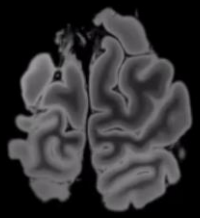
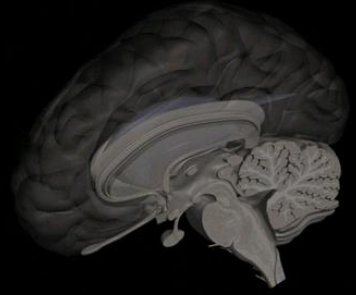
CURSO NEUROPEDIATRÍA

CURSO DE PEDIATRÍA V AÑO ESCUELA DE MEDICINA
UNIVERSIDAD SAN SEBASTIÁN PUERTO MONTT
SEGUNDO SEMESTRE 2025

DR. PATRICIO GUERRA
NEURÓLOGO INFANTIL Y ADOLESCENTES
MAGÍSTER NEUROCIENCIAS

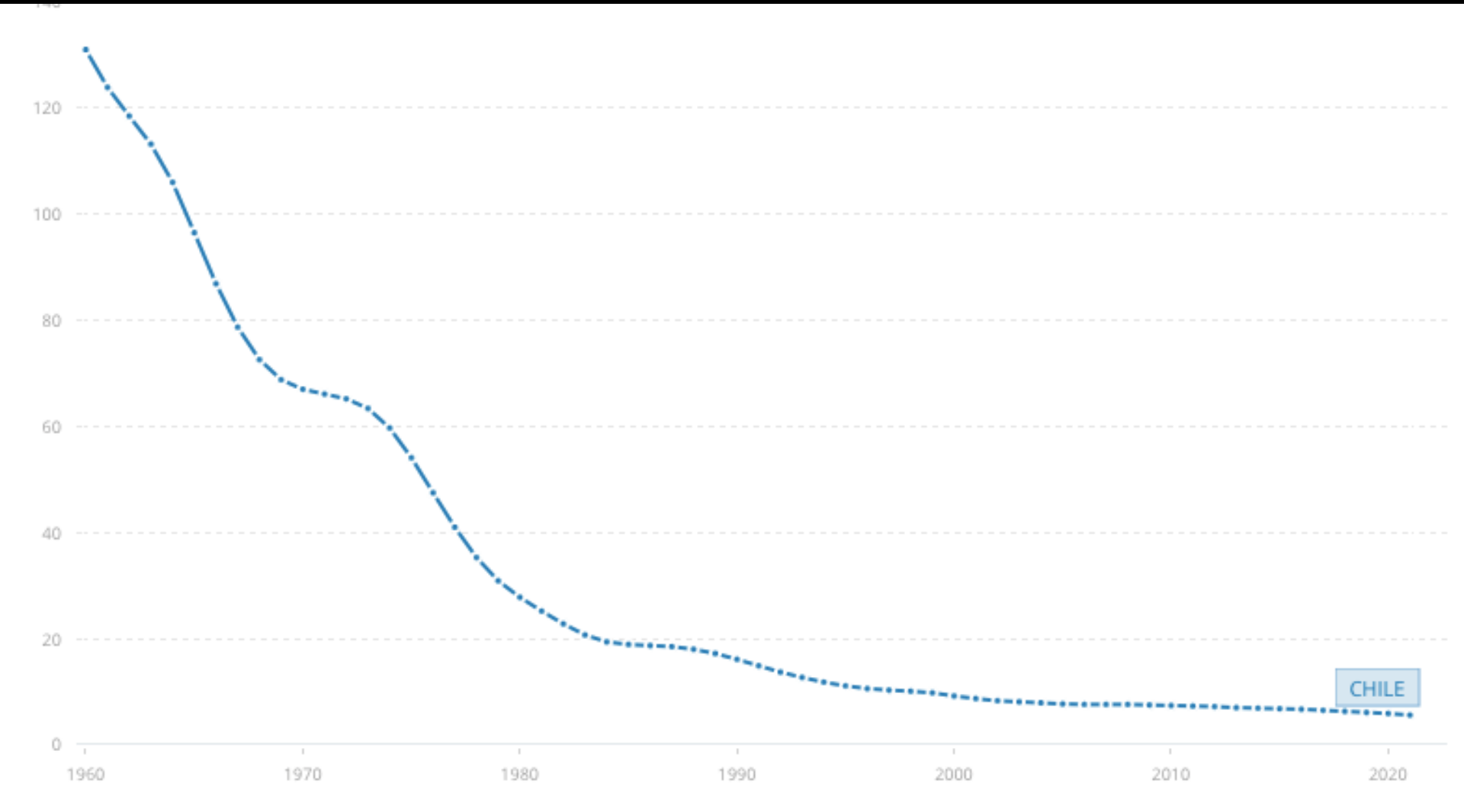




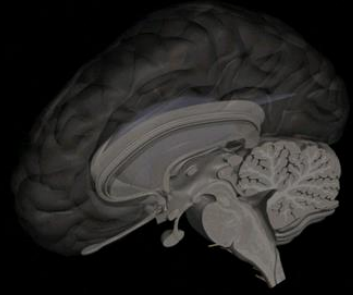
EPIGENÉTICA DEL DESARROLLO COGNITIVO Y EMOCIONAL EN LA INFANCIA

DR. PATRICIO GUERRA
NEURÓLOGO INFANTIL Y ADOLESCENTES
MAGÍSTER NEUROCIENCIAS
ESCUELA DE MEDICINA UNIVERSIDAD SAN SEBASTIÁN PUERTO MONTT

Tasa de Mortalidad Infantil 1960-2024
(Recién nacidos vivos que mueren antes del año de vida)
2024: 6,2/1.000



Fuente: www.datos.bancomundial.org



DISMINUCIÓN NACIMIENTOS

DISMINUCIÓN MORTALIDAD INFANTIL

AUMENTO DE SECUELAS DE NIÑOS QUE YA NO MUEREN (PREMATUROS)

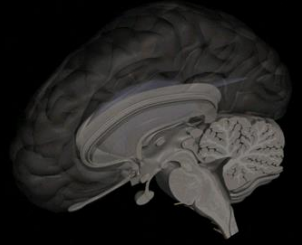
AUMENTO DE CONDICIONES DE SALUD CRÓNICAS (CARDIOPATÍAS, NEUROLOGÍA)

AUMENTO DE CONDICIONES ANTERIORMENTE NO RECONOCIDAS (AUTISMO)

AUMENTO DE CONDICIONES NUEVAS Y CONDICIONADAS SOCIALMENTE (TDAH)

SENSACIÓN DE MAYOR CARGA DE ENFERMEDAD EN LA INFANCIA

¿QUÉ PODEMOS HACER PARA DISMINUIR ESTA SENSACIÓN? (O ESTA REALIDAD)



GOODWIN (DINAMARCA) 1974

110 NIÑOS DADOS EN ADOPCIÓN

55 VARONES HIJOS DE PADRES ALCOHÓLICOS

55 VARONES PADRES NO ALCOHÓLICOS

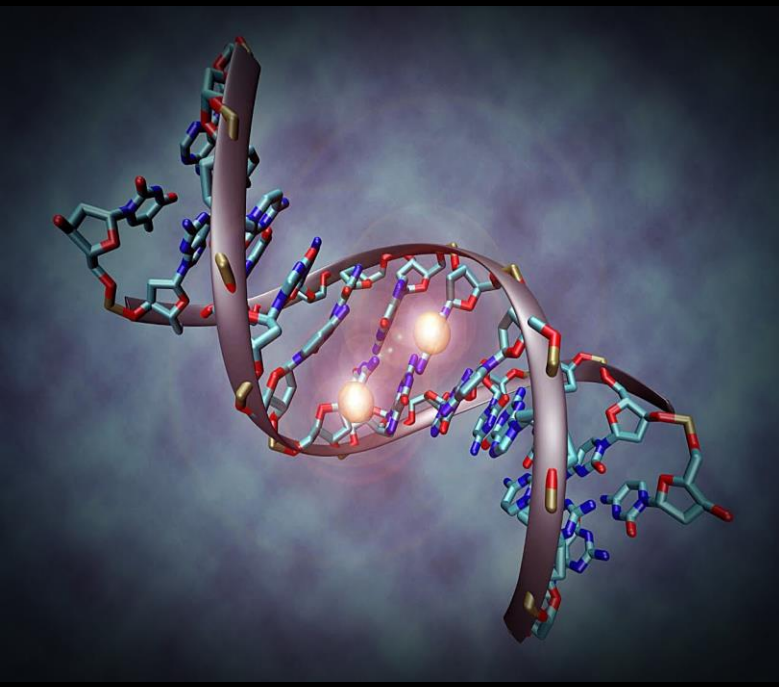
ADOPCIÓN ANTES DEL MES DE VIDA-NUNCA CONTACTO CON PADRES.

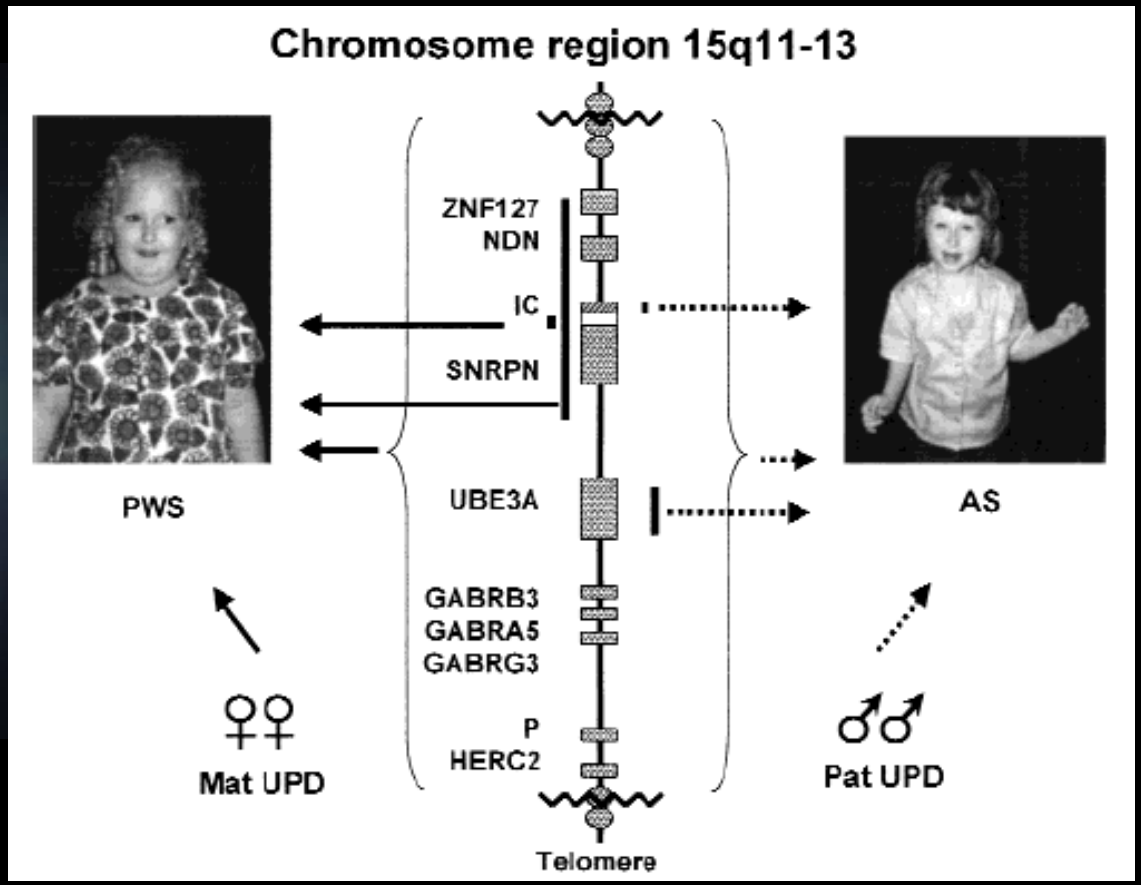
25-29 AÑOS DE EDAD

20% ALCOHOLISMO

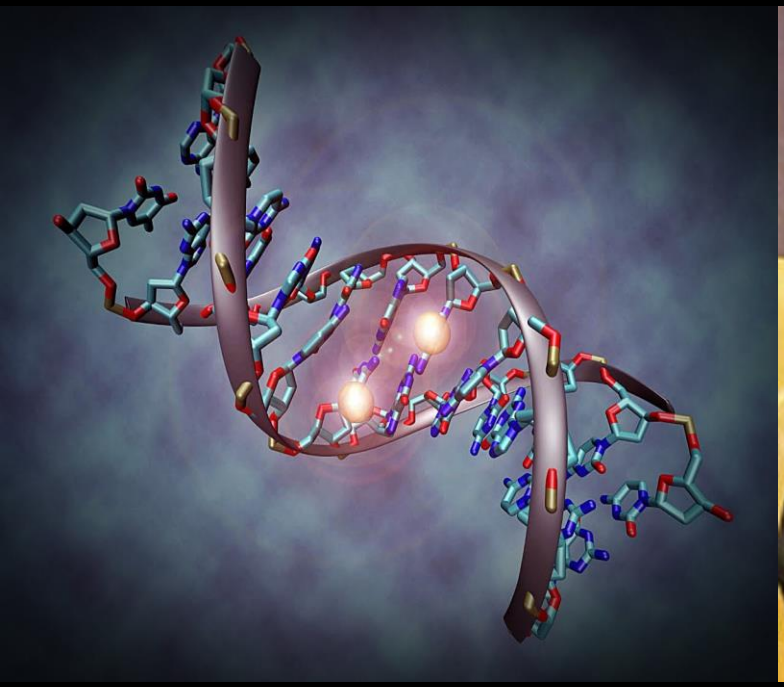
5% ALCOHOLISMO

MECANISMOS DE CAMBIO: MUTACIONES





MECANISMOS DE CAMBIO: INFLUENCIA AMBIENTAL



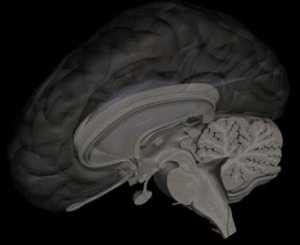
Rev. chil. neuro-psiquiatr. v.41 n.3 Santiago jul. 2003

ARTÍCULO ORIGINAL

Rasgos de ansiedad y alteraciones neuronales en la corteza prefrontal medial, ocasionadas por experiencias adversas tempranas

Anxiety traits and neuronal alterations in the medial prefrontal cortex induced by early adverse experiences

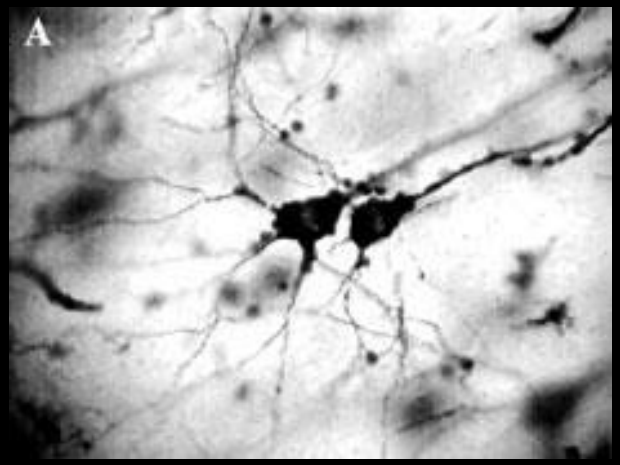
Rodrigo Pascual, Mitzi Catalán, Marta Fuentealba

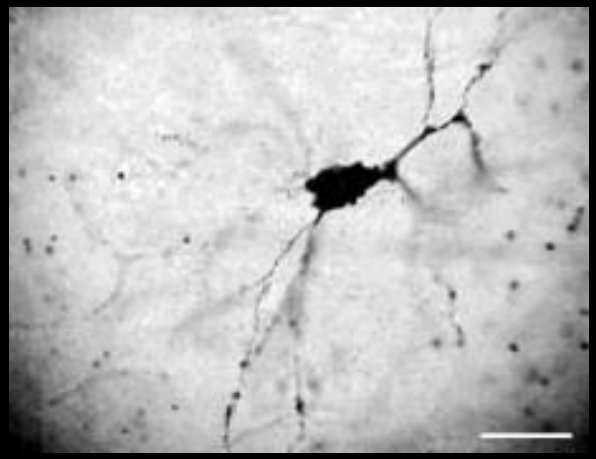


RATAS GENÉTICAMENTE SIMILARES

CRIANZA CON HERMANAS

AISLAMIENTO SOCIAL





POTENCIACIÓN A LARGO PLAZO

NEURONA 1 → NEURONA 2

Estímulo 1 →
Estímulo 2 →
Estímulo 3 →
Estímulo 4 →
Estímulo 5… →

Mayor eficacia NEUROTRANSMISIÓN

MECANISMO CELULAR APRENDIZAJE-MEMORIA

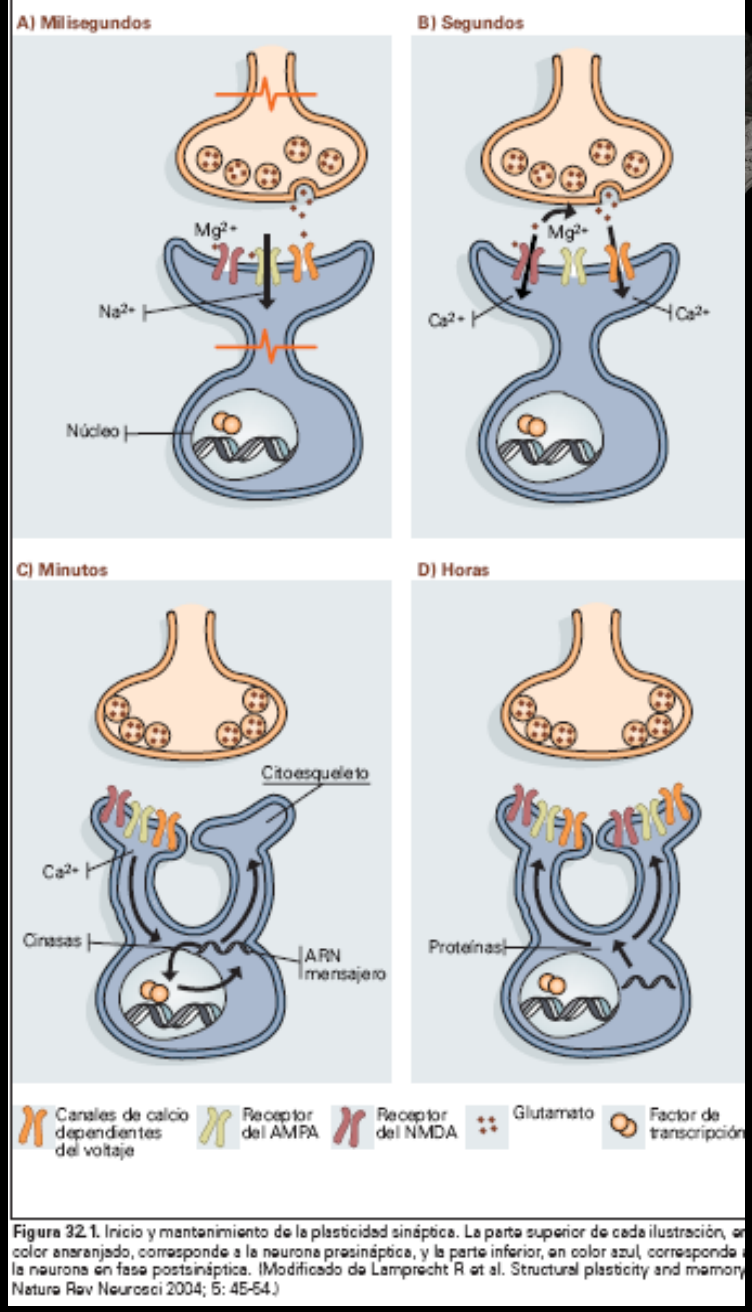
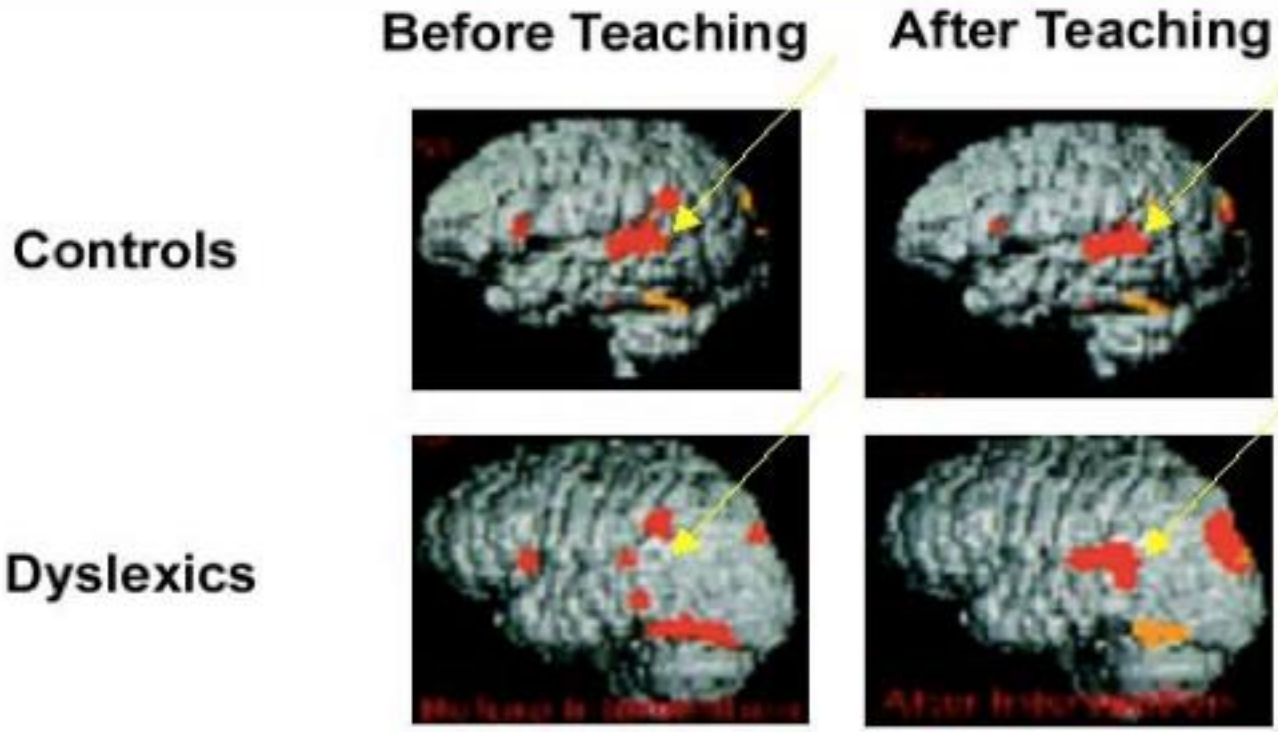


Figura 32.1. Inicio y mantenimiento de la plasticidad sináptica. La parte superior de cada ilustración, en color anaranjado, corresponde a la neurona presináptica, y la parte inferior, en color azul, corresponde a la neurona en fase postsináptica. (Modificado de Lamprecht R et al. Structural plasticity and memory. Nature Rev Neurosci 2004; 5: 45-54.)

El tratamiento de la dislexia corrige el patrón anómalo de activación cerebral



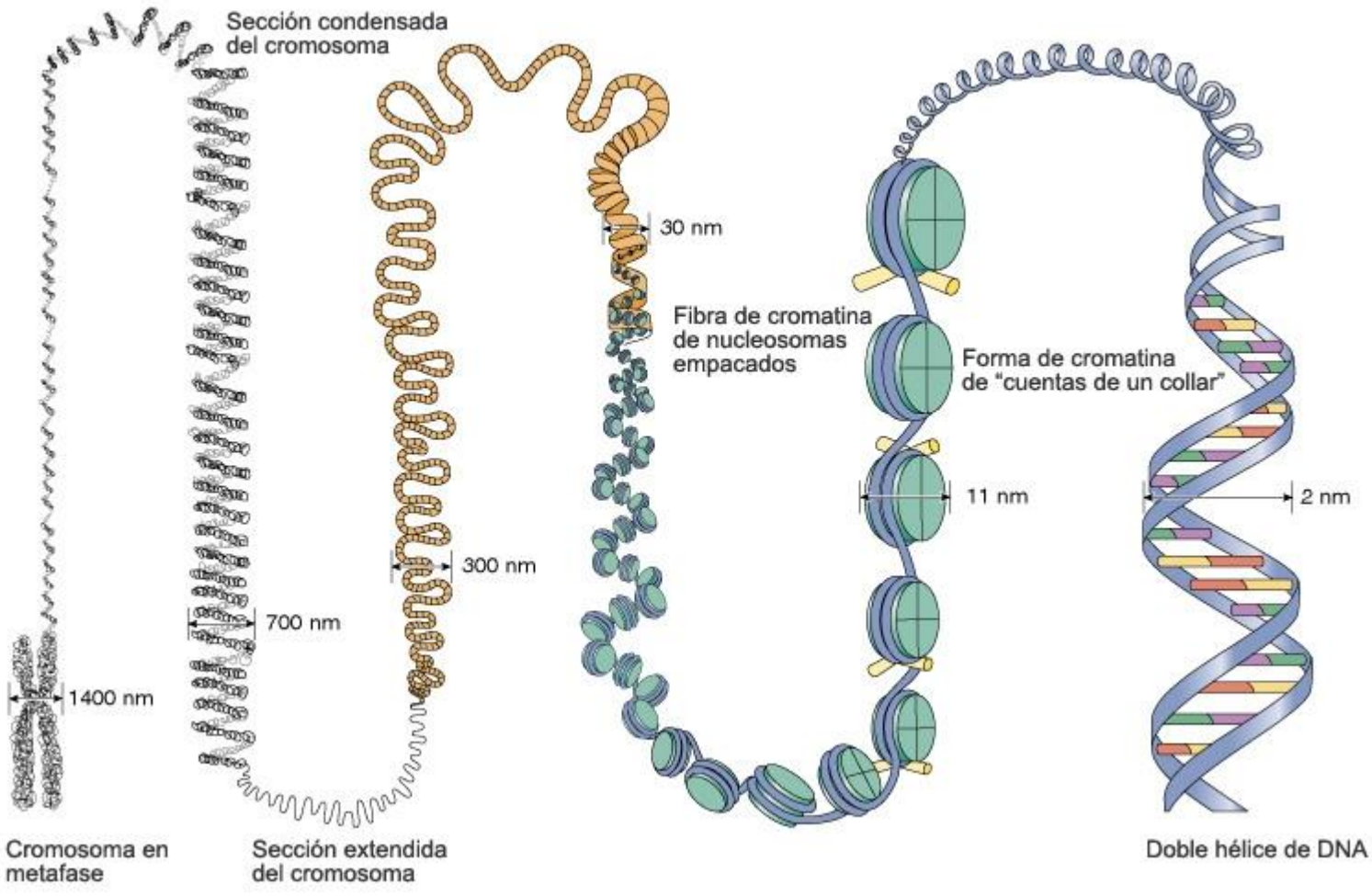
80 hrs (1-2 hrs / day) one-on-one instruction
Phonological Processing & Decoding
Multisensory & Visual Imagery Instruction

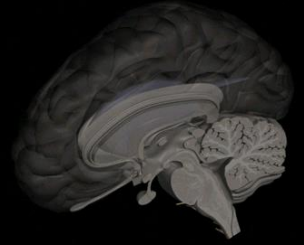
Simos, U Texas

Dyslexia-specific brain activation profile becomes normal following successful remedial training, Simos et al. Neurology 58: 1203-13, 2002.

MECANISMOS DE CAMBIO: EPIGENÉTICA

Se entiende por epigenética al "estudio de cambios heredables en la función de los genes que ocurren sin un cambio en la secuencia del ADN".





ALIMENTACIÓN PERMANENTE CON JALEA REAL

↓

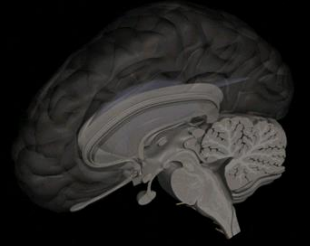
SILENCIAMIENTO DEL GEN Dnmt3

↓

DESARROLLO DE OVARIOS
AUMENTO DE TAMAÑO

Martens et al. BMC Medicine
DOI 10.1186/s12916-016-0689-0

BMC Medicine



RESEARCH ARTICLE Open Access

Maternal pre-pregnancy body mass index and newborn telomere length

Dries S. Martens[1], Michelle Plusquin[1,2], Wilfried Gyselaers[3], Immaculata De Vivo[4,5] and Tim S. Nawrot[1,6*]

Abstract

Background: Newborn telomere length sets telomere length for later life. At birth, telomere length is highly variable among newborns and the environmental factors during *in utero* life for this observation remain largely unidentified. Obesity during pregnancy might reflect an adverse nutritional status affecting pregnancy and offspring outcomes, but the association of maternal pre-pregnancy body mass index (BMI) with newborn telomere length, as a mechanism of maternal obesity, on the next generation has not been addressed.

Methods: Average relative telomere lengths were measured in cord blood ($n = 743$) and placental tissue ($n = 702$) samples using a quantitative real-time PCR method from newborns from the ENVIRONAGE birth cohort in Belgium. By using univariate and multivariable adjusted linear regression models we addressed the associations between pre-pregnancy BMI and cord blood and placental telomere lengths.

Results: Maternal age was 29.1 years (range, 17–44) and mean (SD) pre-pregnancy BMI was 24.1 (4.1) kg/m^2. Decline in newborn telomere length occurred in parallel with higher maternal pre-pregnancy BMI. Independent of maternal and paternal age at birth, maternal education, gestational age, newborn gender, ethnicity, birthweight, maternal smoking status, parity, cesarean section, and pregnancy complications, each kg/m^2 increase in pre-pregnancy BMI was associated with a −0.50 % (95 % CI, −0.83 to −0.17 %; $P = 0.003$) shorter cord blood telomere length and a −0.66 % (95 % CI, −1.06 to −0.25 %; $P = 0.002$) shorter placental telomere length.

Conclusions: Maternal pre-pregnancy BMI is associated with shorter newborn telomere lengths as reflected by cord blood and placental telomeres. These findings support the benefits of a pre-pregnancy healthy weight for promoting molecular longevity from early life onwards.

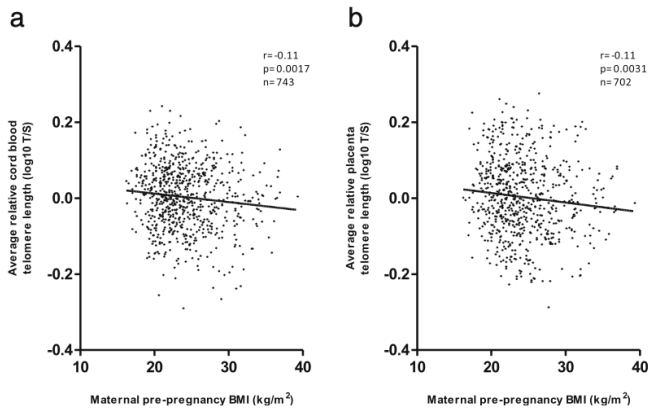


Fig. 1 Pearson correlation between maternal pre-pregnancy BMI and newborn telomere length. Relative average telomere lengths were expressed as the ratio of telomere copy number to single-copy gene number (T/S ratio). **a** Cord blood telomeres. **b** Placental telomeres

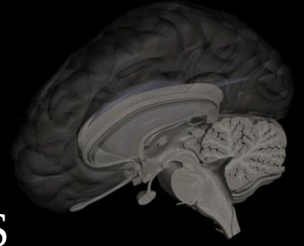
Published in final edited form as:
Horm Behav. 2011 March ; 59(3): 315–320. doi:10.1016/j.yhbeh.2010.05.005.

Epigenetic marking of the BDNF gene by early-life adverse experiences

Tania L. Roth[1,2] and **J. David Sweatt**[1,*]
[1] Department of Neurobiology and Evelyn F. McKnight Brain Institute, University of Alabama at Birmingham, Birmingham, AL 35294

Abstract

Studies over the past half-century have made it clear that environmental influences in development, particularly stress and traumatic experiences, can remain pervasive across the lifespan. Though it has been hypothesized for some time that the long-term consequences of early-life adversity represent epigenetic influences, it has not been until recently that studies have begun to provide empirical support of experience-driven epigenetic modifications to the genome. Here we focus on this theme, and review current knowledge pertaining to the epigenetics of behavioral development. At the center of our discussion is the brain-derived neurotrophic factor (BDNF) gene, as abnormal BDNF gene activity is a leading etiological hypothesis by which early-life adverse experiences persistently modify brain and behavioral plasticity.



EXPERIENCIAS ADVERSAS
EN LA INFANCIA

↓

MODIFICACIÓN EXPRESIÓN
DEL GEN BDNF

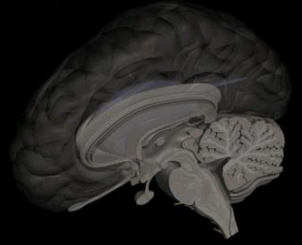
↓

RESPUESTA ANSIOGÉNICA EXAGERADA
FRENTE A ESTRÉS

↓

EVIDENCIA MANTENCIÓN DE LA MODIFICACIÓN DE LA EXPRESIÓN

DEL GEN BDNF AL MENOS HASTA LA TERCERA GENERACIÓN



TEMPERAMENTO

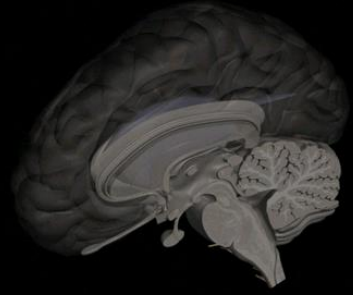
FÁCIL

MATRIZ BIOLÓGICA

DIFÍCIL

TEMPERAMENTO
+
AMBIENTE=

CARÁCTER



DISMINUCIÓN NACIMIENTOS

DISMINUCIÓN MORTALIDAD INFANTIL

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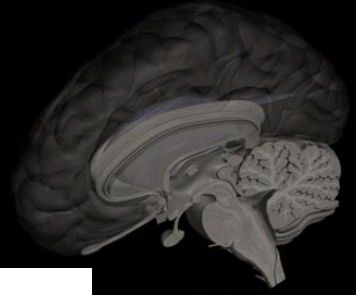
SENSACIÓN DE MAYOR CARGA DE ENFERMEDAD EN LA INFANCIA

¿QUÉ PODEMOS HACER PARA DISMINUIR ESTA SENSACIÓN? (O ESTA REALIDAD)



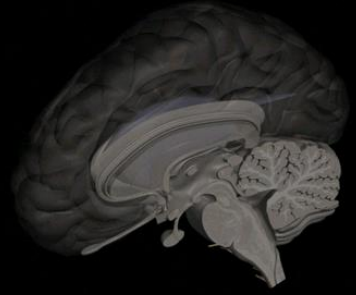
Journal of Personality and Social Psychology
1972, Vol 21, No 2, 204–218

COGNITIVE AND ATTENTIONAL MECHANISMS IN DELAY OF GRATIFICATION[1]

WALTER MISCHEL,[2] EBBE B. EBBESEN, AND ANTONETTE RASKOFF ZEISS

Stanford University

Three experiments investigated attentional and cognitive mechanisms in delay of gratification In each study preschool children could obtain a less preferred reward immediately or continue waiting indefinitely for a more preferred but delayed reward Experiment I compared the effects of external and cognitive distraction from the reward objects on the length of time which preschool children waited for the preferred delayed reward before forfeiting it for the sake of the less preferred immediate one. In accord with predictions from an extension of frustrative nonreward theory, children waited much longer for a preferred reward when they were distracted from the rewards than when they attended to them directly Experiment II demonstrated that only certain cognitive events (thinking "fun things") served as effective ideational distractors Thinking "sad thoughts" produced short delay times, as did thinking about the rewards themselves In Experiment III the delayed rewards were not physically available for direct attention during the delay period, and the children's attention to them cognitively was manipulated by prior instructions While the children waited, cognitions about the rewards significantly reduced, rather than enhanced, the length of their delay of gratification Overall, attentional and cognitive mechanisms which enhanced the salience of the rewards shortened the length of voluntary delay, while distractions from the rewards, overtly or cognitively, facilitated delay The results permit a reinterpretation of basic mechanisms in voluntary delay of gratification and self-control



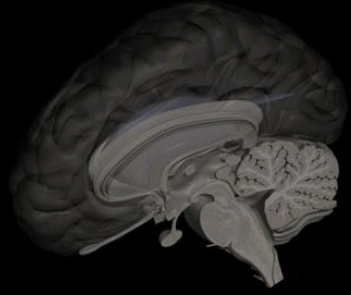
EXPERIENCIA DE AUTOCONTROL PREESCOLARES
EVOLUCIÓN A 30 AÑOS

-70% “SE AGUANTABAN”

-30% “NO SE AGUANTARON”

DIFERENCIAS SIGNIFICATIVAS EN EVOLUCIÓN

-SOCIAL
-ESCOLAR
-EMOCIONAL
-FAMILIAR
-LABORAL



Behavioral and neural correlates of delay of gratification 40 years later

B. J. Casey[a,1], Leah H. Somerville[a], Ian H. Gotlib[b], Ozlem Ayduk[c], Nicholas T. Franklin[a], Mary K. Askren[d], John Jonides[d], Marc G. Berman[d], Nicole L. Wilson[e], Theresa Teslovich[a], Gary Glover[f], Vivian Zayas[g], Walter Mischel[h,1], and Yuichi Shoda[e,1]

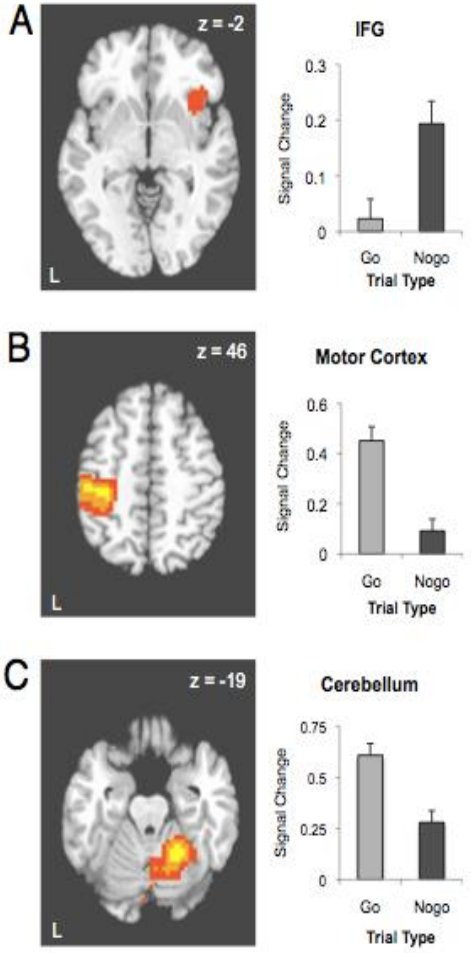
[a]Sackler Institute for Developmental Psychobiology, Weill Cornell Medical College, New York, NY 10065; [b]Department of Psychology, Stanford University, Stanford, CA 94305; [c]Department of Psychology, University of California, Berkeley, CA 94720; [d]Department of Psychology, University of Michigan, Ann Arbor, MI 48109; [e]Department of Psychology, University of Washington, Seattle, WA 98195; [f]Lucas Imaging Center, Department of Radiology, Stanford University School of Medicine, Stanford, CA 94305; [g]Department of Psychology, Cornell University, Ithaca, NY 14853; and [h]Department of Psychology, Columbia University, New York, NY 10027

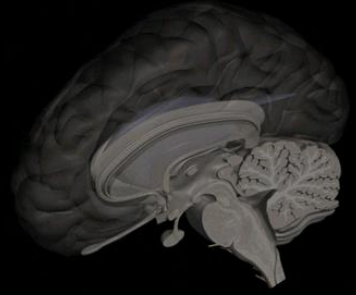
Edited* by Michael Posner, University of Oregon, Eugene, OR, and approved July 26, 2011 (received for review May 27, 2011)

We examined the neural basis of self-regulation in individuals from a cohort of preschoolers who performed the delay-of-gratification task 4 decades ago. Nearly 60 individuals, now in their mid-forties, were tested on "hot" and "cool" versions of a go/nogo task to assess whether delay of gratification in childhood predicts impulse control abilities and sensitivity to alluring cues (happy faces). Individuals who were less able to delay gratification in preschool and consistently showed low self-control abilities in their twenties and thirties performed more poorly than did high delayers when having to suppress a response to a happy face but not to a neutral or fearful face. This finding suggests that sensitivity to environmental hot cues plays a significant role in individuals' ability to suppress actions toward such stimuli. A subset of these participants (n = 26) underwent functional imaging for the first time to test for biased recruitment of frontostriatal circuitry when required to suppress responses to alluring cues. Whereas the prefrontal cortex differentiated between nogo and go trials to a greater extent in high delayers, the ventral striatum showed exaggerated recruitment in low delayers. Thus, resistance to temptation as measured originally by the delay-of-gratification task is a relatively stable individual difference that predicts reliable biases in frontostriatal circuitries that integrate motivational and control processes.

had more difficulty suppressing inappropriate actions than did their low-temptation-focus counterparts, especially for the most difficult trials. Difficulty was manipulated by increasing the number of "go" trials preceding a "nogo" trial, thus making the "go" response more salient and automated. Differences between the high- and low-temptation-focus groups increased as the number of preceding "go" trials increased, with the high-temptation-focus group having more difficulty, reflected in slower response times, suppressing responses. These findings suggest that performance in preschool delay of gratification may predict the capacity, in adulthood, to control thoughts and actions, as reflected in performance on cognitive control tasks, and that the ability to control one's thoughts and actions can vary by the potency of interfering information (12). Likewise, alluring or social contexts can diminish self-control (4, 13, 14).

Early experiments on delay of gratification demonstrated that part of the contextual effect was due to the different cognitive strategies that individuals used. For example, "cooling" the hot, appealing, or appetitive features of tempting stimuli by reappraisal or reframing strategies to focus on their cool, cognitive features (e.g., to envision the marshmallow as a cloud or a little cotton ball, rather than as a sweet, delectable treat) has been shown to be highly effective in enhancing delay of gratification





EXPERIENCIA DE AUTOCONTROL PREESCOLARES
EVOLUCIÓN A 30 AÑOS

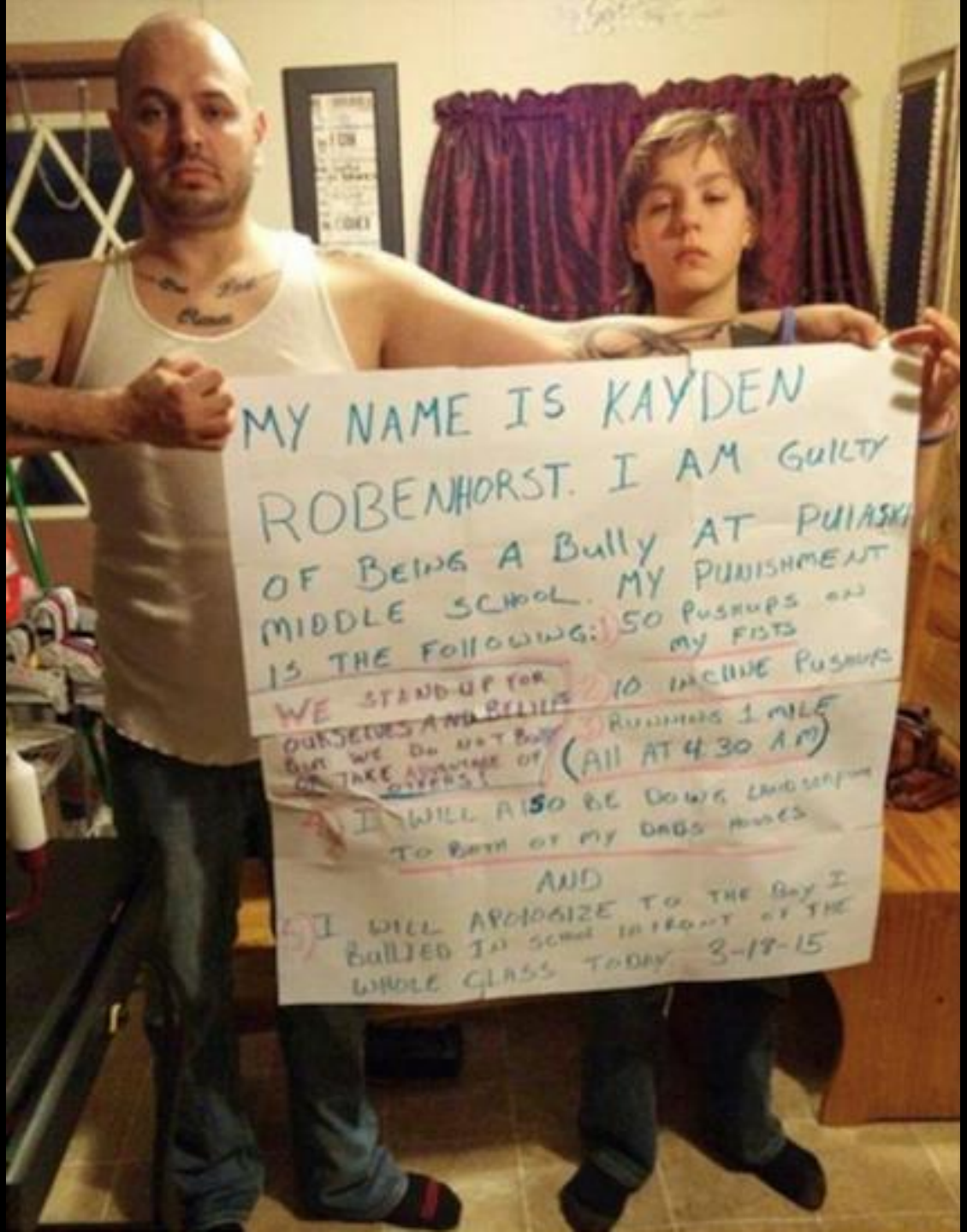
AUTOCONTROL ⟶ CAPACIDAD DE SUPERAR LA GRATIFICACIÓN INMEDIATA EN POS DE ALGO “SUPERIOR”

NIÑOS CON CAPACIDAD INNATA

NIÑOS QUE SE LES PUEDE “ENTRENAR”

PRIMER PASO ⟶ CONTROL EXTERNO

LUEGO ⟶ DESARROLLO DE CONTROL INTERNO


MY NAME IS KAYDEN
ROBENHORST. I AM GUILTY
OF BEING A BULLY AT PULASKI
MIDDLE SCHOOL. MY PUNISHMENT
IS THE FOLLOWING:
1) 50 PUSHUPS AND
MY FISTS
WE STAND UP FOR
OURSELVES AND BELIEVE
BUT WE DO NOT BULLY
OR TAKE ADVANTAGE OF
OTHERS
2) 10 INCLINE PUSHUPS
3) RUNNING 1 MILE
(ALL AT 4:30 AM)
4) I WILL ALSO BE DOING LUNGES
TO BOTH OF MY DADS HOUSES
AND
5) I WILL APOLOGIZE TO THE BOY I
BULLIED IN SCHOOL IN FRONT OF THE
WHOLE GLASS TODAY
3-18-15

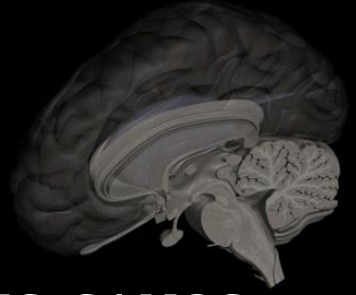
POR LO TANTO, EL PRIMER PASO PARA TENER NIÑOS FELICES

-NO ES EL EFECTO MOZART

-NO ES DARLES TODO LO QUE NECESITAN
(NI TODO LO QUE QUIEREN)

-SÍ ES PONERLE LÍMITES (UN NIÑO SABE LO QUE ES EL *NO*
DESDE LOS 8 MESES DE VIDA)

-PONER LÍMITES IMPLICA ASUMIR AUTORIDAD
(Y RESPONSABILIDAD) COMO PADRES



POR LO TANTO, EL PRIMER PASO PARA TENER NIÑOS FELICES, SANOS E INTELIGENTES

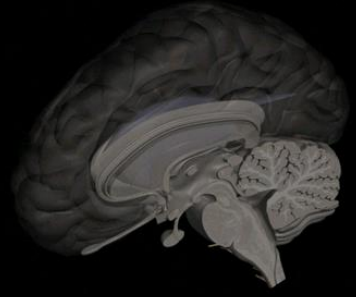
ASUMIR QUE LOS HIJOS SON NUESTROS, NUESTRA RESPONSABILIDAD

-NO DE LA ABUELITA

-NO DEL COLEGIO

-NO DEL ESTADO

-NO DE LA SOCIEDAD



DADO ESTE PRIMER PRINCIPIO BÁSICO

¿QUÉ PODEMOS HACER PARA QUE LOS NIÑOS SEAN MÁS FELICES, SANOS E INTELIGENTES?

(Y QUE ESTÁ EN NOSOTROS, Y NO EN OTROS, LOGRARLO)

ARCHIVAL REPORT

BIOL PSYCHIATRY 2014;75:56–64

Maternal-Preterm Skin-to-Skin Contact Enhances Child Physiologic Organization and Cognitive Control Across the First 10 Years of Life

Ruth Feldman, Zehava Rosenthal, and Arthur I. Eidelman

Background: Maternal–newborn contact enhances organization of the infant's physiological systems, including stress reactivity, autonomic functioning, and sleep patterns, and supports maturation of the prefrontal cortex and its ensuing effects on cognitive and behavioral control. Premature birth disrupts brain development and is associated with maternal separation and disturbances of contact-sensitive systems. However, it is unknown whether the provision of maternal–preterm contact can improve long-term functioning of these systems.

Methods: We used the Kangaroo Care (KC) intervention and provided maternal–newborn skin-to-skin contact to 73 premature infants for 14 consecutive days compared with 73 case-matched control subjects receiving standard incubator care. Children were then followed seven times across the first decade of life and multiple physiologic, cognitive, parental mental health, and mother–child relational measures were assessed.

Results: KC increased autonomic functioning (respiratory sinus arrhythmia, RSA) and maternal attachment behavior in the postpartum period, reduced maternal anxiety, and enhanced child cognitive development and executive functions from 6 months to 10 years. By 10 years of age, children receiving KC showed attenuated stress response, improved RSA, organized sleep, and better cognitive control. RSA and maternal behavior were dynamically interrelated over time, leading to improved physiology, executive functions, and mother–child reciprocity at 10 years.

Conclusions: These findings are the first to demonstrate long-term effects of early touch-based intervention on children's physiologic organization and behavioral control and have salient implications for the care practices of premature infants. Results demonstrate the dynamic cascades of child physiological regulation and parental provisions in shaping developmental outcome and may inform the construction of more targeted early interventions.

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PLOS ONE

Family Poverty Affects the Rate of Human Infant Brain Growth

Jamie L. Hanson[1,2]*, Nicole Hair[3,4], Dinggang G. Shen[5,6,7], Feng Shi[5,6,7], John H. Gilmore[8], Barbara L. Wolfe[3,4,9], Seth D. Pollak[1,2]

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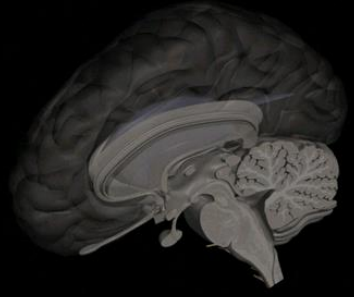
Abstract

Living in poverty places children at very high risk for problems across a variety of domains, including schooling, behavioral regulation, and health. Aspects of cognitive functioning, such as information processing, may underlie these kinds of problems. How might poverty affect the brain functions underlying these cognitive processes? Here, we address this question by observing and analyzing repeated measures of brain development of young children between five months and four years of age from economically diverse backgrounds (n = 77). In doing so, we have the opportunity to observe changes in brain growth as children begin to experience the effects of poverty. These children underwent MRI scanning, with subjects completing between 1 and 7 scans longitudinally. Two hundred and three MRI scans were divided into different tissue types using a novel image processing algorithm specifically designed to analyze brain data from young infants. Total gray, white, and cerebral (summation of total gray and white matter) volumes were examined along with volumes of the frontal, parietal, temporal, and occipital lobes. Infants from low-income families had lower volumes of gray matter, tissue critical for processing of information and execution of actions. These differences were found for both the frontal and parietal lobes. No differences were detected in white matter, temporal lobe volumes, or occipital lobe volumes. In addition, differences in brain growth were found to vary with socioeconomic status (SES), with children from lower-income households having slower trajectories of growth during infancy and early childhood. Volumetric differences were associated with the emergence of disruptive behavioral problems.

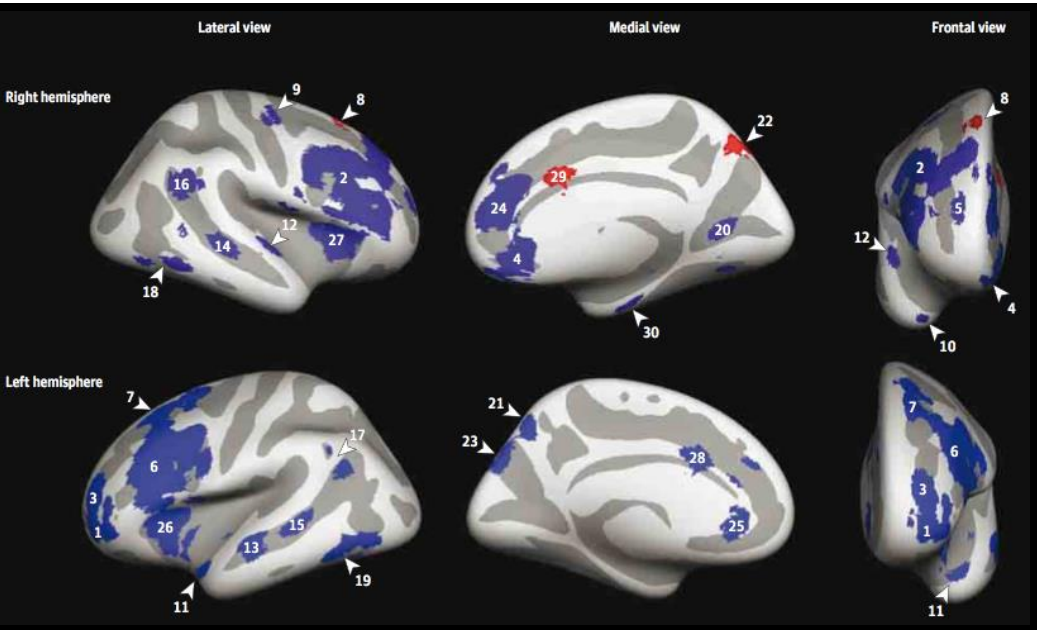
Citation: Hanson JL, Hair N, Shen DG, Shi F, Gilmore JH, et al. (2013) Family Poverty Affects the Rate of Human Infant Brain Growth. PLoS ONE 8(12): e80954. doi:10.1371/journal.pone.0080954



Original Investigation

Effect of Early Adversity and Childhood Internalizing Symptoms on Brain Structure in Young Men

Sarah K. G. Jensen, MSc; Erin W. Dickie, PhD; Deborah H. Schwartz, MA; C. John Evans, PhD; Iroise Dumontheil, PhD; Tomáš Paus, MD, PhD; Edward D. Barker, PhD

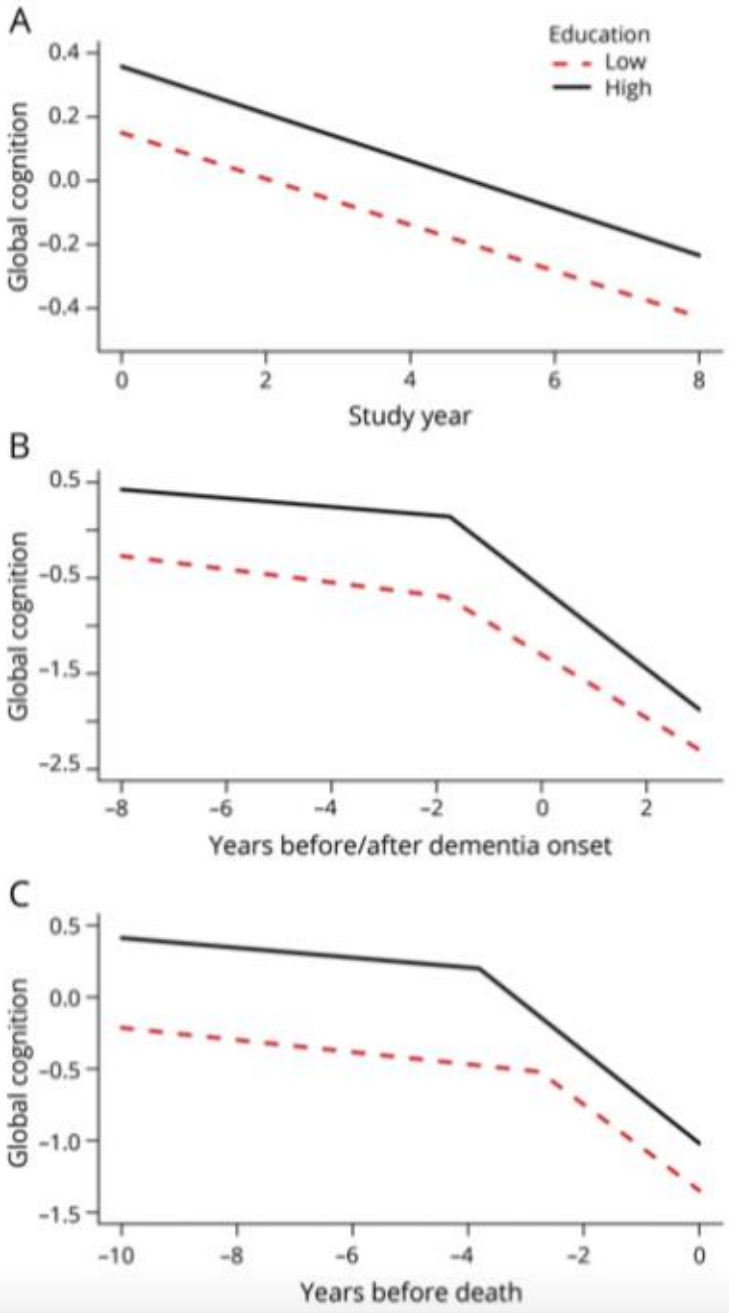


JAMA Pediatr. doi:10.1001/jamapediatrics.2015.1486
Published online August 17, 2015.

At a Glance

- The extent to which brain structure variation typically associated with depression may also relate to early experiences of stress was examined within a large (n = 494) longitudinal birth cohort.
- The study found that early adverse experiences predicted lower gray matter volume in the anterior cingulate cortex and greater gray matter volume in the precuneus in adolescence.
- Early adversity was indirectly associated with lower gray matter volume in the superior frontal gyrus via higher levels of internalizing symptoms.
- These results indicate that early childhood adversity is associated with altered brain structure, and the effects of depression on the brain may partly relate to early adversity.

Figure 1 Relation of education to trajectories of global cognitive change



Education and cognitive reserve in old age

Robert S. Wilson, PhD, Lei Yu, PhD, Melissa Lamar, PhD, Julie A. Schneider, MD, Patricia A. Boyle, PhD, and David A. Bennett, MD

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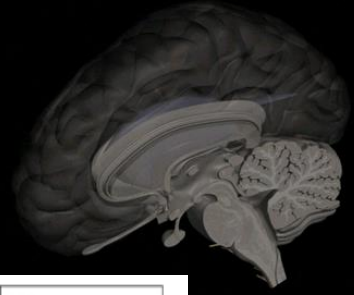
Neurology® 2019;92:e1-e10. doi:10.1212/WNL.0000000000007036



Contents lists available at ScienceDirect

Sleep Medicine Reviews

journal homepage: www.elsevier.com/locate/smrv

CLINICAL REVIEW

Normal sleep patterns in infants and children: A systematic review of observational studies

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[b] Department of Paediatrics, University of Otago, PO Box 7343, Wellington, New Zealand
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ARTICLE INFO

Article history:
Received 28 April 2011
Received in revised form
12 June 2011
Accepted 13 June 2011
Available online 23 July 2011

Keywords:
Development
Meta-analysis
Normal sleep
Sleep diaries
Sleep questionnaires

SUMMARY

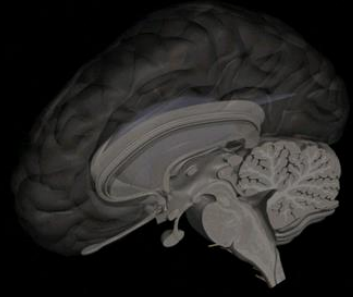
This is a systematic review of the scientific literature with regard to normal sleep patterns in infants and children (0–12 years). The review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Mean and variability data for sleep duration, number of night wakings, sleep latency, longest sleep period overnight, and number of daytime naps were extracted from questionnaire or diary data from 34 eligible studies. Meta-analysis was conducted within age-bands and categories. In addition, fractional polynomial regression models were used to estimate best-fit equations for the sleep variables in relation to age. Reference values (means) and ranges (±1.96 SD) for sleep duration (hours) were: infant, 12.8 (9.7–15.9); toddler/preschool, 11.9 (9.9–13.8); and child, 9.2 (7.6–10.8). The best-fit ($R^2 = 0.89$) equation for hours over the 0–12 year age range was $10.49 - 5.56 \times [(age/10)^{0.5} - 0.71]$. Meta-regression showed predominantly Asian countries had significantly shorter sleep (1 h less over the 0–12 year range) compared to studies from Caucasian/non-Asian countries. Night waking data provided 4 age-bands up to 2 years ranging from 0 to 3.4 wakes per night for infants (0–2 months), to 0–2.5 per night (1–2 year-olds). Sleep latency data were sparse but estimated to be stable across 0–6 years. Because the main data analysis combined data from different countries and cultures, the reference values should be considered as global norms.

Sleep Drives Metabolite Clearance from the Adult Brain

SCIENCE VOL 342 18 OCTOBER 2013

Lulu Xie,[1]* Hongyi Kang,[1]* Qiwu Xu,[1] Michael J. Chen,[1] Yonghong Liao,[1] Meenakshisundaram Thiyagarajan,[1] John O'Donnell,[1] Daniel J. Christensen,[1] Charles Nicholson,[2] Jeffrey J. Iliff,[1] Takahiro Takano,[1] Rashid Deane,[1] Maiken Nedergaard[1]†

The conservation of sleep across all animal species suggests that sleep serves a vital function. We here report that sleep has a critical function in ensuring metabolic homeostasis. Using real-time assessments of tetramethylammonium diffusion and two-photon imaging in live mice, we show that natural sleep or anesthesia are associated with a 60% increase in the interstitial space, resulting in a striking increase in convective exchange of cerebrospinal fluid with interstitial fluid. In turn, convective fluxes of interstitial fluid increased the rate of β-amyloid clearance during sleep. Thus, the restorative function of sleep may be a consequence of the enhanced removal of potentially neurotoxic waste products that accumulate in the awake central nervous



Sleep, clocks, and synaptic plasticity

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[2] Zoology Department, Stockholm University, Stockholm, Sweden
[3] Instituto de Investigaciones Biológicas Clemente Estable, Montevideo, Uruguay

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Sleep Medicine

journal homepage: www.elsevier.com/locate/sleep

Original Article

The history of sleep apnea is associated with shorter leukocyte telomere length: the Helsinki Birth Cohort Study

Katri Savolainen[a,*], Johan G. Eriksson[b,c,d,e,f], Eero Kajantie[b,g], Marius Lahti[a], Katri Räikkönen[a]

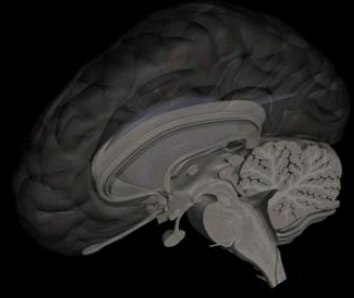
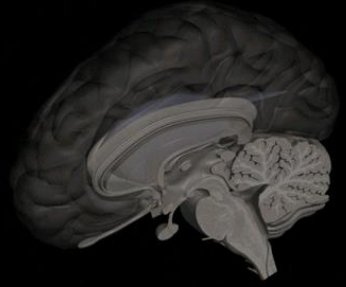


Table 2
Expert panel recommended sleep durations.

Age	Recommended, h	May be appropriate, h	Not recommended, h
Newborns 0-3 mo	14 to 17	11 to 13 18 to 19	Less than 11 More than 19
Infants 4-11 mo	12 to 15	10 to 11 16 to 18	Less than 10 More than 18
Toddlers 1-2 y	11 to 14	9 to 10 15 to 16	Less than 9 More than 16
Preschoolers 3-5 y	10 to 13	8 to 9 14	Less than 8 More than 14
School-aged children 6-13 y	9 to 11	7 to 8 12	Less than 7 More than 12
Teenagers 14-17 y	8 to 10	7 11	Less than 7 More than 11
Young adults 18-25 y	7 to 9	6 10 to 11	Less than 6 More than 11
Adults 26-64 y	7 to 9	6 10	Less than 6 More than 10
Older adults ≥65 y	7 to 8	5 to 6 9	Less than 5 More than 9

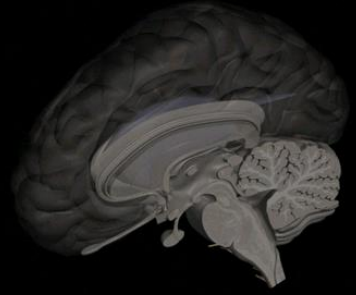
Please cite this article as: Hirshkowitz M, et al, National Sleep Foundation's sleep time duration recommendations: methodology and results summary, Sleep Health (2015), http://dx.doi.org/10.1016/j.sleh.2014.12.010



FALTA DE SUEÑO ASOCIADA A:

-MENOR RENDIMIENTO ESCOLAR
-MAYOR IRRITABILIDAD DIURNA
-MENOR SECRECIÓN HcG
-OBESIDAD
-CEFALEA
-SONAMBULISMO Y PESADILLAS
-TRASTORNOS EMOCIONALES Y CONDUCTUALES TARDÍOS
-IDEACIÓN SUICIDA
-ACCIDENTE CEREBROVASCULAR
-ALZHEIMER
-PARKINSON
-EPILEPSIA
-ESCLEROSIS MÚLTIPLE
-JAQUECAS
-DOLOR CRÓNICO
-TRASTORNOS DEL ÁNIMO

COMER BIEN



-OMEGA 3

-PROBIÓTICOS

-DESAYUNAR ABUNDANTEMENTE

-EVITAR AYUNO PROLONGADO

-ESTUDIAR OLIGOELEMENTOS EN DIETAS RESTRICTIVAS

-EVITAR COMIDA CHATARRA

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PLOS ONE

Low Blood Long Chain Omega-3 Fatty Acids in UK Children Are Associated with Poor Cognitive Performance and Behavior: A Cross-Sectional Analysis from the DOLAB Study

Paul Montgomery*, Jennifer R. Burton, Richard P. Sewell, Thees F. Spreckelsen, Alexandra J. Richardson

Centre for Evidence-Based Intervention, University of Oxford, Oxford, United Kingdom

Consumption of Fermented Milk Product With Probiotic Modulates Brain Activity

KIRSTEN TILLISCH,[1] JENNIFER LABUS,[1] LISA KILPATRICK,[1] ZHIGUO JIANG,[1] JEAN STAINS,[1] BAHAR EBRAT,[1] DENIS GUYONNET,[2] SOPHIE LEGRAIN-RASPAUD,[2] BEATRICE TROTIN,[2] BRUCE NALIBOFF,[1] and EMERAN A. MAYER[1]

[1]Oppenheimer Family Center for Neurobiology of Stress, Division of Digestive Diseases, Department of Medicine, David Geffen School of Medicine at UCLA, Los Angeles, California; and [2]Danone Research, Palaiseau, France

BACKGROUND & AIMS: Changes in gut microbiota have been reported to alter signaling mechanisms, emotional behavior, and visceral nociceptive reflexes in rodents. However, alteration of the intestinal microbiota with antibiotics or probiotics has not been shown to produce these changes in humans. We investigated whether consumption of a fermented milk product with probiotic (FMPP) for 4 weeks by healthy women altered brain intrinsic connectivity or responses to emotional attention tasks. **METHODS:** Healthy women with no gastrointestinal or psychiatric symptoms were randomly assigned to groups given FMPP (n = 12), a nonfermented milk product (n = 11, controls), or no intervention (n = 13) twice daily for 4 weeks. The FMPP contained *Bifidobacterium animalis* subsp *Lactis*, *Streptococcus thermophiles*, *Lactobacillus bulgaricus, and Lactococcus lactis* subsp *Lactis*. Participants underwent functional magnetic resonance imaging before and after the intervention to measure brain response to an emotional faces attention task and resting brain activity. Multivariate and region of interest analyses were performed. **RESULTS:** FMPP intake was associated with reduced task-related response of a distributed functional network (49% cross-block covariance; P = .004) containing affective, viscerosensory, and somatosensory cortices. Alterations in intrinsic activity of resting brain indicated that ingestion of FMPP was associated with changes in midbrain connectivity, which could explain the observed differences in activity during the task. **CONCLUSIONS: Four-week intake of an FMPP by healthy women affected activity of brain regions that control central processing of emotion and sensation.**

might have a homologous effect on normal human behavior and that alterations in their composition, or in their metabolic products can play a role in the pathophysiology of psychiatric disease or in chronic abdominal pain syndromes, such as irritable bowel syndrome (IBS).[11–14] However, in contrast to the strong preclinical evidence linking alterations in gut microbiota to emotional behavior, there is only suggestive evidence that a similar relationship might exist in humans.[3,15–17]

Many reports have provided evidence for effects of probiotics on gut function and visceral sensitivity.[18,19] For example, various strains of probiotics have been demonstrated to reduce visceral nociceptive reflex responses in rodents and human symptoms of abdominal discomfort; however, the mechanism(s) underlying these effects remain poorly understood.[8,20–27] In addition to various suggested peripheral mechanisms, alteration in central modulation of interoceptive signals, including the engagement of descending bulbospinal pain modulation systems, or ascending monoaminergic modulation of sensory brain regions, can also play a role.[28,29] Alterations in such endogenous pain-modulation systems have been implicated in the pathophysiology of persistent pain syndromes, such as IBS and fibromyalgia.[30–32]

There are many potential signaling mechanisms by which gut microbiota and probiotics could influence brain activity, including changes in microbiota-produced signaling molecules (including amino acid metabolites, short chain fatty acids, and neuroactive substances), mucosal immune mechanisms, and enterochromaffin cell–mediated vagal activation.[12,33–37] In rodent studies, altered

Fish consumption and risk of depression: a meta-analysis

Fang Li, Xiaoqin Liu, Dongfeng Zhang

Li F, *et al*. *J Epidemiol Community Health* 2015;**0**:1–6. doi:10.1136/jech-2015-206278

ABSTRACT

Background The association between fish consumption and risk of depression is controversial. We performed a meta-analysis to evaluate the association.

Methods A literature search was performed in PubMed, EMBASE and Web of Science database for all relevant studies up to March 2015. We pooled the relative risks (RRs) with 95% CIs from individual studies with random effects model, and conducted meta-regression to explore potential sources of heterogeneity. Publication bias was estimated by Egger's test and the funnel plot.

Results A total of 26 studies involving 150 278 participants were included in the present meta-analysis. The pooled RR of depression for the highest versus lowest consumption of fish was 0.83 (95% CI 0.74 to 0.93). The findings remained significant in the cohort studies (RR=0.84, 95% CI 0.75 to 0.94, n=10) as well as in the cross-sectional studies (RR=0.82, 95% CI 0.68 to 1.00, n=16). When men and women were analysed separately, a significant inverse association was also observed. There was no evidence of publication bias.

Conclusions This meta-analysis indicates that high-fish consumption can reduce the risk of depression.

structure and function,[9 10] has been reported to be associated with depression in several studies.[11–14] However, others did not find an association between fish consumption and depression risk.[15–19]

Considering the inconsistent and inconclusive findings of the epidemiology studies, we conducted a meta-analysis to summarise the results of observational studies on the association between fish consumption and depression risk.

MATERIALS AND METHODS

We consulted Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines for reporting of meta-analyses in this analysis.[20]

Search strategy

We performed a literature search up to March 2015 in the databases of PubMed, EMBASE and Web of Science, with the following search terms, 'depression' or 'depressive disorder' or 'depressive symptoms' and 'fish'. All searches were limited to studies conducted in humans and published in English. Furthermore, the reference lists of

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ORIGINAL ARTICLES

Soft Drinks Consumption Is Associated with Behavior Problems in 5-Year-Olds

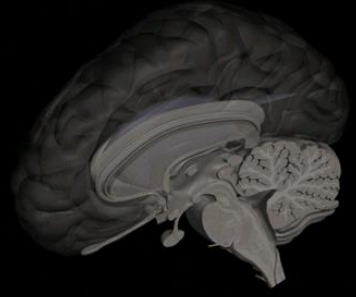
Shakira F. Suglia, ScD[1], Sara Solnick, PhD[2], and David Hemenway, PhD[3]

Objective To examine soda consumption and aggressive behaviors, attention problems, and withdrawal behavior among 5-year-old children.

Study design The Fragile Families and Child Wellbeing Study is a prospective birth cohort study that follows a sample of mother-child pairs from 20 large US cities. Mothers reported children's behaviors using the Child Behavior Checklist at age 5 years and were asked to report how many servings of soda the child drinks on a typical day.

Results In the sample of 2929 children, 52% were boys, 51% were African-American, 43% consumed at least one serving of soda per day, and 4% consumed 4 or more servings per day. In analyses adjusted for sociodemographic factors, consuming one (beta, 0.7; 95% CI, 0.1-1.4), 2 (beta, 1.8; 95% CI, 0.8-2.7), 3 (beta, 2.0; 95% CI, 0.6-3.4), or 4 or more (beta, 4.7; 95% CI, 3.2-6.2) servings was associated with a higher aggressive behavior score compared with consuming no soda. Furthermore, those who consumed 4 or more (beta, 1.7; 95% CI, 1.0-2.4) soda servings had higher scores on the attention problems subscale. Higher withdrawn behavior scores were noted among those consuming 2 (beta, 1.0; 95% CI, 0.3-1.8) or 4 or more (beta, 2.0; 95% CI, 0.8-3.1) soda servings compared with those who consumed no soda.

Conclusion We note an association between soda consumption and negative behavior among very young children; future studies should explore potential mechanisms that could explain this association. *(J Pediatr 2013;■:■-■).*



Effects of the FITKids Randomized Controlled Trial on Executive Control and Brain Function

AUTHORS: Charles H. Hillman, PhD,[a] Matthew B. Pontifex, PhD,[b] Darla M. Castelli, PhD,[c] Naiman A. Khan, PhD, RD,[a] Lauren B. Raine, BS,[a] Mark R. Scudder, BS,[a] Eric S. Drollette, BS,[a] Robert D. Moore, MS,[a] Chien-Ting Wu, PhD,[d] and Keita Kamijo, PhD[e]

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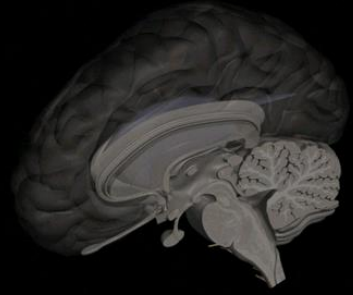
KEY WORDS
cognition, physical activity, aerobic fitness, randomized controlled trial

WHAT'S KNOWN ON THIS SUBJECT: Physical activity programs have been shown to have positive implications for children's cognitive performance and brain structure and function. However, additional randomized controlled trials are needed to determine whether daily physical activity influences executive control and its neural underpinnings.

WHAT THIS STUDY ADDS: The randomized controlled trial, designed to meet daily physical activity recommendations, used behavioral and electrophysiological measures of brain function to demonstrate enhanced attentional inhibition and cognitive flexibility among prepubertal children.

Pediatrics 2014;134:e1063–e1071



NIÑOS MÁS SANOS, INTELIGENTES Y FELICES:

DEPORTES

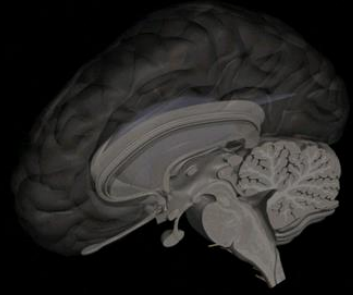
-RECOMENDACIONES: 5 HORAS DE PRÁCTICA DEPORTIVA INTENSA

FAVORECER DEPORTES QUE FORMEN DISCIPLINA

ARTES MARCIALES: AUTOCONTROL, NO LUCHA

NATACIÓN, YOGA: EFECTOS PROBADOS

MEJORÍA SUEÑO, CONDUCTA, APRENDIZAJE



The Journal of Neuroscience, November 6, 2013 • 33(45):17667–17674 • 17667

Systems/Circuits

Older Adults Benefit from Music Training Early in Life: Biological Evidence for Long-Term Training-Driven Plasticity

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Aging results in pervasive declines in nervous system function. In the auditory system, these declines include neural timing delays in response to fast-changing speech elements; this causes older adults to experience difficulty understanding speech, especially in challenging listening environments. These age-related declines are not inevitable, however: older adults with a lifetime of music training do not exhibit neural timing delays. Yet many people play an instrument for a few years without making a lifelong commitment. Here, we examined neural timing in a group of human older adults who had nominal amounts of music training early in life, but who had not played an instrument for decades. We found that a moderate amount (4–14 years) of music training early in life is associated with faster neural timing in response to speech later in life, long after training stopped (>40 years). We suggest that early music training sets the stage for subsequent interactions with sound. These experiences may interact over time to sustain sharpened neural processing in central auditory nuclei well into older age.

OPEN ACCESS Freely available online

PLOS ONE

Behavioral and Neural Correlates of Executive Functioning in Musicians and Non-Musicians

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Abstract

Executive functions (EF) are cognitive capacities that allow for planned, controlled behavior and strongly correlate with academic abilities. Several extracurricular activities have been shown to improve EF, however, the relationship between musical training and EF remains unclear due to methodological limitations in previous studies. To explore this further, two experiments were performed; one with 30 adults with and without musical training and one with 27 musically trained and untrained children (matched for general cognitive abilities and socioeconomic variables) with a standardized EF battery. Furthermore, the neural correlates of EF skills in musically trained and untrained children were investigated using fMRI. Adult musicians compared to non-musicians showed enhanced performance on measures of cognitive flexibility, working memory, and verbal fluency. Musically trained children showed enhanced performance on measures of verbal fluency and processing speed, and significantly greater activation in pre-SMA/SMA and right VLPFC during rule representation and task-switching compared to musically untrained children. Overall, musicians show enhanced performance on several constructs of EF, and musically trained children further show heightened brain activation in traditional EF regions during task-switching. These results support the working hypothesis that musical training may promote the development and maintenance of certain EF skills, which could mediate the previously reported links between musical training and enhanced cognitive skills and academic achievement.

Citation: Zuk J, Benjamin C, Kenyon A, Gaab N (2014) Behavioral and Neural Correlates of Executive Functioning in Musicians and Non-Musicians. PLoS ONE 9(6): e99868. doi:10.1371/journal.pone.0099868

Editor: Amanda Bruce, University of Missouri-Kansas City, United States of America

Received December 31, 2013; **Accepted** May 20, 2014; **Published** June 17, 2014

frontiers in
HUMAN NEUROSCIENCE

ORIGINAL RESEARCH ARTICLE
published: 06 January 2014
doi: 10.3389/fnhum.2013.00897

Taming a wandering attention: Short-form mindfulness training in student cohorts

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[2] School of Law, University of Miami, Miami, FL, USA
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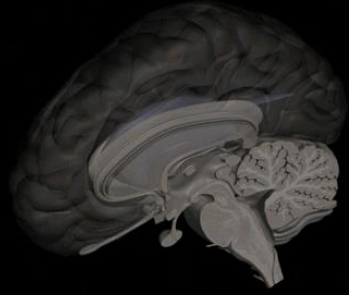
Mindfulness training (MT) is a form of mental training in which individuals engage in exercises to cultivate an attentive, present centered, and non-reactive mental mode. The present study examines the putative benefits of MT in University students for whom mind wandering can interfere with learning and academic success. We tested the hypothesis that short-form MT (7 h over 7 weeks) contextualized for the challenges and concerns of University students may reduce mind wandering and improve working memory. Performance on the sustained attention to response task (SART) and two working memory tasks (operation span, delayed-recognition with distracters) was indexed in participants assigned to a waitlist control group or the MT course. Results demonstrated MT-related benefits in SART performance. Relative to the control group, MT participants had higher task accuracy and self-reported being more "on-task" after the 7-week training period. MT did not significantly benefit the operation span task or accuracy on the delayed-recognition task. Together these results suggest that while short-form MT did not bolster working memory task performance, it may help curb mind wandering and should, therefore, be further investigated for its use in academic contexts.



American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

FROM THE AMERICAN ACADEMY OF PEDIATRICS

Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

POLICY STATEMENT

Literacy Promotion: An Essential Component of Primary Care Pediatric Practice

COUNCIL ON EARLY CHILDHOOD

KEY WORDS
literacy promotion, reading aloud, early brain development, language development, child development, school readiness

ABBREVIATIONS
AAP—American Academy of Pediatrics
ROR—Reach Out and Read

abstract

FREE

Reading regularly with young children stimulates optimal patterns of brain development and strengthens parent-child relationships at a critical time in child development, which, in turn, builds language, literacy, and social-emotional skills that last a lifetime. Pediatric providers have a unique opportunity to encourage parents to engage in this important and enjoyable activity with their children beginning in infancy. Research has revealed that parents listen and children learn as a result of literacy promotion by pediatricians, which provides a practical and evidence-based opportunity to support early brain development in primary care practice. The American Academy of Pediatrics (AAP) recommends that pediatric providers promote early literacy development for children beginning in infancy and continuing at least until the age of kindergarten entry by (1) advising all parents that reading aloud with young children can enhance parent-child relationships and prepare young minds to learn language and early literacy skills; (2) counseling all parents about developmentally appropriate shared-reading activities that are enjoyable for children and their parents and offer language-rich exposure to books, pictures, and the written word; (3) providing developmentally appropriate books given at health supervision visits for all high-risk, low-income young children; (4) using a robust spectrum of options to support and promote these efforts; and (5) partnering with other child advocates to influence national messaging and policies that support and promote these key early shared-reading experiences. The AAP supports federal and state funding for children's books to be provided at pediatric health supervision visits to children at high risk living at or near the poverty threshold and the integration of literacy promotion, an essential component of pediatric primary care, into pediatric resident education. This policy statement is supported by the AAP technical report "School Readiness" and supports the AAP policy statement "Early Childhood Adversity, Toxic Stress, and the Role of the Pediatrician: Translating Developmental Science Into Lifelong Health." *Pediatrics* 2014;134:1–6

ELSEVIER

Contents lists available at SciVerse ScienceDirect

International Journal of Educational Research

journal homepage: www.elsevier.com/locate/ijedures

Reading linear texts on paper versus computer screen: Effects on reading comprehension

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ARTICLE INFO

Article history:
Received 24 May 2012
Received in revised form 6 December 2012
Accepted 10 December 2012
Available online 5 January 2013

Keywords:
Reading comprehension
Screen reading
Print reading
Computers in education

ABSTRACT

Objective: To explore effects of the technological interface on reading comprehension in a Norwegian school context.
Participants: 72 tenth graders from two different primary schools in Norway.
Method: The students were randomized into two groups, where the first group read two texts (1400–2000 words) in print, and the other group read the same texts as PDF on a computer screen. In addition pretests in reading comprehension, word reading and vocabulary were administered. A multiple regression analysis was carried out to investigate to what extent reading modality would influence the students' scores on the reading comprehension measure.
Conclusion: Main findings show that students who read texts in print scored significantly better on the reading comprehension test than students who read the texts digitally. Implications of these findings for policymaking and test development are discussed.

Contents lists available at SciVerse ScienceDirect

European Journal of Radiology

journal homepage: www.elsevier.com/locate/ejrad

Gray matter and white matter abnormalities in online game addiction

Chuan-Bo Weng[a,b], Ruo-Bing Qian[a,c,*], Xian-Ming Fu[a,c], Bin Lin[b], Xiao-Peng Han[d], Chao-Shi Niu[a,c], Ye-Han Wang[a,c]

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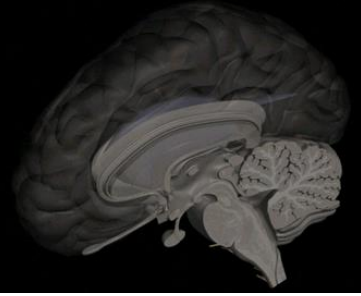
ARTICLE INFO

Article history:
Received 19 November 2012
Received in revised form 22 January 2013
Accepted 31 January 2013

Keywords:
Online game addiction
Voxel-based morphometry
Tract-based spatial statistics
Magnetic resonance imaging

ABSTRACT

Online game addiction (OGA) has attracted greater attention as a serious public mental health issue. However, there are only a few brain magnetic resonance imaging studies on brain structure about OGA. In the current study, we used voxel-based morphometry (VBM) analysis and tract-based spatial statistics (TBSS) to investigate the microstructural changes in OGA and assessed the relationship between these morphology changes and the Young's Internet Addiction Scale (YIAS) scores within the OGA group. Compared with healthy subjects, OGA individuals showed significant gray matter atrophy in the right orbitofrontal cortex, bilateral insula, and right supplementary motor area. According to TBSS analysis, OGA subjects had significantly reduced FA in the right genu of corpus callosum, bilateral frontal lobe white matter, and right external capsule. Gray matter volumes (GMV) of the right orbitofrontal cortex, bilateral insula and FA values of the right external capsule were significantly positively correlated with the YIAS scores in the OGA subjects. Our findings suggested that microstructure abnormalities of gray and white matter were present in OGA subjects. This finding may provide more insights into the understanding of the underlying neural mechanisms of OGA.



Contents lists available at SciVerse ScienceDirect

Journal of Experimental Social Psychology

journal homepage: www.elsevier.com/locate/jesp

FlashReport

The more you play, the more aggressive you become: A long-term experimental study of cumulative violent video game effects on hostile expectations and aggressive behavior

Youssef Hasan [a,*], Laurent Bègue [a], Michael Scharkow [b], Brad J. Bushman [c,d]

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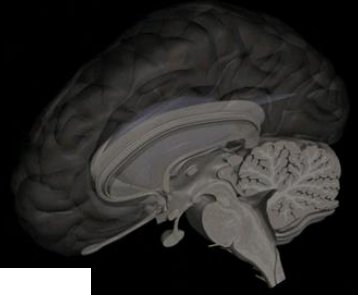
[b] University of Hohenheim, Germany
[c] The Ohio State University, USA
[d] VU University, Amsterdam, the Netherlands

HIGHLIGHTS

- A 3-day experiment tested the cumulative effects of violent video games.
- Hostile expectations increased over 3 days for violent video game players.
- Aggression increased over 3 days for violent video game players.
- Hostile expectations mediated the effect of violent video games on aggression.
- Nonviolent video games did not influence hostile expectations or aggression.



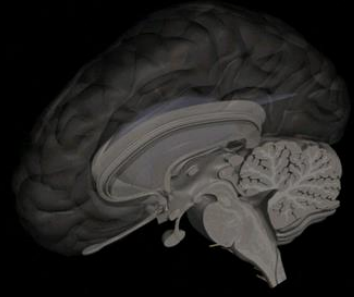
Differences in Parent-Toddler Interactions With Electronic Versus Print Books

Tiffany G. Munzer, MD,[a] Alison L. Miller, PhD,[b,c] Heidi M. Weeks, PhD,[d] Niko Kaciroti, PhD,[c,e] Jenny Radesky, MD[a]

WHAT'S KNOWN ON THIS SUBJECT: When preschoolers read electronic books with parents, parents may show less dialogic reading, and talk is often focused on the technology. It is not known whether toddler-parent interactions differ when reading commercially available electronic books compared with print.

WHAT THIS STUDY ADDS: Parents engaged in more dialogic reading with fewer technology-related verbalizations and more parent-toddler verbalizations with print books compared with electronic books. Print books elicited a higher quality of parent-toddler collaborative reading experience compared with electronic books.

To cite: Munzer TG, Miller AL, Weeks HM, et al. Differences in Parent-Toddler Interactions With Electronic Versus Print Books. *Pediatrics*. 2019;143(4):e20182012



PLOS ONE

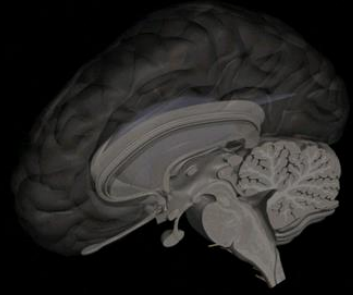
RESEARCH ARTICLE

Screen-time is associated with inattention problems in preschoolers: Results from the CHILD birth cohort study

Sukhpreet K. Tamana[1], Victor Ezeugwu[1], Joyce Chikuma[1], Diana L. Lefebvre[2], Meghan B. Azad[3], Theo J. Moraes[4], Padmaja Subbarao[4], Allan B. Becker[3], Stuart E. Turvey[5], Malcolm R. Sears[2], Bruce D. Dick[6], Valerie Carson[7], Carmen Rasmussen[1], CHILD study Investigators[¶], Jacqueline Pei[8], Piush J. Mandhane[1]*

1 Department of Pediatrics, University of Alberta, Edmonton, Alberta, Canada, **2** Department of Medicine, McMaster University, Hamilton, Ontario, Canada, **3** Department of Pediatrics & Child Health, Children's Hospital Research Institute of Manitoba, University of Manitoba, Winnipeg, Manitoba, Canada, **4** Department of Pediatrics, Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada, **5** Department of Pediatrics, Child & Family Research Institute, BC Children's Hospital, University of British Columbia, Vancouver, British Columbia, Canada, **6** Department of Anesthesiology and Pain Medicine, University of Alberta, Edmonton, Alberta, Canada, **7** Faculty of Physical Education and Recreation, University of Alberta, Edmonton, Alberta, Canada, **8** Department of Educational Psychology, University of Alberta, Edmonton, Alberta, Canada

NIÑOS MÁS SANOS, INTELIGENTES Y FELICES: MENOS TIEMPO FRENTE A TV Y PANTALLAS



RECOMENDACIONES:

NIÑOS ANTES DE LOS DOS AÑOS DE VIDA, NO DEBEN VER TV (NI SIQUIERA *PROGRAMAS INFANTILES*)

NUNCA ESTAR MÁS DE DOS HORAS AL DÍA FRENTE A PANTALLAS ELECTRÓNICAS (SUMANDO TV-PC-CELULAR-TABLET-CONSOLAS DE JUEGOS)

RESTRINGIR JUEGOS ELECTRÓNICOS, ESPECIALMENTE DE CONTENIDO VIOLENTO

EVITAR CELULARES CON JUEGOS-INTERNET (NIÑOS: ESCASA CAPACIDAD DE AUTOREGULACIÓN)

SABER QUÉ VEN EN LA TV

USO DE COMPUTADOR EN LUGAR PÚBLICO

Original Investigation

Direct Effect of Sunshine on Suicide

Supplemental content at jamapsychiatry.com

Benjamin Vyssoki, MD; Nestor D. Kapusta, MD, PhD; Nicole Praschak-Rieder, MD, PhD; Georg Dorffner, PhD; Matthaeus Willeit, MD, PhD

IMPORTANCE It has been observed that suicidal behavior is influenced by sunshine and follows a seasonal pattern. However, seasons bring about changes in several other meteorological factors and a seasonal rhythm in social behavior may also contribute to fluctuations in suicide rates.

OBJECTIVE To investigate the effects of sunshine on suicide incidence that are independent of seasonal variation.

DESIGN, SETTING, AND PARTICIPANTS Retrospective analysis of data on all officially confirmed suicides in Austria between January 1, 1970, and May 6, 2010 (n = 69 462). Data on the average duration of sunshine per day (in hours) were calculated from 86 representative meteorological stations. Daily number of suicides and daily duration of sunshine were differentiated to remove variation in sunshine and variation in suicide incidence introduced by season. Thereafter, several models based on Pearson correlation coefficients were calculated.

MAIN OUTCOMES AND MEASURES Correlation of daily number of suicides and daily duration of sunshine after mathematically removing the effects of season.

RESULTS Sunshine hours and number of suicides on every day from January 1, 1970, to May 6, 2010, were highly correlated ($r = 0.4870$; $P < 10^{-9}$). After differencing for the effects of season, a mathematical procedure that removes most of the variance from the data, a positive correlation between number of suicides and hours of daily sunshine remained for the day of suicide and up to 10 days prior to suicide ($r_{maximum} = 0.0370$; $P < 10^{-5}$). There was a negative correlation between the number of suicides and daily hours of sunshine for the 14 to 60 days prior to the suicide event ($r_{minimum} = -0.0383$; $P < 10^{-5}$). These effects were found in the entire sample and in violent suicides.

CONCLUSIONS AND RELEVANCE Duration of daily sunshine was significantly correlated with suicide frequency independent of season, but effect sizes were low. Our data support the hypothesis that sunshine on the day of suicide and up to 10 days prior to suicide may facilitate suicide. More daily sunshine 14 to 60 days previously is associated with low rates of suicide. Our study also suggests that sunshine during this period may protect against suicide.

Original Investigation

Effect of Time Spent Outdoors at School on the Development of Myopia Among Children in China
A Randomized Clinical Trial

Mingguang He, MD, PhD; Fan Xiang, MD, PhD; Yangfa Zeng, MD; Jincheng Mai, BSc; Qianyun Chen, MSc; Jian Zhang, MSc; Wayne Smith, MD, PhD; Kathryn Rose, PhD; Ian G. Morgan, PhD

Editorial page 1137

Supplemental content at jama.com

CME Quiz at jamanetworkcme.com and CME Questions page 1173

IMPORTANCE Myopia has reached epidemic levels in parts of East and Southeast Asia. However, there is no effective intervention to prevent the development of myopia.

OBJECTIVE To assess the efficacy of increasing time spent outdoors at school in preventing incident myopia.

DESIGN, SETTING, AND PARTICIPANTS Cluster randomized trial of children in grade 1 from 12 primary schools in Guangzhou, China, conducted between October 2010 and October 2013.

INTERVENTIONS For 6 intervention schools (n = 952 students), 1 additional 40-minute class of outdoor activities was added to each school day, and parents were encouraged to engage their children in outdoor activities after school hours, especially during weekends and holidays. Children and parents in the 6 control schools (n = 951 students) continued their usual pattern of activity.

MAIN OUTCOMES AND MEASURES The primary outcome measure was the 3-year cumulative incidence rate of myopia (defined using the Refractive Error Study in Children spherical equivalent refractive error standard of ≤−0.5 diopters [D]) among the students without established myopia at baseline. Secondary outcome measures were changes in spherical equivalent refraction and axial length among all students, analyzed using mixed linear models and intention-to-treat principles. Data from the right eyes were used for the analysis.

RESULTS There were 952 children in the intervention group and 951 in the control group with a mean (SD) age of 6.6 (0.34) years. The cumulative incidence rate of myopia was 30.4% in the intervention group (259 incident cases among 853 eligible participants) and 39.5% (287 incident cases among 726 eligible participants) in the control group (difference of −9.1% [95% CI, −14.1% to −4.1%]; $P < .001$). There was also a significant difference in the 3-year change in spherical equivalent refraction for the intervention group (−1.42 D) compared with the control group (−1.59 D) (difference of 0.17 D [95% CI, 0.01 to 0.33 D]; $P = .04$). Elongation of axial length was not significantly different between the intervention group (0.95 mm) and the control group (0.98 mm) (difference of −0.03 mm [95% CI, −0.07 to 0.003 mm]; $P = .07$).

CONCLUSIONS AND RELEVANCE Among 6-year-old children in Guangzhou, China, the addition of 40 minutes of outdoor activity at school compared with usual activity resulted in a reduced incidence rate of myopia over the next 3 years. Further studies are needed to assess long-term follow-up of these children and the generalizability of these findings.

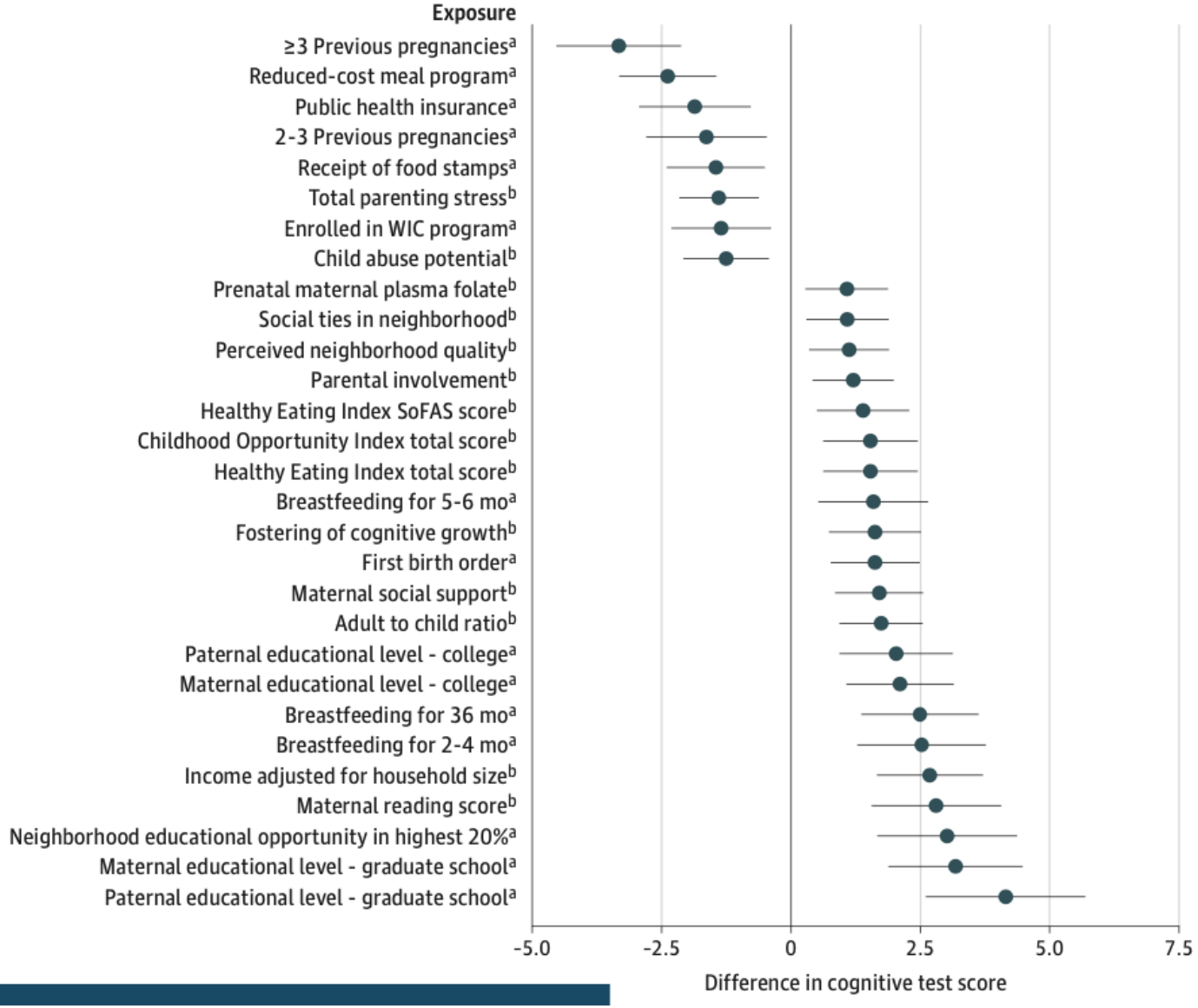
TRIAL REGISTRATION clinicaltrials.gov Identifier: NCT00848900

JAMA. 2015;314(11):1142-1148. doi:10.1001/jama.2015.10803

Author Affiliations: Author affiliations are listed at the end of this article.

Corresponding Author: Mingguang He, MD, PhD, Zhongshan Ophthalmic Center, Guangzhou 510060, China (mingguang_he@yahoo.com).

Figure. Exposures Associated With Cognitive Test Scores



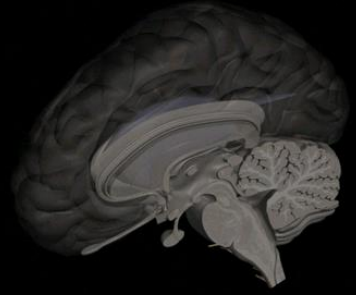
Research

JAMA Pediatrics | Original Investigation

Identification of Modifiable Social and Behavioral Factors Associated With Childhood Cognitive Performance

Kaja Z. LeWinn, ScD, MS; Nicole R. Bush, PhD; Akansha Batra, MA; Frances Tylavsky, PhD; David Rehkopf, ScD, MPH

JAMA Pediatr. doi:10.1001/jamapediatrics.2020.2904
Published online September 21, 2020.



CONCLUSIONES

FOMENTAR EL AUTOCONTROL TEMPRANO: AFECTIVIDAD Y DISCIPLINA

FOMENTAR UN SUEÑO DE CALIDAD Y TIEMPO ADECUADO

ALIMENTACIÓN SANA

ACTIVIDAD FÍSICA VIGOROSA FRECUENTE

FAVORECER ACTIVIDADES AL AIRE LIBRE

LEERLE A LOS HIJOS-CREAR INSTANCIAS PARA QUE LEAN

EVITAR PANTALLAS ELECTRÓNICAS

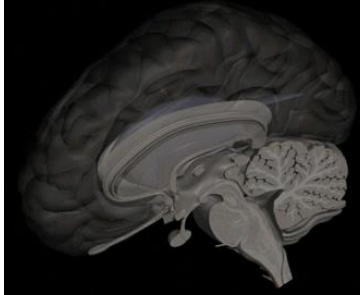
FOMENTAR LA MÚSICA EN LOS NIÑOS

BENEFICIOS DE TÉCNICAS DE MEDITACIÓN

IMPULSAR INTEGRACIÓN SOCIAL POSITIVA

Schellnegger *et al. Sports Medicine - Open* (2022) 8:111
https://doi.org/10.1186/s40798-022-00503-1

Sports Medicine - Open



SYSTEMATIC REVIEW Open Access

Physical Activity on Telomere Length as a Biomarker for Aging: A Systematic Review

Marlies Schellnegger[1,2,3*], Alvin C. Lin[3*], Niels Hammer[3] and Lars-Peter Kamolz[1,2]

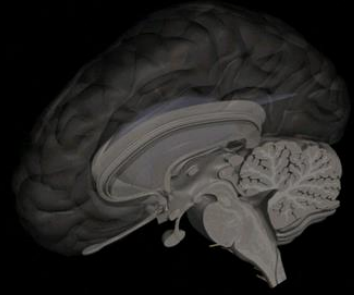
Abstract

Background: Overall life expectancy continues to rise, approaching 80 years of age in several developed countries. However, healthy life expectancy lags far behind, which has, in turn, contributed to increasing costs in healthcare. One way to improve health and attenuate the socio-economic impact of an aging population is to increase overall fitness through physical activity. Telomere attrition or shortening is a well-known molecular marker in aging. As such, several studies have focused on whether exercise influences health and aging through telomere biology. This systematic review examines the recent literature on the effect of physical activity on telomere length (TL) and/or telomerase activity as molecular markers of aging.

Methods: A focused search was performed in the databases PubMed and Web of Science for retrieving relevant articles over the past ten years. The search contained the following keywords: exercise, sport, physical activity, fitness, sedentary, physical inactivity, telomere, telomere length, t/s ratio, and telomerase. PRISMA guidelines for systematic reviews were observed.

Results: A total of 43 articles were identified and categorized into randomized controlled trials (RCT), observational or interventional studies. RCTs ($n=8$) showed inconsistent findings of increased TL length with physical activity in, e.g. obese, post-menopausal women. In comparison with a predominantly sedentary lifestyle, observational studies ($n=27$) showed significantly longer TL with exercise of moderate to vigorous intensity; however, there was no consensus on the duration and type of physical activity and training modality. Interventional studies ($n=8$) also showed similar findings of significantly longer TL prior to exercise intervention; however, these studies had smaller numbers of enrolled participants (mostly of high-performance athletes), and the physical activities covered a range of exercise intensities and duration. Amongst the selected studies, aerobic training of moderate to vigorous intensity is most prevalent. For telomere biology analysis, TL was determined mainly from leukocytes using qPCR. In some cases, especially in RCT and interventional studies, different sample types such as saliva, sperm, and muscle biopsies were analyzed; different leukocyte cell types and potential genetic markers in regulating telomere biology were also investigated.

Conclusions: Taken together, physical activity with regular aerobic training of moderate to vigorous intensity appears to help preserve TL. However, the optimal intensity, duration of physical activity, as well as type of exercise



JAMA Neurology | Original Investigation

Trends in Intracranial and Cerebral Volumes of Framingham Heart Study Participants Born 1930 to 1970

Charles DeCarli, MD; Pauline Maillard, PhD; Matthew P. Pase, PhD; Alexa S. Beiser, PhD; Daniel Kojis, BA; Claudia L. Satizabal, PhD; Jayandra J. Himali, PhD; Hugo J. Aparicio, MD, MPH; Evan Fletcher, PhD; Sudha Seshadri, MD

IMPORTANCE Human brain development and maintenance is under both genetic and environmental influences that likely affect later-life dementia risk.

OBJECTIVE To examine environmental influences by testing whether time-dependent secular differences occurred in cranial and brain volumes and cortical thickness over birth decades spanning 1930 to 1970.

DESIGN, SETTING, AND PARTICIPANTS This cross-sectional study used data from the community-based Framingham Heart Study cohort for participants born in the decades 1930 to 1970. Participants did not have dementia or history of stroke and had magnetic resonance imaging (MRI) obtained from March 18, 1999, to November 15, 2019. The final analysis dataset was created in October 2023.

EXPOSURE Years of birth ranging from 1925 to 1968.

MAIN MEASURES Cross-sectional analysis of intracranial, cortical gray matter, white matter, and hippocampal volumes as well as cortical surface area and cortical thickness. The secular measure was the decade in which the participant was born. Covariates included age at MRI and sex.

RESULTS The main study cohort consisted of 3226 participants with a mean (SD) age of 57.7 (7.8) years at the time of their MRI. A total of 1706 participants were female (53%) and 1520 (47%) were male. The birth decades ranged from the 1930s to 1970s. Significant trends for larger intracranial, hippocampal, and white matter volumes and cortical surface area were associated with progressive birth decades. Comparing the 1930s birth decade to the 1970s accounted for a 6.6% greater volume (1234 mL; 95% CI, 1220-1248, vs 1321 mL; 95% CI, 1301-1341) for ICV, 7.7% greater volume (441.9 mL; 95% CI, 435.2-448.5, vs 476.3 mL; 95% CI, 467.0-485.7) for white matter, 5.7% greater value (6.51 mL; 95% CI, 6.42-6.60, vs 6.89 mL; 95% CI, 6.77-7.02) for hippocampal volume, and a 14.9% greater value (1933 cm^2; 95% CI, 1908-1959, vs 2222 cm^2; 95% CI, 2186-2259) for cortical surface area. Repeat analysis applied to a subgroup of 1145 individuals of similar age range born in the 1940s (mean [SD] age, 60.0 [2.8] years) and 1950s (mean [SD] age, 59.0 [2.8] years) resulted in similar findings.

CONCLUSION AND RELEVANCE In this study, secular trends for larger brain volumes suggested improved brain development among individuals born between 1930 and 1970. Early life environmental influences may explain these results and contribute to the declining dementia incidence previously reported in the Framingham Heart Study cohort.

Editorial
Supplemental content

Author Affiliations: Author affiliations are listed at the end of this article.

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JAMA Neurol. doi:10.1001/jamaneurol.2024.0469
Published online March 25, 2024.

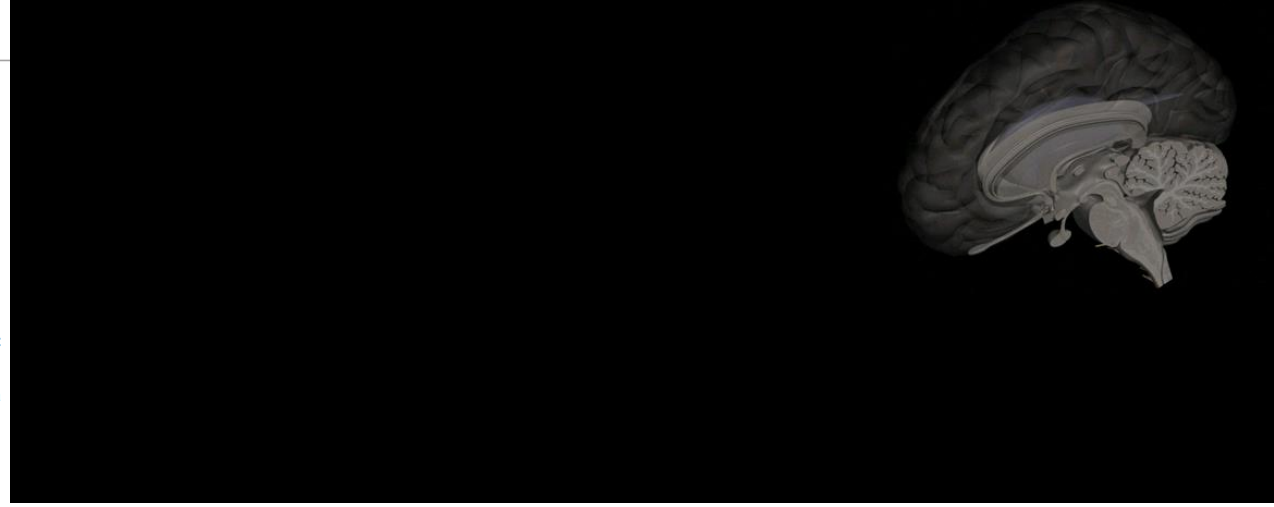
Leonard *et al.*, *Science* **357**, 1290–1294 (2017) 22 September 2017

COGNITIVE DEVELOPMENT

Infants make more attempts to achieve a goal when they see adults persist

Julia A. Leonard,* Yuna Lee, Laura E. Schulz

Persistence, above and beyond IQ, is associated with long-term academic outcomes. To look at the effect of adult models on infants' persistence, we conducted an experiment in which 15-month-olds were assigned to one of three conditions: an Effort condition in which they saw an adult try repeatedly, using various methods, to achieve each of two different goals; a No Effort condition in which the adult achieved the goals effortlessly; or a Baseline condition. Infants were then given a difficult, novel task. Across an initial study and two preregistered experiments (N = 262), infants in the Effort condition made more attempts to achieve the goal than did infants in the other conditions. Pedagogical cues modulated the effect. The results suggest that adult models causally affect infants' persistence and that infants can generalize the value of persistence to novel tasks.



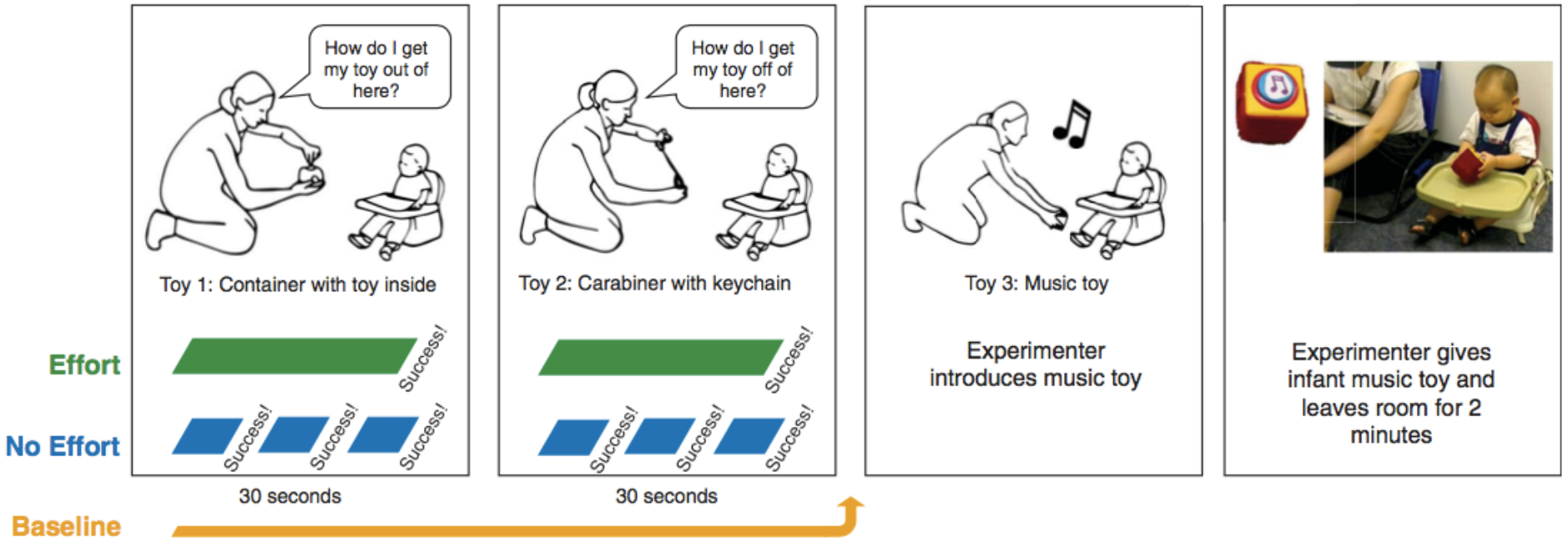


Fig. 1. Schematic of study design. In experiment 1, infants were assigned to one of three conditions: Effort, No Effort, or Baseline. In the Effort condition, the experimenter struggled for 30 s before achieving each of two goals. In the No Effort condition, the experimenter achieved her goals effortlessly three times over 30 s. In the Baseline condition, there was no experimenter demonstration. The experimenter then introduced the infant to a novel toy, activated the toy out of the infant's sight so that it played a tune for 5 s, gave the infant the toy, and left the room for 2 min. The dependent variables were the number of times that infants pressed the large (inert) button on the music toy in total and before the first handoff.

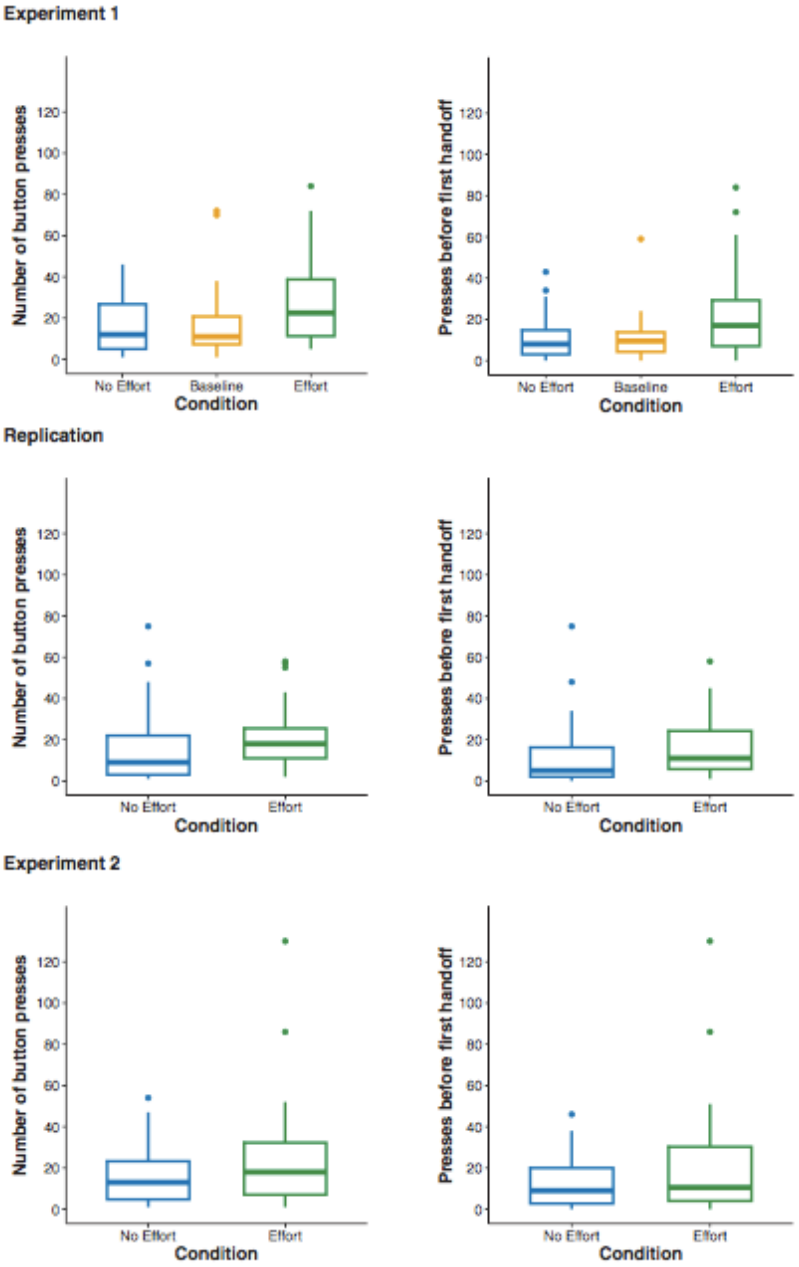
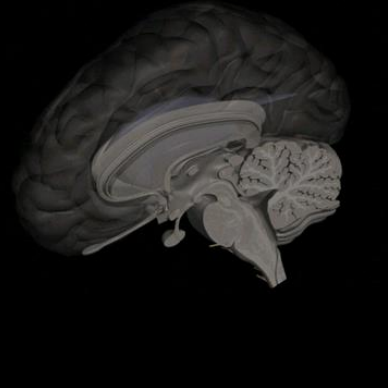


Fig. 2. Results from experiment 1, the replication, and experiment 2. The top and the bottom of the box correspond to the first and third quartiles (the 25th and 75th percentiles). The upper whisker (vertical line) extends from the third quartile to the largest value no further than 1.5 interquartile ranges from the third quartile; the lower whisker extends from the 25th percentile down to the smallest value no further than 1.5 interquartile ranges from the first quartile (i.e., the largest and smallest values that are not outliers). The dots are values more than 1.5 times the interquartile range above the third quartile (outliers). See text for statistical analyses.



HUMAN DEVELOPMENT

The social origins of persistence

Infants can learn the value of persistence by observing adult behavior

By **Lucas P. Butler**

Effort and hard work have long been regarded as key to achievement and success. But individuals hold different beliefs about how important effort is in determining success, relative to pure talent or natural skill. Recent research has shown that holding a growth mindset—that is, a set of beliefs that em-

was pressed. Unknown to the children, this toy was disabled. The researchers tracked how many times infants tried to activate the toy when given the chance to do so on their own. The results were clear. Infants tried harder when they had seen an adult persist to succeed, relative to both a low-effort and a baseline condition, suggesting that they had drawn the inference that hard work pays off.