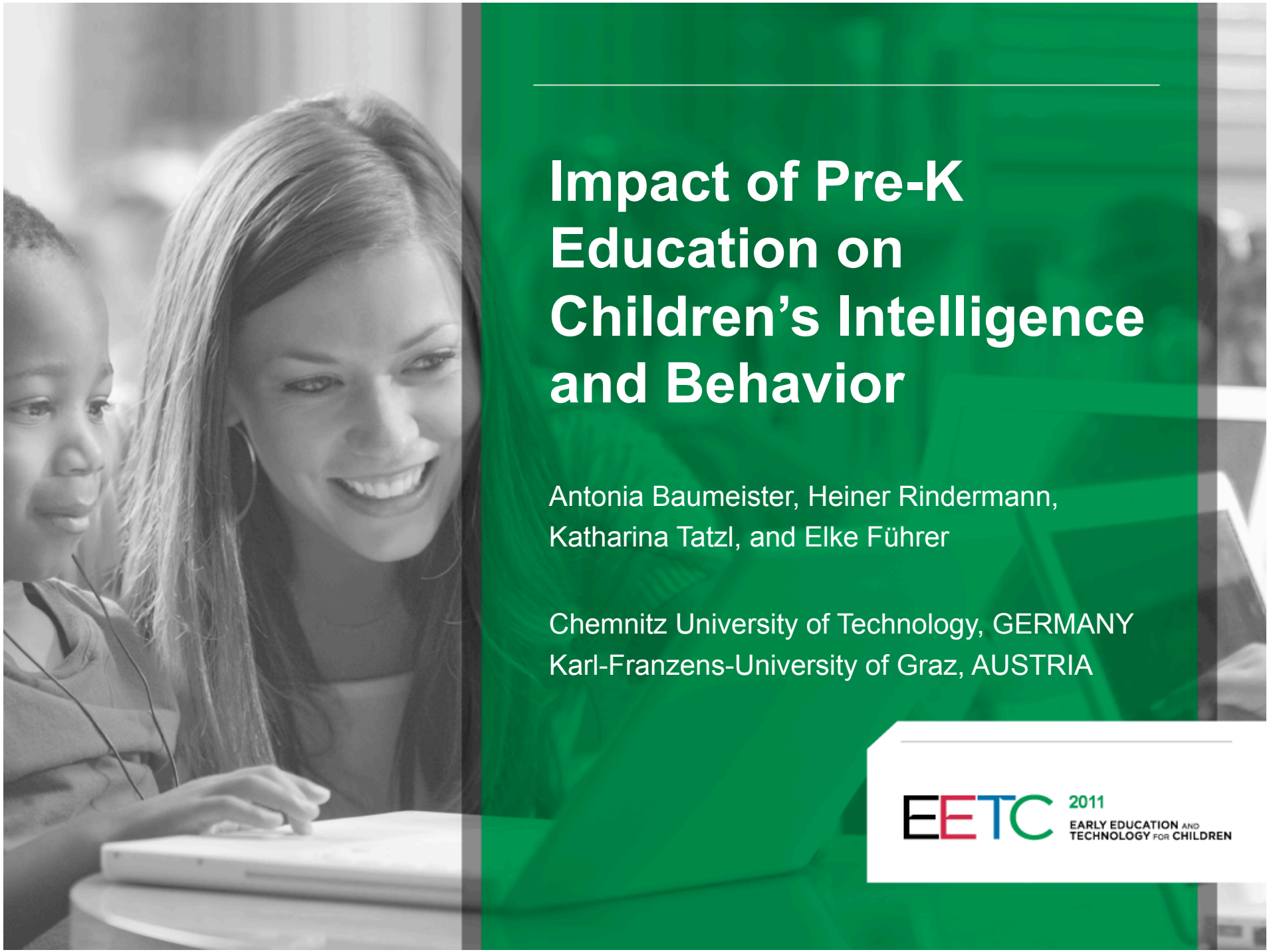

Impact of Pre-K Education on Children's Intelligence and Behavior

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EARLY EDUCATION AND TECHNOLOGY FOR CHILDREN

Impact of pre-k education on children‘s intelligence and behavior

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CHEMNITZ UNIVERSITY OF TECHNOLOGY 1836-2011 175 Years

Previous ECEC-studies

Experimental US-studies:

High/Scope Perry Preschool program & Abecedarian program

- increased intelligence (short-term or stable)
- increased achievement test scores
- improved behavior and attitudes
- decreased crime & delinquency
- decreased being on welfare
- healthier lifestyle

(e.g., Barnett, 1985-2007; Cunha et al., 2006)

Previous ECEC-studies

National Institute of Child Health and Human Development (NICHD, 2003), USA:

More hours of center care (age: 6 months till school enrollment):

- superior cognitive development
- but also: more „teacher-reported externalizing problems“

Previous ECEC-studies

Crèche attendance in Germany

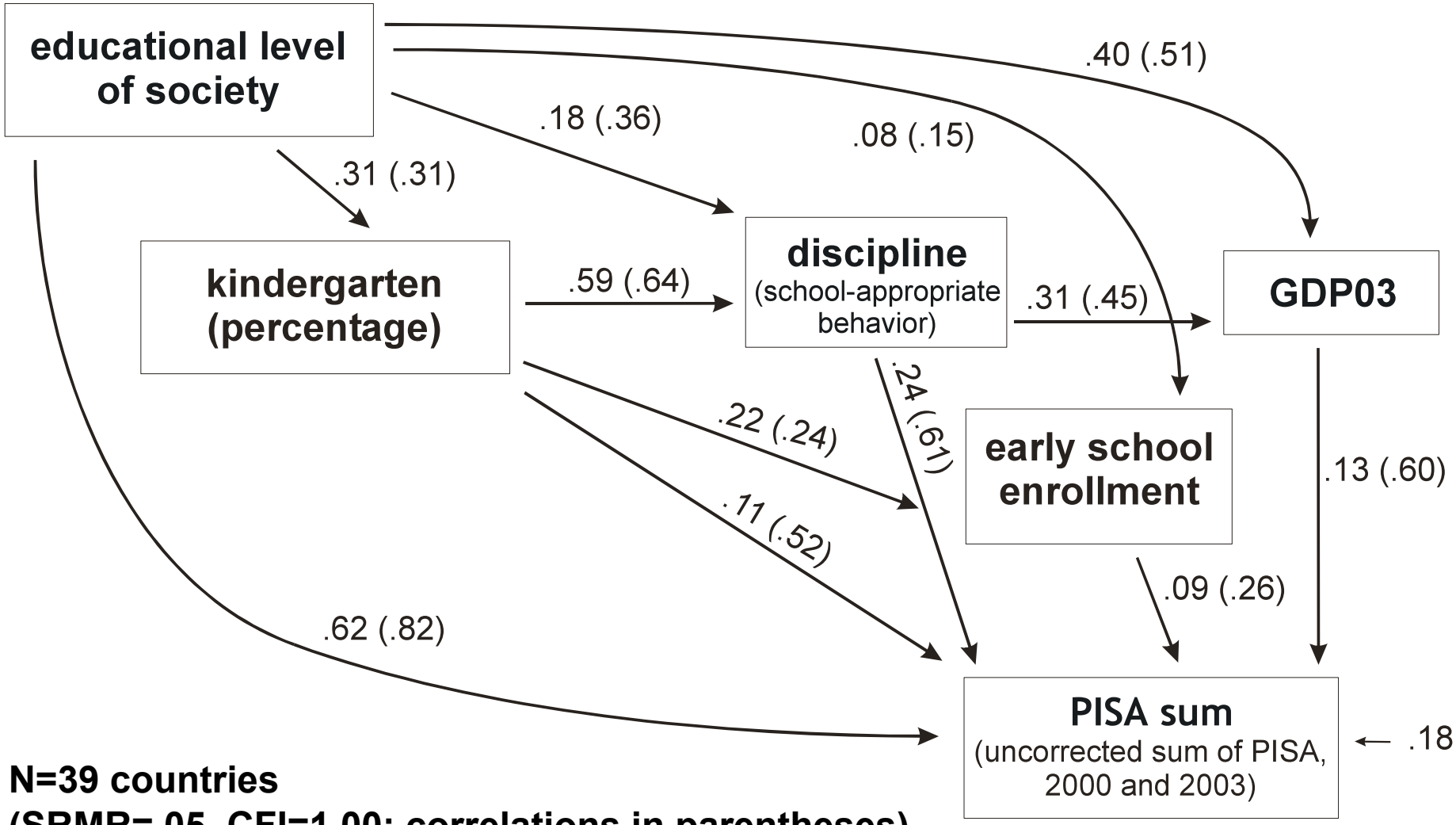
- increases probability of enrollment to University-preparatory school (secondary school track)
- effects larger for disadvantaged children

(Fritschi & Oesch, 2008)

BUT:

No analysis of psychological factors!

Rindermann & Ceci (2009): Cross-country comparison of Kindergarten effects



N=39 countries
(SRMR=.05, CFI=1.00; correlations in parentheses)

Overview of research questions: Crèche attendance effects

Studies 1 and 2:

1. Positive impact on children's **cognitive** and **social-emotional development** as well as **learning behavior**?

3. Study 1: **Short**- to **middle-term** effects (i.e., 2-4 years follow-up)?
   Study 2: **Longer-term** effects (i.e., 7-9 years follow-up)?

5. Increased **school success** in Austria (university-preparatory school enrollment)?

7. Larger effects on **immigrants**?

Study 1: Crèche effects at kindergarten age

Participants

- N=62 children
- age: 4-6 years
- Graz (Austria)
- second kindergarten year
- matched samples (family characteristics):
  - 31 children with former crèche attendance
  - 31 children without former crèche attendance

Study 1: Crèche effects at kindergarten age

Methods

- test of overall development: „Wiener Entwicklungstest“ (WET)
- sociodemographic questionnaire (parents)
- rating of behavior problems (kindergarten teachers)

Study 1: Crèche effects at kindergarten age

Results: WET

	Overall development	Cognitive development	Social-emotional development	Motor development
Total sample (*N*=62)				
d	1.16	0.97	0.94	0.84
r	.58**	.49**	.48**	.43**
Immigrant subsample (*N*=11)				
d	1.63	1.57	1.11	1.22
r_p	.90**	.88**	.76*	.61^{t}

**p<.01, *p<.05, ^{t}p<.10. Partial correlations (r_p) controlling for parental sociodemographic characteristics.

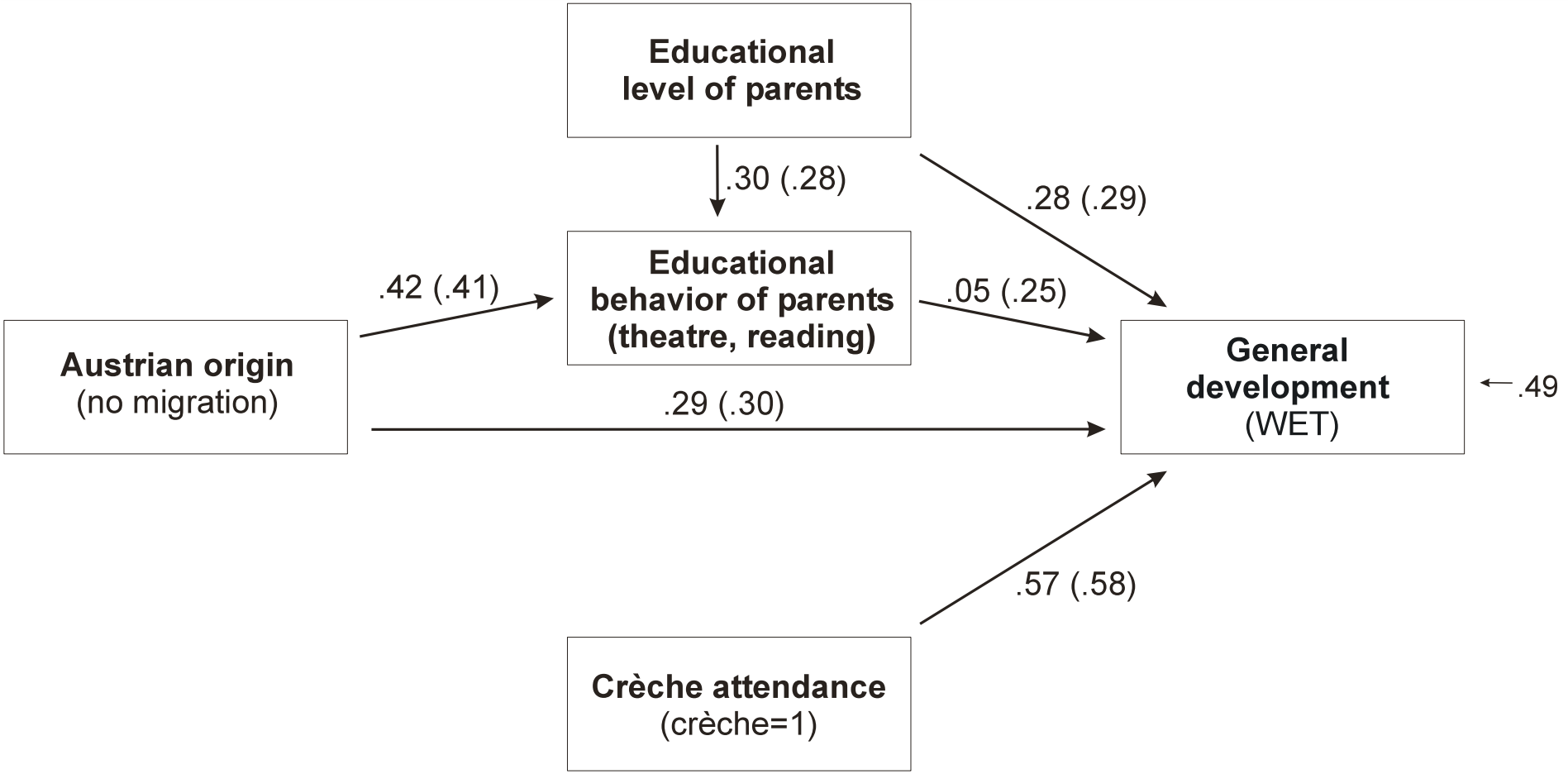
Study 1: Crèche effects at kindergarten age

Results: Behavior problems

Total sample (*N*=62):		Behavior problems
With vs. without prior crèche attendance	*d*	0.31
With vs. without prior crèche attendance	*r*	.16
Subsample with prior crèche attendance (*N*=31):		
Intensity of crèche attendance in hours per week	*r*	.36[t]
Intensity of crèche attendance in hours per month	*r*	.46*

Ratings of kindergarten teachers for *N*=62 children. *p<.05, [t]p<.10.

Study 1: Crèche effects at kindergarten age



CFI=1.00, *SRMR*=.01, *RMSEA*=.00; *N*=62; correlations in parentheses; missing paths due to sample matching.

Study 1: Crèche effects at kindergarten age

Summary & conclusions

1. (More objective) **test results** (WET) vs. (more subjective) **behavior ratings** of kindergarten teachers:
   - Test: Crèche attendance **enhances** children's **cognitive** and **socio-emotional development**
   - Ratings: Crèche attendance associated to **worse social behavior** (more aggressiveness)

3. **Middle-term** effects (2-4 years follow-up)

Study 2: Crèche effects at primary school age

Participants

- N=118 children
- age: 9-11 years
- fourth graders at primary schools in Graz (Austria)
- no sample matching:
  - 52 children with former crèche attendance
  - 66 children without former crèche attendance

Study 2: Crèche effects at primary school age

Methods

- cognitive abilities test (CogAT)
- teacher‘s rating:
  - social behavior
  - learning behavior
  - secondary school recommendation
- sociodemographic questionnaire (parents)

Study 2: Crèche effects at primary school age

Results: CogAT – General intelligence

	Total sample (*N*=118)
d	0.38
r	.19*
r_p	.14

	Immigrant subsample (*N*=21)
d	0.36
r	.18
r_p	.08

*p<.05. Partial correlations (r_p) controlling for immigration background (total sample), parental sociodemographic characteristics (immigrant subsample).

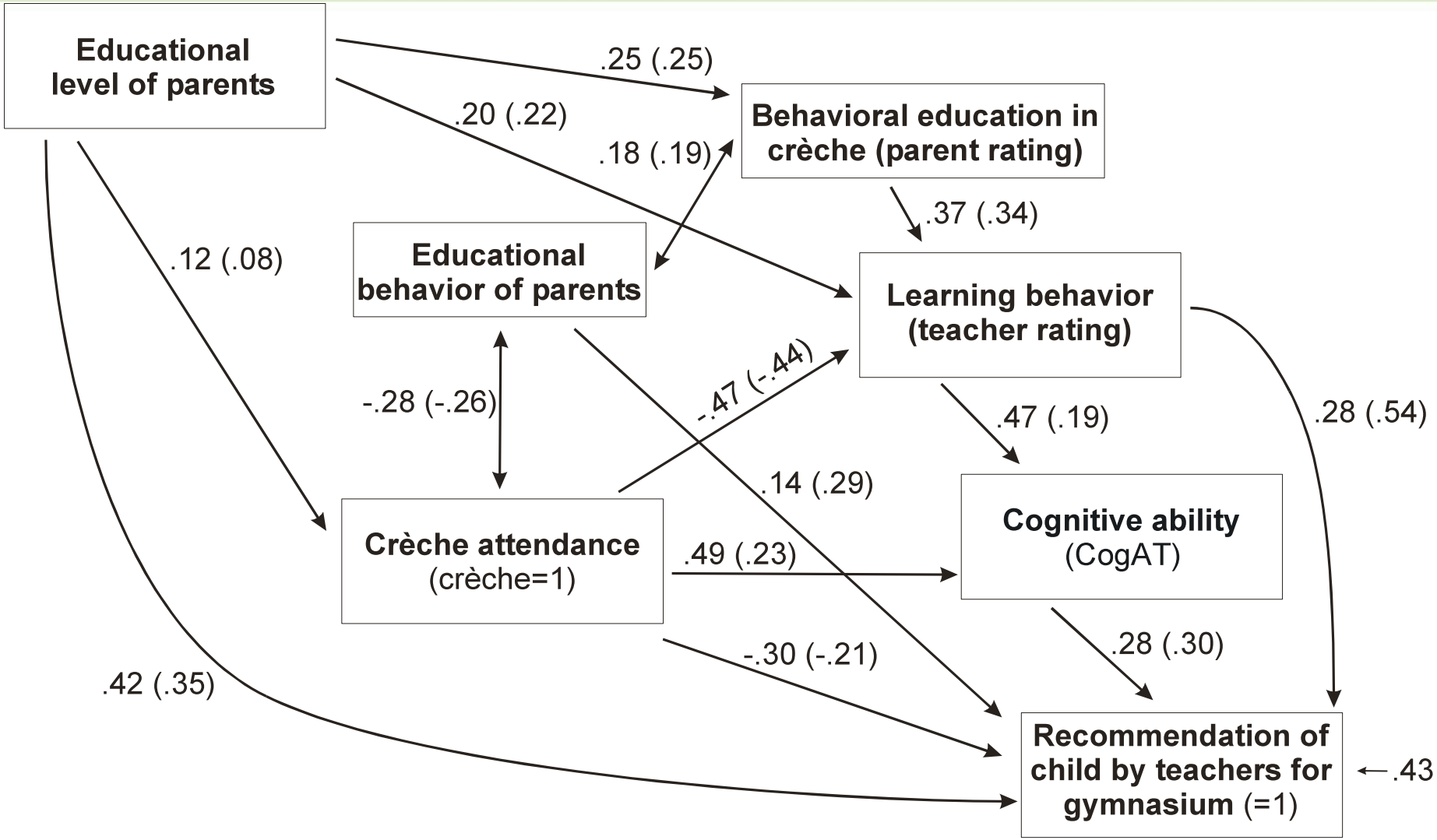
Study 2: Crèche effects at primary school age

Results: Social and learning behavior

Total sample (*N*=116)		Social and learning behavior
	d	-0.76
	r	-.38**
	r_p	-.31**
Subsample with prior crèche attendance (*N*=52):		
Intensity of crèche attendance in hours per week	*r*	-.08
Intensity of crèche attendance in hours per month	*r*	.09

Partial correlations (r_p) controlled for parental sociodemographic characteristics and immigration background. **p<.01.

Study 2: Crèche effects at primary school age



CFI=1.00, *RMSEA*=.00; *N*=116; correlations in parentheses; with categorical dependent measures

Study 2: Crèche effects at primary school age

Summary & conclusions: Crèche attendance

1. Strong **positive direct** impact on **cognitive ability**,

3. **Indirect negative** impact on cognitive ability through **learning behavior**

5. Positive and negative effects on secondary **school recommendation**:
   - Positive: increases cognitive ability
   - Negative: learning behavior, school recommendation

6. **Sum of positive & negative effects**: -.30+.14-.13-.06=**-.35**

9. Positive effects diminish at **primary school age** compared to **kindergarten age**, but still observable

Discussion

1. Crèche attendance:
   - **supports cognitive development**,
   - **effects diminish** in the long-term,
   - pos. effect on cogn. development masked by **neg. effect on learning behavior** (rated by kindergarten & primary school teachers)

2. Behavior problems:
   - early peer contacts as **"assertiveness training"**? (→ biases in teachers' ratings?)
   - negative effect on attachment security?

Discussion

3. Migration background:
   - mixed findings: crèche sometimes esp. beneficial, sometimes not
   - **quality of preschool education**?

5. Quality of preschool education:
   - study 2: Existence of **behavior rules** modeled by preschool teachers? → **pos. impact on learning behavior** at primary school age!
   - to be investigated: parents' role
     → select preschool (or vice versa)?
     → affect preschool curriculum?
     → preschool affects parental educational behavior?

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