

## Support from Birth: ZEPPELIN 0-3 and first follow-up ZEPPELIN 5-9

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ZEPPELIN<sup>1</sup> is one of the largest longitudinal intervention studies in Europe with a randomized controlled trial study design: Using the “Parents as Teachers (PAT)” program, parent educators made home visits to support young children in 132 families with social burdens every 2 to 3 weeks for a period of 3 years after birth. The children are being compared to young children in 116 families who are not receiving “PAT” support. The aim is to test whether early support starting at birth is effective in families that are in difficult circumstances.

The main research questions are:

1. Does the early support have positive impacts on the children’s development?
2. Do the parenting skills improve?
3. Do the families become more socially integrated?
4. Do children receiving support from the program have greater school success than children not receiving support from the program?

At present, results from the first 3 years of the study and from the first follow-up year 2017 (age 5) are available: The first three questions can be answered affirmatively: The intervention proved effective (see below). The fourth question, as to whether the early support increases educational opportunities in the longterm can be answered only later, after the investigations planned at school entry in 2017 to 2021 (ZEPPELIN 5-9) and at the transition to lower secondary school in 2023 to 2025 (ZEPPELIN 12-13).

**Target group:** ZEPPELIN is interested in families in difficult circumstances around the time of giving birth and who need support with early care and education for their children. ‘Difficult circumstances’ means that the families have burdens and risk factors that make the start of parenthood difficult, such as limited social support, financial distress, unemployment, or family problems. A short insight into the sample:

Of the 248 participating families, 73% of the mothers do not have Swiss citizenship, 31% spoke no or only little German at recruitment into the study, 34% did not attend school after their compulsory education, and 12% are single moms. 14% of the children were born prematurely (the Swiss average is 7.3%), 10.6% having low birth weight (< 2,500g; the Swiss average is 5.9% for Swiss births and 6.3% for foreigners), and 5.2% are twins (the Swiss average is 1.9%). Three children had to be excluded from the study due to illness or severe disability; these children and their families instead received support from early childhood education for children with special needs.

The socioeconomic status of the ZEPPELIN sample is very low, with a mean score of 24 on the International Socio-Economic Index of Occupational Status (ISEI), much lower compared to the Program for International Student Assessment (PISA).

Participating families could be invited and recruited thanks to the good cooperation with the regional child and youth services centers (kjj), and interdisciplinary networks (obstetric departments, pediatricians, etc).

**Early support:** Early support was implemented in several communes in the Canton of Zurich (near the project locations Dietikon-Schlieren, Opfikon-Kloten, and Dübendorf-Uster). The families received at-home support from an experienced parent advisor (a “PAT” parent educator), in some cases starting before birth and mostly starting one month after birth, continuing until the child’s third birthday. In addition, group meetings were held monthly at the family center. All “PAT” parent educators completed a “PAT” training and were coached and supervised regularly. For information on the necessary prerequisites and conditions for “PAT”, see <http://www.pat-mitelternlernen.org>.

<sup>1</sup> *Zürcher Equity Präventionsprojekt Elternbeteiligung und Integration* [Zurich Equity Prevention Project with Parents’ Participation and Integration]

**Research:** To examine the effectiveness of the early support, the families were randomly assigned to two groups at the outset: an intervention group receiving the intervention (“PAT” support) and a control group without intervention. Comparisons of the two groups aims to uncover possible impacts of the early support. To this data was collected after birth and around the child’s first three birthdays at three levels: parents, child, and parent-child interaction.

### A) Main Results at Project End ZEPPELIN 0-3<sup>2</sup>

Sample: Of the 248 families, 38 families were until the fourth measurement (age 3 years) due to moving away, lack of time, illness or unreported reasons. The loss of participants was thus less than 5% per annum and far smaller than in similar “PAT” studies in the United States or Germany. As of May 2016, 210 families were participating in the ZEPPELIN study, thereof 109 families in the intervention group and 101 families in the control group.

Child’s development: The greatest impacts were found in the children’s language, cognition, and behaviour (Bayley III, SBE-KT, CBCL): Children from “PAT” families showed significant advances compared to children in the control group; they had a larger vocabulary and better expressive language skills. They were less anxious (CBCL) and slept better through the night (health questionnaire). Experiments on delayed gratification showed that IG children had better impulse control.

Parenting practices: The analyses indicate that the positive impacts were mainly associated with a more stimulating environment at home (HOME). Already after one year, mothers receiving “PAT” support were significantly more sensitive than mothers not receiving “PAT” support (CARE-Index), indirectly enhancing language development (Bayley III).

#### Social networks:

Parents receiving “PAT” were better connected to community resources. For instance, they used toy lending shops as well as libraries significantly more frequently than families in the control group. Further, mothers with “PAT” felt more supported by their partners than mothers in the control group did.

The quality of the access to “difficult to reach” families consists in the following concrete points:

- We tie in with existing early childhood services (such as parent advice)
- We build interdisciplinary networks related to birth (with professionals in healthcare and psychosocial care, such as pediatricians, midwives, and more)
- We conduct a short screening for an initial assessment of risk factors and preventive factors
- We do not give up if the first contact is unsuccessful and visit families at home, with intercultural interpreters, if needed
- We provide incentives for parents to participate and to stay in the program (small welcome and birthday gifts for the child, such as a toy or picture book)

<sup>2</sup> For all analyses, we checked whether the impacts found are not erroneously attributable to the variables child’s gender, child’s birthweight, mother’s ability to speak German, and family burdens.

## B) Main Results of the first follow-up year 2017 (ZEPPELIN 5-9), assessment at age 5

Sample: Due to relocation, lack of time or interest 21 additional families declined participation, so that the overall drop-out over 5 years of study equals 21%. Still the participation rate is high compared to similar longitudinal studies internationally.

Child's development: The positive effects of PAT on learning stimuli in the family (HOME) and language (measured by "sprachgewandt"), which were found at age 3 could be confirmed at age 5. In contrast, there were no significant group differences regarding mathematical competencies (WILMA) and cognition (SON-R)

Additional intervention group: In preparation of school entry and to enhance school success in first and second grade a new intervention was established: **Lernort Familie 5+**, offering five educational group meetings for the former "PAT" parents. In order to distinguish effects of the early intervention (at age 0-3) and the new intervention (at age 5), a new intervention group of at-risk families was recruited ( $N=90$ ), only participating at **Lernort Familie 5+**.

### Key Data of the ZEPPELIN Intervention Study with the Parents as Teachers (PAT) Program

- Longitudinal study (2011 to 2016) with follow-ups (2017 to 2021 and 2023 to 2025)
- Target group: Families with social burdens and a newborn
- Main aim: Early support for enhanced educational opportunities in the long term
- Intervention: Targeted parent education at home using a support program
- RCT design;  $N$  at  $t_0$  (baseline) = 248 families with 261 children (intervention group = 132 families; control group = 116 families)
- Four measurements ( $t_0$ : at child's 3rd month of life;  $t_1$ : 12<sup>th</sup> months;  $t_2$ : 24<sup>th</sup> months,  $t_3$ : 36<sup>th</sup> months)

### Support Program: "Parents as Teachers (PAT) "

- A parent advisor after specific training ("PAT" parent educator) regularly visits 12 families at home (every 2 to 3 weeks for 3 years)
- Group meetings are held monthly at the local family center
- Establishing social connections in the local community is intensively pursued
- "PAT" parent educators conduct regular development screenings
- At program end, use of further child related resources in the community is set up with each family

### Conclusion for practice:

The prevention program "Parents as Teachers (PAT)" is suited for providing effective and long-lasting developmental support of children in families with social burdens.

The challenge is to correctly identify families at risk and obtaining and retaining their consent to participate in the intensive program.

### Selected Peer-reviewed-Publications

- Lanfranchi, A. & Neuhauser, A. (2013). ZEPPELIN 0-3: Theoretische Grundlagen, Konzept und Implementation des frühkindlichen Förderprogramms „PAT –Mit Eltern Lernen“. *Frühe Bildung*, 2(1), 3-11.
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- Neuhauser, A., Ramseier, E., Schaub, S., Burkhardt, S. C. A., Templer, F., & Lanfranchi, A. (2015). Hard to reach families – a methodological approach for early detection, recruitment, and randomization in an intervention study. *Mental Health and Prevention*, 3, 79-88. doi: 10.1016/j.mhp.2015.07.002.
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- Jungmann, T., Sierau, S., Dähne, V., Serbati, S., Dugravier, R., & Lanfranchi, A. (2017). Effectiveness of four early intervention programs in Europe: How do the results inform program development and dissemination? *Nursing and Health Sciences*, 3(3), online: <http://www.royal.com/open-access/effectiveness-of-four-early-intervention-programs-in-europe-how-do-the-results-inform-program-development-and-dissemination-.php?aid=86357>.
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