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Raising primates: Frans de Waal and the underrepresentation of evolutionary perspectives in child and family studies

Short title: Evolutionary child and family studies

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Summary

This article examines the legacy of Frans de Waal (1948–2024) in relation to child and family studies (Dutch: pedagogiek). De Waal's prediction that evolutionary approaches would become the dominant explanatory framework within psychology has been partially fulfilled: evolutionary developmental psychology and related frameworks such as the evolved developmental niche have grown into active research traditions since the early 2000s. Yet this literature has been slow to reach applied child and family studies — parenting support, child welfare, and youth care — a field concerned with one of the most defining behaviours of our species, the raising of offspring. Building on De Waal's critique of the behavioural sciences, Tinbergen's four levels of explanation, and Hrdy's work on cooperative breeding and alloparenting, the article argues that child and family studies would benefit from an evolutionary pedagogy that bridges this gap between developmental-evolutionary theory and applied practice. Such an approach situates child-rearing and development within the evolutionary history of the human species without neglecting social and cultural dimensions. The article further argues that this persistent gap between theory and practice leaves the field of child and family studies vulnerable to recurring overestimations of the malleability of

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children and the influence of upbringing, and to advice that overlooks the flexible, cooperative nature of human caregiving.

Keywords: Frans de Waal; evolutionary pedagogy; child and family studies; parenting; Tinbergen's four questions; alloparenting; cooperative breeding

An event in Arnhem

In the summer of 1979, Burgers' Zoo — a renowned Dutch primate research centre in Arnhem — did something the world had never seen before. A chimpanzee mother who had lost several infants because she was unable to produce enough milk adopted the infant of another mother who was deaf and unable to care for her offspring. Even more remarkably, Kuif learned to bottle-feed the baby, whom they named Roosje (De Waal, 1980). The idea came from a young biologist working at the zoo — Frans de Waal. This anecdote illustrates the behavioural flexibility and caregiving capacities that De Waal later interpreted within a broader evolutionary framework of primate sociality.

As a child, I cut out the story from the Alkmaarsche Courant, a Dutch regional newspaper, and pasted it into my animal scrapbook. Only much later did I discover that Frans de Waal, through books such as Our Inner Ape, Good Natured, and Mama's Last Hug, would profoundly shape my thinking about human behaviour, particularly child-rearing. As an orthopedagogue, I found in his work a perspective that I had not encountered in my own training, and this ultimately led me to advocate for an evolutionary perspective within child and family studies, a field in which, as argued below, such perspectives remain underrepresented. This personal trajectory motivates the perspective offered here; it is not presented as evidence for it. The support for the argument lies in the literature discussed below, and its limits are acknowledged in the section 'An emerging field, yet fragmented from pedagogical practice'.

A terminological note is in order here. By child and family studies (Dutch: pedagogiek; also rendered here as pedagogical sciences), this article refers to the broad developmental discipline concerned with child-rearing, parenting, and child and family wellbeing — encompassing developmental pedagogy, orthopedagogy, and youth care — as it is institutionalised in the Netherlands and much of continental Europe. This is distinct from the narrower Anglo-American sense of 'educational sciences' or 'pedagogy' as the study of schooling, curriculum, and instruction. Where the two literatures do overlap — as in work explicitly framed around education, such as Geary and Berch (2016) — this is noted explicitly. For readability, 'child and family studies' is used as the main term; 'pedagogy' and 'pedagogical' are used only where the Dutch or continental European tradition is specifically meant, as in 'evolutionary pedagogy'.

A bold prediction

Twenty-five years ago, Frans de Waal — primatologist, ethologist, and Charles Howard Candler Professor of Primate Behavior in the Psychology Department at Emory University — made a bold prediction:

> "I dare predict that in 50 years every psychology department will have Darwin's bearded portrait on the wall. Evolutionary approaches can produce a conceptual framework that will accommodate or replace the proliferation of disconnected theories in the study of human behaviour" (De Waal, 2002).

The prediction was both ambitious and diagnostic. De Waal identified a fundamental shortcoming within the behavioural sciences: the absence of a widely shared overarching explanatory framework. Darwin, he argued, could provide that framework. Since then, evolutionary psychology has developed into a fully fledged discipline, and — as this article will show — evolutionary developmental psychology has grown into an active research tradition in its own right. For child and family studies as an applied, practice-oriented

discipline, however, this Darwinian turn has been slower to arrive. This is remarkable, given that child and family studies is concerned with one of the defining behaviours of our species: raising offspring within a family context.

The legacy of Frans de Waal

Two years after Frans de Waal's death (1948–2024), the time has come to assess his legacy beyond primatology. As a deep thinker, De Waal transcended his own discipline, thereby narrowing the conceptual distance between human and non-human behaviour. His work on empathy, morality, and cooperation in primates had direct implications for our understanding of human behaviour. The same broader perspective characterised his critique of the behavioural sciences.

In a 2019 interview with De Pedagoog, the journal of the Dutch Association of Pedagogical Professionals (NVO), De Waal noted that although the role of biology and evolution has become more widely recognised in recent decades, it remains "seriously underestimated and often ignored" within the behavioural sciences. His observation about adolescents was pointed:

> "I've attended entire conferences on adolescent behaviour without ever hearing the words power and sex, while for me those are precisely what teenage life is all about."

Research on adolescence often focuses on concepts such as self-esteem, emotion regulation, and risky behaviour, while evolutionarily relevant themes such as status, competition, and sexuality receive comparatively little explicit attention. Excluding such themes risks leaving important aspects of adolescent behaviour insufficiently explained.

A missing instrument: Tinbergen's four questions

Tinbergen's four levels of explanation — mechanism, development, function, and phylogeny — continue to underpin our understanding of behaviour across the behavioural

sciences (Tinbergen, 1963; Bateson & Laland, 2013). Tinbergen, who co-founded this journal in 1948, described these as the central 'whys of behaviour', referring to the causes, development, function, and evolutionary history of behavioural traits. The four questions are complementary causal explanations: two proximate, concerning immediate causes within the organism's lifetime (mechanism and development), and two ultimate, concerning evolutionary causes (function and phylogeny). Take infant crying. Its mechanism concerns the physiological arousal that produces crying and the hormonal and neural responses it triggers in caregivers; its development concerns how temperament, caregiving history, and learning shape crying over the first months; its function concerns how crying elicits care and thereby promotes survival; and its phylogeny concerns the deep evolutionary roots of infant distress calls in mammals and primates. A complete explanation of why babies cry, and why parents respond as they do requires all four. More recently, O'Brien and Gallup (2011) suggested that this framework may be particularly useful for integrating evolutionary perspectives into human-centred disciplines.

Yet Tinbergen's explanatory framework has played only a limited role within child and family studies to date, even though it offers a useful point of departure for integrating evolutionary explanations into the field (Koppies, 2019). Applied to externalising behaviour in boys during childhood, for example, these levels of explanation draw attention not only to environmental influences, but also to temperament, sex differences, behavioural function, and the regulation of physical activity and arousal. Without such explanatory levels, there is a risk of behaviour being approached primarily descriptively rather than explanatorily — a tendency that appears to persist in parts of contemporary child and family research and youth care.

De Waal also emphasised: observe, observe, observe

De Waal criticised the dominance of questionnaire-based research within psychology and child and family studies. He argued that observable behaviour can reveal patterns that self-report methods fail to capture. To illustrate this point, he recounted the following anecdote: a

researcher at a primate centre investigated whether pregnant monkey mothers ate more. It turned out that they consumed five times as much food. However, when the researcher repeated the study using questionnaires with pregnant women, he found no difference, which he found puzzling. Analysis of supermarket receipts, however, revealed a very different picture: it turned out the women had reported what they would normally eat. Unfortunately, despite its well-known limitations, self-report remains a dominant research method within psychology and child and family studies.

The limitations of self-report and the problem of causal inference are related but distinct. More direct observation may improve the measurement of behaviour, but it does not by itself establish whether observed parent–child associations reflect parental effects, genetic pathways, child effects, or shared circumstances. The problem of causal inference is particularly relevant within child and family studies, where correlations between parenting behaviour and child characteristics are frequently presented as causal relationships. Yet such correlations can arise in at least four ways: (i) parenting shapes the child, the pathway usually assumed; (ii) parents transmit genes as well as provide an environment, so that parenting and child traits covary for genetic reasons (passive gene–environment correlation; Plomin et al., 1977); (iii) heritable child characteristics such as temperament evoke particular parenting responses, so that the causal arrow runs from child to parent (Bell, 1968; Scarr & McCartney, 1983); and (iv) shared circumstances, such as poverty or neighbourhood, influence both. Genetically informed designs, such as twin, adoption, or sibling-comparison studies, can separate these pathways. Fifty years of twin research show that, for a broad range of human traits, genetic variation accounts for a substantial share of individual differences (Polderman et al., 2015). Harris (1998) pressed this point forcefully, arguing that the assumption that parents largely determine how their children turn out is not supported by the evidence once heredity and the influence of peer groups are taken into account. Her position has been debated, but the

underlying methodological lesson stands: the effects of parenting cannot be read off from correlations alone. This does not imply that parenting is unimportant, but it does mean that genetic and shared family factors need to be explicitly incorporated into the interpretation of such associations (Koppies, 2019).

Wilson, De Waal, and Belsky: a recurring argument

The core of De Waal's prediction (see above) echoed a position already advanced by E.O. Wilson in Sociobiology (1975), where he suggested that sociology and the other social sciences, as well as the humanities, were among the last branches of biology still waiting to be included in the Modern Synthesis (Wilson, 1975, p. 4). Wilson's programme was more reductionist than the position defended here and provoked fierce controversy. Unlike Wilson, this article treats evolutionary explanation as an additional level of analysis, not a replacement for social and cultural explanation. De Waal himself distinguished between productive and unproductive forms of evolutionary psychology (De Waal, 2002). What connects Wilson, De Waal, and Belsky is the shared claim that the study of human behaviour cannot remain isolated from evolutionary biology. Half a century later, Belsky (2026) is still making essentially the same argument.

Belsky argues that developmental psychology should engage more strongly with evolutionary models of human behaviour and that it is long overdue for the field to abandon idealised and romanticised conceptions of who we humans are, and why children and adolescents develop the way they do.

According to Belsky, this reluctance has contributed to a relatively strong separation between social and biological explanatory models of behaviour, a distinction he argues can no longer be sustained:

> "We are a form of life that functions in accord with the same evolutionary principles that guide all other living things on the planet" (Belsky, 2026, p. 2).

Belsky further notes that he is essentially restating the position Wilson took in 1975 — a view fiercely contested at the time, but one whose broad outline has since largely stood the test of time. It is telling that this argument still needs to be repeated in 2026. In essence, it remains the same argument, yet the integration of evolutionary perspectives within child and family studies continues to be limited.

Hrdy and the canon of child and family studies

It was through Frans de Waal that I discovered the work of Sarah Blaffer Hrdy, rather than through my university studies in pedagogiek. Her theories on cooperative breeding and alloparenting make a fundamental contribution to our understanding of how *Homo sapiens* raise offspring (Hrdy, 1999, 2009, 2024). In my experience, this work has not secured an established place within the canon of child and family studies, which is consistent with the limited penetration of evolutionary perspectives into its theory. As a consequence, a line of research directly relevant to understanding human child-rearing and development remains comparatively underutilised within child and family studies.

An emerging field, yet fragmented from pedagogical practice

It would be inaccurate to suggest that no evolutionary tradition has developed within developmental science since De Waal's 2002 prediction. Since Geary and Bjorklund's (2000) foundational paper, evolutionary developmental psychology (EDP) has grown into an active subdiscipline, combining Tinbergen's explanatory levels with a developmental focus on ontogenetic and deferred adaptations (Bjorklund et al., 2015). Geary and Berch's (2016) edited volume extends this work directly into education, applying evolutionary reasoning to primary versus secondary forms of learning — the distinction, for instance, between spoken language acquisition and the comparatively effortful, culturally recent skill of reading.

A parallel and partly competing line of work has developed around Narvaez's concept of the evolved developmental niche, which foregrounds cooperative breeding, alloparenting, and early relational care as species-typical conditions for healthy development (Narvaez et al., 2014) — a framework closely aligned with Hrdy's work discussed above. The recent exchange between Narvaez and colleagues (2022) and Bjorklund et al. (2022) over the adequacy of mainstream evolutionary-adaptationist thinking versus a more explicitly developmental, plasticity-oriented account illustrates that the field is neither dormant nor settled, but the site of ongoing theoretical debate.

Within pedagogiek itself, the same argument has in fact been made before, and by two of the field's most cited researchers. In a chapter on behaviour genetics in the standard Dutch textbook Pedagogiek in beeld, Bakermans-Kranenburg and Van IJzendoorn (2005) argued that heredity is far more important than pedagogical sciences had, up to that point, been willing to recognise, while stressing that upbringing nonetheless remains indispensable for balanced development. They concluded that the field should aspire to what they explicitly termed an 'evolutionaire pedagogiek' (evolutionary pedagogy; Bakermans-Kranenburg & Van IJzendoorn, 2005, p. 106). This claim was maintained essentially unchanged in the textbook's third edition twelve years later (Bakermans-Kranenburg & Van IJzendoorn, 2017, p. 70). That such an explicit call, published in the discipline's own standard textbook and authored by leading researchers, has not visibly reshaped pedagogical training or practice illustrates precisely the gap this article is concerned with.

What has been slower to develop, however, is the translation of this literature into applied child and family studies: parenting support, child welfare, and youth care, particularly outside the Anglo-American context. EDP and the evolved-developmental-niche literature remain largely confined to developmental and evolutionary psychology journals; their uptake within applied child and family studies (pedagogiek) remains limited. It is this gap between an

increasingly mature developmental-evolutionary literature and its applied counterpart in child and family studies, rather than an absence of evolutionary thinking as such, that this article addresses. The claim of underrepresentation made here rests on illustrative examples, on De Waal's own observations (2019), and on the author's familiarity with the Dutch field, rather than on a systematic assessment of, for instance, curricula, textbooks, or journal content. The argument is therefore offered as a conceptual diagnosis, and as an invitation to examine more closely how evolutionary perspectives are distributed across child and family studies.

What is at stake in practice

The gap described above is not merely theoretical: it has consequences for the advice offered to parents and for the expectations placed on them. Attachment theory has evolutionary roots, as Bowlby (1969) drew explicitly on ethology, but its early formulations need to be read in their historical context. Bowlby's emphasis on the mother as the principal attachment figure (monotropy) and on the lasting effects of early separation took shape in the aftermath of the Second World War (Vicedo, 2013), and was later broadened by evidence for multiple early attachments (Schaffer & Emerson, 1964). Critics such as Kagan (1998) have questioned the associated 'infant determinism', the idea that early relationships determine later development, arguing that it underestimates children's resilience and the influence of later experience. The point here is not to reject attachment theory as a whole. It concerns interpretations that treat a single early caregiving relationship as a sufficient explanation of later development, without adequate attention to temperament, reciprocal child–caregiver effects (Bell, 1968), wider caregiving networks (Hrdy, 2009), and contextual variation. Interpretations of this kind risk placing disproportionate responsibility, and blame on mothers both in parenting advice and in clinical assessments of children's difficulties. Evolutionary and comparative work suggests a different emphasis. Human caregiving has been shaped by cooperative breeding and alloparental care, and is characterised by flexibility rather than by a single fixed arrangement:

who cares for children and how varies across ecologies and societies, and mothers' investment depends on the support and circumstances available to them (Hrdy, 1999, 2009; Narvaez et al., 2014). Advice that treats one particular arrangement, such as a single continuously available caregiver, as the norm therefore rests on a narrower view of human caregiving than the evolutionary and ethnographic record supports. The lesson is not that another fixed model should take its place, but that human child-rearing is evolutionarily embedded in cooperation and adaptability.

The same applies to debates on infant sleep. Close physical proximity between infants and caregivers at night is the ancestral pattern in our species (McKenna & McDade, 2005), yet public discussion of co-sleeping rarely acknowledges that bed-sharing is also associated with an increased risk of sleep-related infant death under certain circumstances (Moon et al., 2022; NCJ, 2017). An evolutionary perspective can inform how such questions are framed, but not whether a particular sleeping arrangement is safe.

Two examples illustrate what an evolutionarily informed approach might ask of child and family studies in practice. First, in research and assessment it would treat the distribution of care across multiple caregivers as an explicit object of analysis, rather than taking the mother–child dyad as the default unit: who else is involved in a child's care, how reliable are they, and how does their support shape the primary parents' caregiving (Hrdy, 2009)? In youth care, this may shift attention from difficulties within a single parent–child relationship to support that is absent or underused. The Arnhem anecdote with which this article opened points in the same direction: caregiving among primates is flexible rather than tied to one fixed arrangement.

Second, it would ask how developmental variation is incorporated into parenting advice. If children differ in temperament and in their sensitivity to context, uniform advice will fit some children and families better than others (Boyce & Ellis, 2005; Belsky & Pluess, 2009).

Advice would then be formulated conditionally, specifying for whom, when, and under which circumstances it is likely to work, and would be cautious about claims that a single practice has uniform effects. These examples are illustrations, not a complete intervention model: they show how a wider explanatory framework can change the questions that are asked.

An evolutionary perspective does not dictate what parents should do: that a practice is ancestral does not make it good, and that a practice is recent does not make it harmful. What it offers is a way of identifying which expectations of parents are evolutionarily unusual, and of weighing advice in that wider context.

Towards an evolutionary pedagogy

This article has argued that although evolutionary-developmental theory has matured considerably since Wilson and De Waal, its translation into applied child and family studies remains limited — a gap that may contribute to a tendency to overestimate the malleability of children and the influence of upbringing (Koppies, 2019), and to advice that overlooks the flexible, cooperative nature of human caregiving. For example, research examining the relationship between parenting and child outcomes frequently focuses on socialisation processes while paying comparatively limited attention to evolved temperamental variation, sex differences, life-history trade-offs, or gene–environment correlations (cf. Geary & Bjorklund, 2000; Bjorklund et al., 2015; Belsky, 2026). The work of Frans de Waal makes this gap between developmental-evolutionary theory and applied practice visible — and increasingly difficult to ignore.

Child and family studies should aspire to what Bakermans-Kranenburg and Van IJzendoorn (2005) called an evolutionary pedagogy (Dutch: evolutionaire pedagogiek), a call this article seeks to develop further (see also Koppies, 2019): an approach that takes biological and evolutionary foundations seriously without neglecting the social and cultural dimensions of child-rearing and development. An evolutionary perspective does not replace social,

cultural, or developmental explanations; rather, it provides an additional level of analysis through which human behaviour can be understood.

By evolutionary pedagogy, I do not mean biological determinism, but an approach that situates child-rearing and development within the evolutionary history of the human species. From this perspective, human child-rearing is not peripheral but central to the life history of our species, characterised by prolonged dependency, cooperative breeding, and extensive social learning.

Concretely, an evolutionary pedagogy is characterised by three features that distinguish it from a general call for integration. First, it is explanatorily pluralist: it asks Tinbergen's four questions of parenting and child behaviour, adding questions about function and phylogeny to the more familiar questions about mechanism and development. Second, it takes the species-typical conditions of human child-rearing as its baseline, notably prolonged dependency and cooperative breeding, and therefore focuses on the network of caregivers involved in rearing children, rather than just the mother–child and/or father–child dyad, as its default unit of analysis. Third, it treats variation as something to be explained rather than averaged away: differences in temperament, sex, age, and context, and the ways in which children and caregivers influence one another are part of what needs explaining, and advice is accordingly formulated conditionally.

Nature and nurture are not competing explanations, but interacting dimensions of human development. Human beings are not a tabula rasa, but a species that functions according to the same evolutionary principles as all other living beings on this planet — a reality inseparable from how children develop and how parents raise them. Nor do evolutionary explanations imply fixed outcomes. On the contrary, they may predict that developmental outcomes vary considerably depending on environment, timing, social relationships, and individual characteristics, because development has been shaped by selection to be responsive

to context (Bjorklund et al., 2015; Narvaez et al., 2022; Belsky, 2026). This variation is not unlimited, however: it is structured by evolved sensitivities, sensitive periods, and constraints, which is why an evolutionary perspective can help to specify for whom, when, and under which conditions upbringing matters most.

For the time being, De Waal's prediction that Darwin's portrait would become prominently displayed within faculties of psychology has yet to be realised within child and family studies. Yet Kuif already knew how to raise an infant in 1979, when it had seemed impossible for her — inspired by Frans de Waal. Perhaps therein lies De Waal's most important legacy: not only that he narrowed the distance between humans and animals, but that he invited disciplines to reconsider their own assumptions.

De Waal showed that human parenting behaviour forms part of a broader evolutionary continuum of primate caregiving. His legacy challenges child and family studies to reconsider child-rearing not exclusively as a cultural practice, but also as an evolved form of behaviour. Without integrating the evolutionary foundations of human caregiving, child and family studies risk maintaining an incomplete understanding of child development and parenting.

References

Bakermans-Kranenburg, M.J. & Van IJzendoorn, M.H. (2005). Gedragsgenetica: genetische aanleg en pedagogische omgeving. – In: Pedagogiek in beeld: een inleiding in de pedagogische studie van opvoeding, onderwijs en hulpverlening, 2nd edn (Van IJzendoorn, M.H. & De Frankrijker, H., eds). Bohn Stafleu van Loghum, Houten, p. 121-135.

Bakermans-Kranenburg, M.J. & Van IJzendoorn, M.H. (2017). Genetische aanleg en pedagogische omgeving. – In: Pedagogiek in beeld: een inleiding in de pedagogische studie van opvoeding, onderwijs en hulpverlening, 3rd edn (Van IJzendoorn, M.H. & Van Rosmalen, L., eds). Bohn Stafleu van Loghum, Houten, p. 73-86.

Bateson, P. & Laland, K.N. (2013). Tinbergen's four questions: an appreciation and an update. – Trends Ecol. Evol. 28: 712-718.

Bell, R.Q. (1968). A reinterpretation of the direction of effects in studies of socialization. – Psychol. Rev. 75: 81-95.

Belsky, J. (2026). The nature of nurture. – Belknap Press of Harvard University Press, Cambridge, MA.

Belsky, J. & Pluess, M. (2009). Beyond diathesis stress: differential susceptibility to environmental influences. – Psychol. Bull. 135: 885-908.

Bjorklund, D.F., Blasi, C.H. & Ellis, B.J. (2015). Evolutionary developmental psychology. – In: The handbook of evolutionary psychology, 2nd edn (Buss, D.M., ed.). Wiley, Hoboken, NJ.

Bjorklund, D.F., Ellis, B.J. & Geary, D.C. (2022). Developing evolutionary psychology: commentary on Narvaez et al. (2022). – Am. Psychol. 77: 781-783.

Bowlby, J. (1969). Attachment and loss, vol. 1: Attachment. – Basic Books, New York.

Boyce, W.T. & Ellis, B.J. (2005). Biological sensitivity to context: I. An evolutionary–developmental theory of the origins and functions of stress reactivity. – Dev. Psychopathol. 17: 271-301.

De Waal, F.B.M. (1980). Aap geeft aapje de fles. – De Levende Natuur 82: 45-54.

De Waal, F.B.M. (2002). Evolutionary psychology: the wheat and the chaff. – Curr. Dir. Psychol. Sci. 11: 187-191.

De Waal, F.B.M. (2019). The bond between mother and child is sacred. – De Pedagoog 20(4): 4-7. NVO, Utrecht.

Geary, D.C. & Berch, D.B., eds (2016). Evolutionary perspectives on child development and education. – Springer, Cham.

Geary, D.C. & Bjorklund, D.F. (2000). Evolutionary developmental psychology. – Child Dev. 71: 57-65.

Harris, J.R. (1998). The nurture assumption: why children turn out the way they do. – Free Press, New York.

Hrdy, S.B. (1999). Mother nature: a history of mothers, infants, and natural selection. – Pantheon Books, New York.

Hrdy, S.B. (2009). Mothers and others: the evolutionary origins of mutual understanding. – Harvard University Press, Cambridge, MA.

Hrdy, S.B. (2024). Father time: a natural history of men and babies. – Princeton University Press, Princeton, NJ.

Kagan, J. (1998). Three seductive ideas. – Harvard University Press, Cambridge, MA.

Koppies, H. (2019). Een pleidooi voor evolutionaire pedagogiek. – Pedagogiek in Praktijk 110: 42-45.

McKenna, J.J. & McDade, T. (2005). Why babies should never sleep alone: a review of the co-sleeping controversy in relation to SIDS, bedsharing and breast feeding. – Paediatr. Respir. Rev. 6: 134-152.

Moon, R.Y., Carlin, R.F., Hand, I. & Task Force on Sudden Infant Death Syndrome and Committee on Fetus and Newborn (2022). Sleep-related infant deaths: updated 2022 recommendations for reducing infant deaths in the sleep environment. – Pediatrics 150(1): e2022057990.

Narvaez, D., Moore, D.S., Witherington, D.C., Vandiver, T.I. & Lickliter, R. (2022). Evolving evolutionary psychology. – Am. Psychol. 77: 424-438.

Narvaez, D., Valentino, K., Fuentes, A., McKenna, J. & Gray, P., eds (2014). Ancestral landscapes in human evolution: culture, childrearing and social wellbeing. – Oxford University Press, New York.

NCJ (Nederlands Centrum Jeugdgezondheid) (2017). JGZ-richtlijn Preventie wiegendood. – NCJ, Utrecht.

O'Brien, D.T. & Gallup, A.C. (2011). Using Tinbergen's four questions (plus one) to facilitate evolution education for human-oriented disciplines. – Evol. Educ. Outreach 4: 107-113.

Plomin, R., DeFries, J.C. & Loehlin, J.C. (1977). Genotype-environment interaction and correlation in the analysis of human behavior. – Psychol. Bull. 84: 309-322.

Polderman, T.J.C., Benyamin, B., de Leeuw, C.A., Sullivan, P.F., van Bochoven, A., Visscher, P.M. & Posthuma, D. (2015). Meta-analysis of the heritability of human traits based on fifty years of twin studies. – Nat. Genet. 47: 702-709.

Scarr, S. & McCartney, K. (1983). How people make their own environments: a theory of genotype → environment effects. – Child Dev. 54: 424-435.

Schaffer, H.R. & Emerson, P.E. (1964). The development of social attachments in infancy. – Monogr. Soc. Res. Child Dev. 29(3): 1-77.

Tinbergen, N. (1963). On aims and methods of ethology. – Z. Tierpsychol. 20: 410-433.

Vicedo, M. (2013). The nature and nurture of love: from imprinting to attachment in Cold War America. – University of Chicago Press, Chicago.

Wilson, E.O. (1975). Sociobiology: the new synthesis. – Harvard University Press, Cambridge, MA.

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