

---

# Positive relationships build a foundation for children's learning

---

Author/s:

**Sara Baker**

*Professor of Developmental Psychology and Education, Faculty of Education, University of Cambridge*

Theme/s:

**Effective teaching / Emotions and learning**

---

This report arises from Science of Learning Fellowships funded by the International Brain Research Organization (IBRO) in partnership with the International Bureau of Education (IBE) of the United Nations Educational, Scientific and Cultural Organization (UNESCO). The IBRO/IBE-UNESCO Science of Learning Fellowship aims to support and translate key neuroscience research on learning and the brain to educators, policy makers, and governments.

---

## Executive summary

- Sensitive, responsive caregiving builds positive relationships between young children and the adults around them. Changes to hormones and brain networks, as well as behavioral patterns, all suggest that these early positive relationships serve as a foundation for lifelong learning skills.
- Children who experience early positive relationships see benefits to their future relationships with others, as well as their cognitive development and their academic outcomes.
- Children's relationships with teachers also matter for their engagement in learning and their academic outcomes.
- Policy makers can invest in support for families and schools to enable sensitive and responsive interactions between children and adults, which will in turn serve as a foundation to learning.

## Introduction

Globally, there is a focus on what should be considered central aspects of teacher competency frameworks (see International Task Force on Teachers for Education 2030 [Discussion paper](#) on Action Track 3 for the Transforming Education Summit). The present brief contributes to this discussion by suggesting that skills to support children's positive relationships with adults should be prioritized, because relationships matter for children's general development, their engagement in learning and for their academic outcomes. In this brief we first review the literature on positive early relationships between infants and their caregivers, and we argue that the biological and behavioral benefits of sensitive caregiving can extend to relationships in school. We draw on the science of learning to demonstrate that teachers can support lifelong learning skills by building positive relationships with their students. Recommendations for policy makers include ensuring support for teachers to develop their relational pedagogy, and an investment in structures that support families' first steps together.

*Positive relationships build infants' brain and behavior from birth.*

Lifelong learning skills are built on foundations of health, security and opportunities for learning during infancy<sup>[1]</sup> (see the [Nurturing care framework](#) from the World Health Organization, World Bank and UNICEF). Early interactions that are sensitive, responsive, and adjusted to the child's interests and needs create a predictable and safe environment for infants, even though they cannot meet their own needs. When adults care for babies in a sensitive way, infants learn that they can trust people to look after their needs and they form bonds often referred to as 'attachment'<sup>[2]</sup>. When infants develop a secure attachment to their caregivers, they are more comfortable exploring the world around them. That trust not only leads infants to feel at ease even when things are uncertain, but it also means they are more likely to take cues to guide their own learning from trusted adults<sup>[3]</sup>.

The quality of infants' attachments to caregivers is reflected in their biology<sup>[4]</sup>. One of the evolutionarily primitive subcortical parts of our brain that we share with other animals, known as the limbic system and specifically the HPA axis (hypothalamic-pituitary-adrenocortical axis), is particularly susceptible to social interactions in early childhood (see also this review of the evidence on [adverse childhood experiences](#)).

In a study with very young babies<sup>[5]</sup>, researchers measured mothers' and infants' cardiovascular activity with sensors on the skin during stressful and non-stressful situations. Infants and mothers were more 'in tune' with each other (showing correlated physiological signals over time) when mothers experienced stress than when they did not. These findings highlight infants' physiological connection with their caregivers, especially when there is a potentially alarming situation. Infants' interactions with adults not only provide signals to infants, but they can also provide tools or 'buffers', so that infants themselves can adjust their responses to their environment and not be overwhelmed. In particular, young children who experience sensitive caregiving are more likely to be able to regulate their own emotions in the long term, than young children whose early interactions are less sensitive<sup>[6]</sup>. In other words, sensitive caregiving in early infancy has a biological impact on the child, which can be a protective factor for how very young children respond to challenges.

Not only are these effects of early relationships visible in the brain and in infants' physiology, but similar patterns are seen in

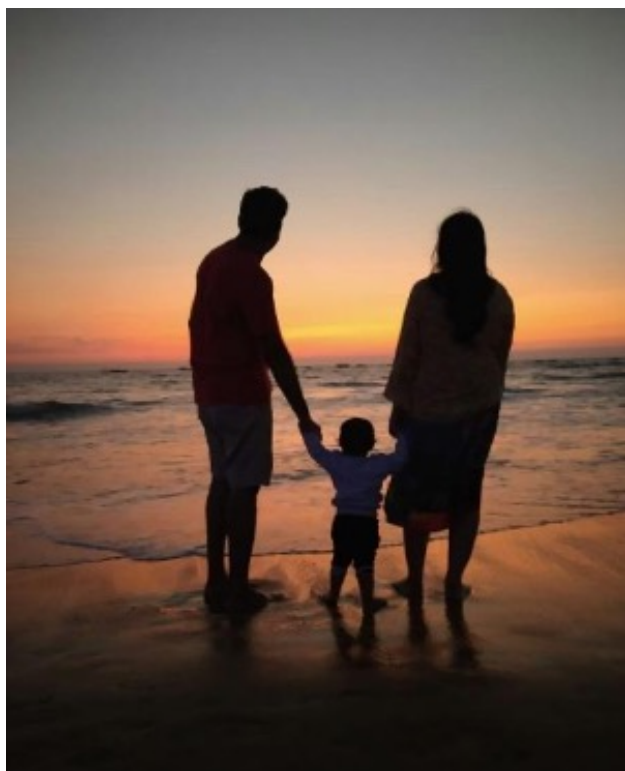
behaviors. When children have close, responsive caregivers they are more likely to grow up to have positive relationships with other people in their lives<sup>[7]</sup>. Early relationships set patterns in the child's thinking and behavior which can last a lifetime.

*Positive relationships are associated with early cognitive development.*

The nurturing care that brings about the biological changes described above also has an effect on observable behavioral outcomes. In a US study, researchers assessed the general developmental status of nine-month-olds (using the standardized Bayley scales), and also examined the ways they interacted with their own mother three months earlier at six months of age<sup>[8]</sup>. The researchers reported that when caregivers were sensitive and responsive with their six-month-olds (for example showing an understanding of the baby's intention or need, and responding in a timely way), babies were more likely to have higher general developmental scores three months later, compared to babies whose caregivers tended to be less engaged with them.

It is possible that close interactions with a caregiver support development by enhancing opportunities for learning from others. For example, researchers found that infants' and caregivers' brain waves were more in tune when the adult was looking directly at the infant<sup>[9]</sup>. The infants also babbled more when the adults were looking directly at them, indicating that mutual gaze might put infants into a state of 'readiness' for communication with adults, or at the very least, for interaction. The authors describe these findings as showing a co-networked brain state that can support sharing of information – in other words, brains that fire together, learn together.

It is important to remember that almost all of the research on early bonding and interactions between infants and their caregivers is conducted with families from the global north. Interactions between adults and very young children can vary by culture. In middle class North American and European families, for example, it is fairly common to sit face to face with a baby mimicking facial expressions<sup>[10]</sup>. Adults in other cultures may have other preferred ways of interacting with young babies<sup>[11]</sup>. Nevertheless, in all cultures caregivers find ways to send signals to babies that are reassuring, sensitive and that can promote infants' sense of connectedness to adults. As one example of sensitive interactions that may not involve direct gaze, Cameroonian babies pay more attention to their surroundings when they have body contact through rocking while an adult sings to them, than when they are not being touched<sup>[12]</sup>. Indeed, touch can be an important source of physiological regulation for infants, and can thus serve a similar function to shared eye gaze in establishing a connection between infant and caregiver, putting them in tune with each other<sup>[13]</sup>.



*Positive relationships are also associated with longer term cognitive development.*

Not only is sensitive caregiving associated with developmental outcomes in infancy, but also in the longer term. A meta-analysis of 106 research studies showed that children who are brought up with sensitive and responsive parenting are more likely to demonstrate higher levels of self-regulation, showing relatively consistent findings all through childhood to the age of 18<sup>[14]</sup>. Self-regulation reflects children's ability to adjust to the circumstances rather than being driven by their emotions or automatic habits<sup>[15]</sup>. For example, a child raising their hand and waiting for the teacher to call on them for an answer (instead of shouting out an answer) would require some self-regulation. When children have had more experiences of sensitive and responsive caregiving, they show stronger self-regulation as they grow up.

In addition to general development and specific aspects of development like self-regulation, early relationships with parents predict academic outcomes. A huge meta-analysis brought together over 300 studies that examined how parenting is associated with children's and adolescents' grade point average or their performance on academic achievement tests.<sup>[16]</sup> Overall, the associations were fairly minor (small statistical effect sizes), yet the findings were consistent across the studies. On the one hand, when adults communicate clearly, even with young children, about expectations, when they grant appropriate amounts of freedom and choice, and when interactions are warm, children's academic outcomes tend to be better in the long run. This aligns with the infancy research reviewed above, showing the importance of sensitive and responsive interaction between caregivers and children. On the other hand when adults are controlling and harsh, and when they put pressure on learners with corporal punishment or by inducing guilt, children's academic outcomes tend to be worse in the long run. There may however be some nuances to note, when it comes to cultural values. For example, although a second large review showed these effects seem to replicate around the globe, a small number of studies indicate that in collectivist cultures, having more freedom and being involved in decisions are not necessarily associated with better academic outcomes for children<sup>[17]</sup>.

One of the key differences between learning in and out of school is that, in the former, there are many children in a class often with just one adult. So one might wonder whether relationships play the same role in children's learning and development in a school setting as they do at home.

Positive relationships between children and teachers are associated with better learning outcomes.

As it happens a lot of research on teacher-student relationships draws on the model of early parent-child interactions, based on the types of findings reviewed above<sup>[18]</sup>. Positive relationships in school, based on teachers' warmth, sensitivity and responsiveness, just like at home, seem to have benefits for children's learning<sup>[19]</sup>. Relationships between students and teachers are not only foundational to academic outcomes<sup>[20]</sup>. Positive relationships show an even stronger association with learners' engagement<sup>[21]</sup>. Although the quality of children's relationships with adults at home is correlated with the quality of their relationships with adults at school, some work has shown that sensitive teachers can moderate the effects of an insensitive home environment for children<sup>[22]</sup>. This suggests that school can be a form of 'intervention' to moderate difficult circumstances at home.

In a school context, relational pedagogy centers relationships between teachers and learners in formal school settings<sup>[23]</sup>. Relational pedagogy differs from a 'service delivery' model of education, and comes with challenges, notably due to the assumption that relationships are an individualized rather than a standardized factor for school leaders to contend with<sup>[24]</sup>.

The research on relationships between teachers and learners, like the work reviewed above on the importance of relationships between caregivers and infants, is also influenced by attachment theory which focuses on the development of a child's individual sense of self. This fundamentally conceptualises relationships as being between two individuals. It is worth noting that almost all of the evidence for a biological impact of relationships on young children is from studies of parenting, rather than studies of children and their teachers; and as noted above, the majority of peer-reviewed studies have been conducted in white, middle-class Western populations. This is an area for future research to explore. Important questions remain, for example, about the features of relational pedagogy in contexts where community and harmony are central values, rather than prioritizing the development of the individual.

## **Policy recommendations**

In this final section we suggest some implications for policy following from the review of research on the importance of positive relationships at home and school for lifelong learning.

First, the focus on learners' relationships with the adults around them is particularly important for equity in education. Trauma-informed teaching<sup>ii</sup>, for example, is an approach that accounts for the importance of relationships and a secure base for learning<sup>[25]</sup>. A focus on establishing positive relationships could be particularly effective when working with displaced learners and teachers, and those whose experiences of group education settings (learning outside the home) are limited.

At the level of teacher competencies and professional development, there are some resources that one can draw on, when thinking about how to bring these into practice.

An example of some guidance for teachers that accounts for relational pedagogy is the [ShREC approach](#) published by the UK's Education Endowment Foundation. This approach, which can be adapted for very young children or older children, suggests that teachers connect with the learners in their class by making eye contact and tuning into their needs (which can include getting down to their level), show an interest in what they are doing, build on what the child is saying or doing and continue to engage the child with back and forth interactions. The recommendations are similar to the approaches that we saw earlier in the parenting literature that can establish positive relationships through sensitive caregiving.

This can work in a setting where there are relatively low numbers of children per adult, and where it is the norm to do small group work or children choosing their own learning activities. In settings where the norm is large group teacher-led direct instruction, this approach cannot be used consistently throughout lessons. Teachers can use it at the start and end of sessions when children are arriving and leaving (for example having some unstructured time where they interact with children as they arrive, show an interest in how things are going at home, etc). In such settings, in between blocks of instruction, when they might engage the children in songs or moving around, teachers can select games that involve back and forth between the teacher and individual children or between two children, to create more opportunities for sensitivity and responsiveness, on an individual basis, that might not be present during whole group instruction.

Within initial teacher training and continuing professional development, it is important to include knowledge of child development in teacher competency frameworks so that teachers can appreciate why they need to invest time in building warm, positive relationships with their learners. Taking the research further towards implementation at scale, researchers may want to test mentorship programmes for teachers and school leaders to reflect on relational pedagogy and the interpersonal aspects in their classrooms and schools, with the aim of developing warm and supportive relationships between teachers and students, and thus, developmental and academic outcomes in the longer term.

Policy makers can invest in structural support for families, recognizing that relationships flourish when there are integrated services and streamlined transitions for children between home and school<sup>[26]</sup>.

Research in the science of learning suggests that investments in positive relationships for learners from the very youngest ages will benefit children's general development, their engagement in their learning, and their academic outcomes.

<sup>i</sup> Note that although these outcome measures are very specific, research reviewed below about the importance of relationships between teachers and their learners shows that test scores, overall engagement in learning is also associated with positive relationships.

<sup>ii</sup> Trauma-informed approaches can include building knowledge about the effects of adverse experiences on learners' readiness to learn, developing systems within schools to promote emotional safety, and self-care for educators. For a review see also Thomas, Crosby & Vanderhaar (2019).

## References

1. Britto, P.R., Lye, S.J., Proulx, K., Yousafzai, A.K., Matthews, S.G., Vaivada, T., Perez-Escamilla, R., Rao, N., Ip, P., Fernald, L.C., MacMillan, . . . .Bhutta, Z.A. (2017). Nurturing care: Promoting early childhood development. *The Lancet*, 389 (10064), 91-102. [https://doi.org/10.1016/S0140-6736\(16\)31390-3](https://doi.org/10.1016/S0140-6736(16)31390-3)
2. Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (2015). *Patterns of attachment: A psychological study of the strange situation*. Psychology Press.
3. Harris, P. L., & Corriveau, K. H. (2011). Young children's selective trust in informants. *Philosophical Transactions of the Royal*

Society B: Biological Sciences, 366(1567), 1179-1187. <https://doi.org/10.1098/rstb.2010.0321>

4. Gunnar, M.R., & Donzella, B. (2002). Social regulation of the cortisol levels in early human development. *Psychoneuroendocrinology* 27 (1), 199–220. [https://doi.org/10.1016/S0306-4530\(01\)00045-2](https://doi.org/10.1016/S0306-4530(01)00045-2)
5. Waters, S. F., West, T. V., & Mendes, W. B. (2014). Stress contagion: Physiological covariation between mothers and infants. *Psychological science*, 25(4), 934-942. <https://doi.org/10.1177/0956797613518>
6. Quirin, M., Pruessner, J. C., & Kuhl, J. (2008). HPA system regulation and adult attachment anxiety: individual differences in reactive and awakening cortisol. *Psychoneuroendocrinology*, 33(5), 581-590. <https://doi.org/10.1016/j.psyneuen.2008.01.013>
7. Sroufe, L. A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment & human development*, 7(4), 349-367. <https://doi.org/10.1080/14616730500365928>
8. Evans, C. A., & Porter, C. L. (2009). The emergence of mother-infant co-regulation during the first year: Links to infants' developmental status and attachment. *Infant Behavior and Development*, 32(2), 147–158. <https://doi.org/10.1016/j.infbeh.2008.12.005>
9. Leong, V., Byrne, E., Clackson, K., Georgieva, S., Lam, S., & Wass, S. (2017). Speaker gaze increases information coupling between infant and adult brains. *Proceedings of the National Academy of Sciences*, 114(50), 13290-13295. <https://doi.org/10.1073/pnas.170249311>
10. Lavelli, M., & Fogel, A. (2005). Developmental changes in the relationship between the infant's attention and emotion during early face-to-face communication: The 2-month transition. *Developmental Psychology*, 41, 265–280. <http://dx.doi.org/10.1037/0012-1649.41.1.265>
11. Keller, H., & Kärtner, J. (2013). Development. The cultural solution of universal developmental tasks. In M. Gelfand, C. Y. Chiu, & Y. Y. Hong (Eds.), *Advances in culture and psychology* (Vol. 3, pp. 63–116). New York, NY: Oxford University Press. <http://dx.doi.org/10.1093/acprof:oso/9780199930449.003.0002>
12. Lavelli, M., Carra, C., Rossi, G., & Keller, H. (2019). Culture-specific development of early mother–infant emotional co-regulation: Italian, Cameroonian, and West African immigrant dyads. *Developmental Psychology*, 55(9), 1850–1867 <https://doi.org/10.1037/dev0000696>
13. Fotopoulou, A., Von Mohr, M., & Krahé, C. (2022). Affective regulation through touch: homeostatic and allostatic mechanisms. *Current Opinion in Behavioral Sciences*, 43, 80-87. <https://doi.org/10.1016/j.cobeha.2021.08.008>
14. Pallini, S., Chirumbolo, A., Morelli, M., Baiocco, R., Laghi, F., & Eisenberg, N. (2018). The relation of attachment security status to effortful self-regulation: A meta-analysis. *Psychological bulletin*, 144(5), 501-531. <https://doi.org/10.1037/bul0000134>
15. Blair, C., & Raver, C. C. (2015). School readiness and self-regulation: A developmental psychobiological approach. *Annual review of psychology*, 66, 711. [10.1146/annurev-psych-010814-015221](https://doi.org/10.1146/annurev-psych-010814-015221)
16. Pinquart (2016). Associations of parenting styles and dimensions with academic achievement in children and adolescents: A Meta-analysis. *Educational Psychology Review*, 28, 475-493. <https://doi.org/10.1007/s10648-015-9338-y>
17. Pinquart, M., & Kauser, R. (2018). Do the associations of parenting styles with behavior problems and academic achievement vary by culture? Results from a meta-analysis. *Cultural Diversity and Ethnic Minority Psychology*, 24(1), 75-100. <https://doi.org/10.1037/cdp0000149>
18. van IJzendoorn, M. H., Dijkstra, J., & Bus, A. G. (1995). Attachment, intelligence, and language: A meta-analysis. *Social development*, 4(2), 115-128 <https://doi.org/10.1111/j.1467-9507.1995.tb00055.x>
19. Sabol, T. J., & Pianta, R. C. (2012). Recent trends in research on teacher–child relationships. *Attachment & human development*, 14(3), 213-231. <https://doi.org/10.1080/14616734.2012.672262>
20. Ansari, A., Hofkens, T. L., & Pianta, R. C. (2020). Teacher-student relationships across the first seven years of education and adolescent outcomes. *Journal of Applied Developmental Psychology*, 71, 101200. <https://doi.org/10.1016/j.appdev.2020.101200>

21. Roorda, D. L., Koomen, H. M., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of educational research*, 81(4), 493-529. <https://doi.org/10.3102/0034654311421>
22. Buyse, E., Verschueren, K., & Doumen, S. (2011). Preschoolers' attachment to mother and risk for adjustment problems in kindergarten: Can teachers make a difference?. *Social Development*, 20(1), 33-50. [10.1111/j.1467-9507.2009.00555.x](https://doi.org/10.1111/j.1467-9507.2009.00555.x)
23. Reeves, J., & Le Mare, L. (2017). Supporting Teachers in Relational Pedagogy and Social Emotional Education: A Qualitative Exploration. *International Journal of Emotional Education*, 9(1), 85-98.
24. Noddings, N. (2002). Educating moral people: A caring alternative to character education. New York: Teachers College Press.
25. Thomas, M. S., Crosby, S., & Vanderhaar, J. (2019). Trauma-informed practices in schools across two decades: An interdisciplinary review of research. *Review of Research in Education*, 43(1), 422-452. <https://doi.org/10.3102/0091732X1882>
26. UNESCO (2022). Global Partnership Strategy for Early Childhood 2021-2030.