

EFFECTS OF THE VIDA PROGRAM

- A RANDOMIZED CONTROLLED TRIAL

by Peter Jensen, Astrid Würtz Rasmussen, Bente Jensen

OUTLINE

- What questions will we answer?
- How did we evaluate VIDA?
- What are the results?
- Conclusion – and some further questions

RESEARCH QUESTIONS

- **Can we improve the quality of Danish daycare institutions by training daycare teachers (through VIDA) and thereby improve child outcomes?**

RESEARCH QUESTIONS

- **Can we improve the quality of Danish daycare institutions by training daycare teachers (through VIDA) and thereby improve child outcomes?**

Child outcomes:
socio-emotional skills
(noncognitive abilities) and
cognitive abilities

RESEARCH QUESTIONS

- **Can we improve the quality of Danish daycare institutions by training daycare teachers (through VIDA) and thereby improve child outcomes?**
- Is the effect different if daycare teachers actively involve parents?
- Is the effect different across subgroups? (especially for disadvantaged children)
- Is the effect different across dimensions of outcomes?

RESEARCH DESIGN

- Randomized controlled trial (RCT)
- Performed in daycare institutions (3-6 year old children) during a two-year period (2011-2013) at four different municipalities in Denmark
- Two interventions: VIDA Basis and VIDA Basis+ Control group (no treatment)
- 129 daycare institutions randomly allocated to VIDA Basis, VIDA Basis+ and control group (with stratification on the share of socially disadvantaged children)

DATA

- The main data source is the **questionnaire** answered by daycare teachers on each child
- Three waves of data: March 2011 (baseline), March 2012 (mid-way), March 2013 (final)
- For each child, the answers provide information on socio-emotional skills and cognitive abilities
- This allows us to construct measures on child outcomes

DATA (...CONT.)

- Outcomes: **socio-emotional skills** measured by **SDQ** scale (Strengths and Difficulties Questionnaire, Goodman (1997))
- This is an internationally accepted and validated scale (75 languages)

DATA (...CONT.)

- Five dimensions / subscales of SDQ:

1. Emotional symptoms

2. Conduct problems

3. Hyperactivity

4. Peer relationships

5. Pro-social behavior

(each measured on a 0 to 10 scale)

The first four are on a decreasing scale, while pro-social behavior is on an increasing scale

DATA (...CONT.)

- The total SDQ difficulties score is the sum of the first four dimensions
- In addition, SDQ provides an impact score (on distress and social impairment)

DATA (...CONT.)

- Additional information from administrative **register data** (on children and families only) combined with **surveys** from municipalities and daycare institutions
- Children: Age, gender, ethnicity, birth order
- Parents: Education, income, work experience, marital status, ethnicity
- Daycare teachers / institutions: Gender, education, turnover, 'staff-child ratio', size, management

ANALYSIS

- Our main statistical analysis is based on the children who participated in all three waves
- We analyze their progress from 2011 to 2013
- We take into account each child's background
- We analyze the two interventions (VIDA Basis and VIDA Basis +) separately
- The effects are obtained from the statistical analysis by comparing with the control group

CHILDREN IN THE ANALYSIS

Wave	Total number of children*	Number of children from previous wave(s)
1	3,622	-
2	4,029	2,387
3	3,890	1,125

* In final sample, after removing observations with missing values etc.

CHILDREN IN THE ANALYSIS

Wave	Total number of children*	Number of children from previous wave(s)
1	3,622	-
2	4,029	2,387
3	3,890	1,125

* In final sample, after removing observations with missing values etc.

ILLUSTRATION OF EFFECT

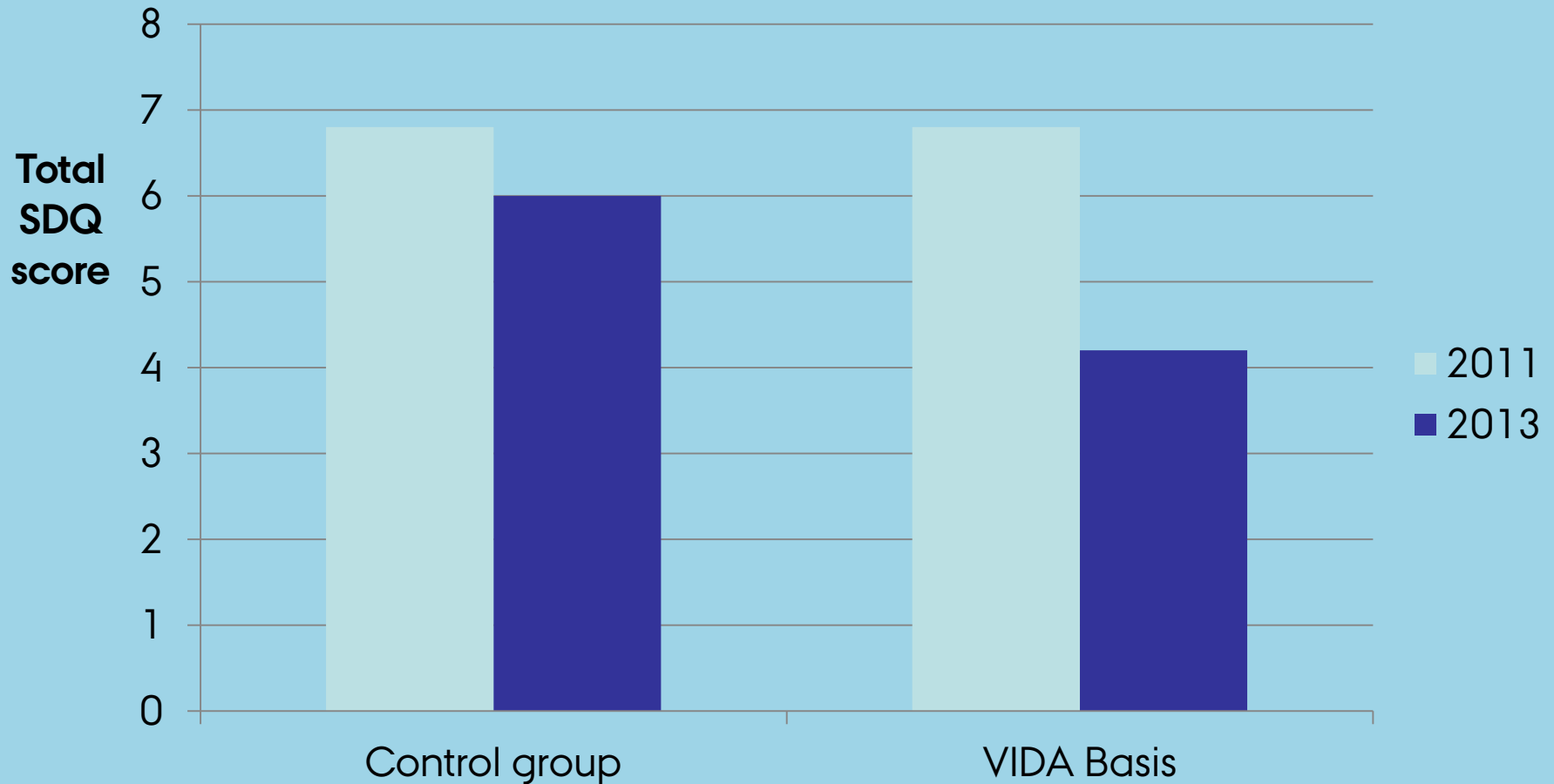


ILLUSTRATION OF EFFECT

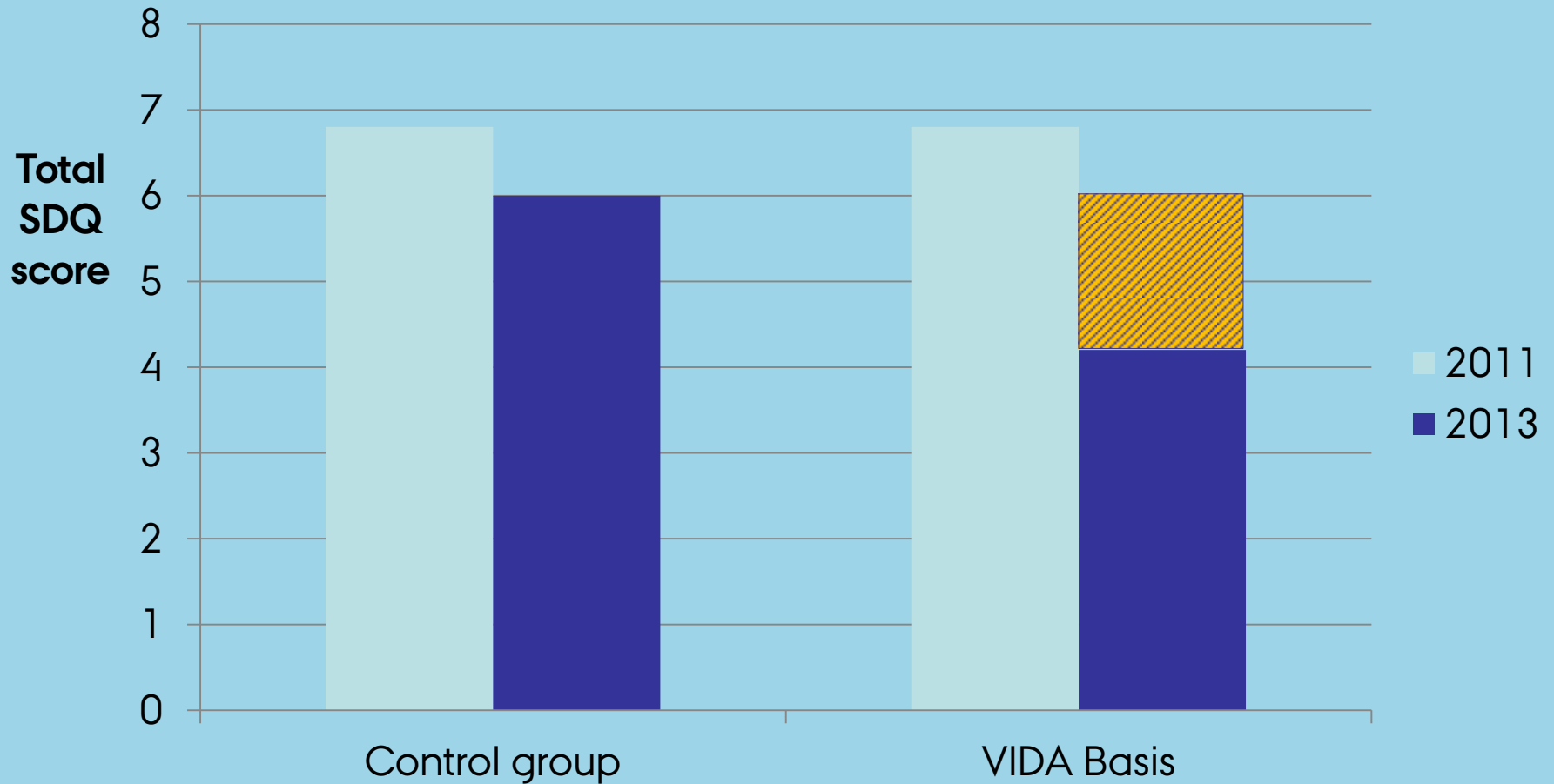
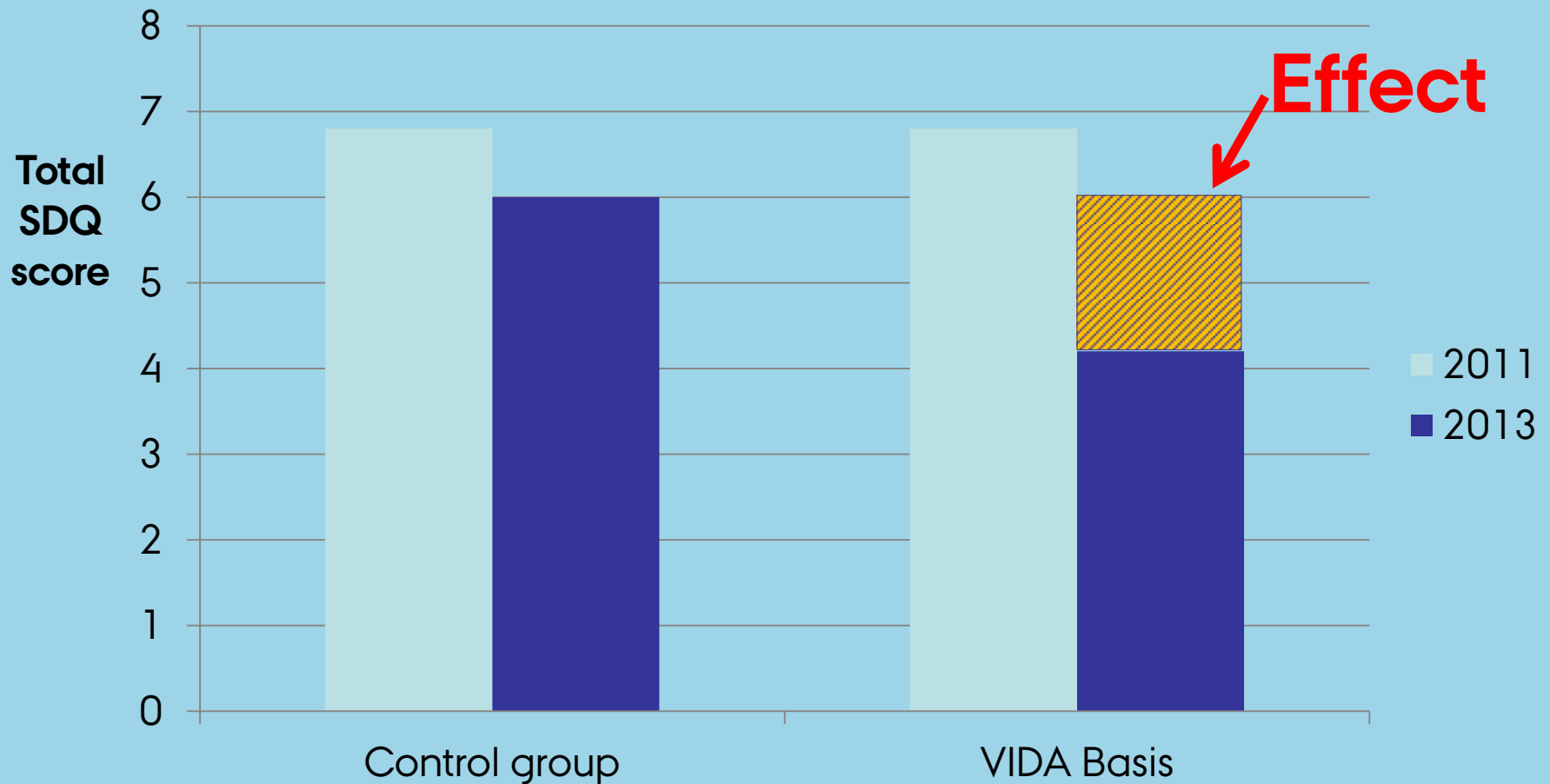


ILLUSTRATION OF EFFECT



RESULTS: MAIN EFFECTS, VIDA BASIS

	Emotional symptoms	Conduct problems	Hyper-activity	Peer relationships	Pro-social behavior	Total SDQ score
VIDA	-0.463**	-0.559***	-0.467	-0.277	0.251	-1.766**
	(0.201)	(0.172)	(0.332)	(0.215)	(0.313)	(0.735)
Time	0.014	0.041	-0.445*	-0.372**	1.121***	-0.762
	(0.143)	(0.114)	(0.242)	(0.150)	(0.251)	(0.524)
Constant	1.601***	1.188***	2.657***	1.338***	7.093***	6.784***
	(0.051)	(0.044)	(0.083)	(0.054)	(0.076)	(0.185)
Obs	1372	1372	1372	1372	1372	1372

RESULTS: MAIN EFFECTS, VIDA BASIS

	Emotional symptoms	Conduct problems	Hyper-activity	Peer relationships	Pro-social behavior	Total SDQ score
VIDA	-0.463**	-0.559***	-0.467	-0.277	0.251	-1.766**
	(0.201)	(0.172)	(0.332)	(0.215)	(0.313)	(0.735)
Time	0.014	0.041	-0.445*	-0.372**	1.121***	-0.762
	(0.143)	(0.114)	(0.242)	(0.150)	(0.251)	(0.524)
Constant	1.601***	1.188***	2.657***	1.338***	7.093***	6.784***
	(0.051)	(0.044)	(0.083)	(0.054)	(0.076)	(0.185)
Obs	1372	1372	1372	1372	1372	1372

RESULTS: MAIN EFFECTS, VIDA BASIS+

	Emotional symptoms	Conduct problems	Hyper-activity	Peer relationships	Pro-social behavior	Total SDQ score
VIDA +	0.018	-0.326**	-0.398	-0.115	0.105	-0.821
	(0.182)	(0.161)	(0.301)	(0.209)	(0.354)	(0.649)
Time	0.014	0.041	-0.445*	-0.372**	1.121***	-0.762
	(0.143)	(0.114)	(0.242)	(0.150)	(0.251)	(0.525)
Constant	1.359***	1.115***	2.534***	1.436***	7.108***	6.444***
	(0.044)	(0.041)	(0.072)	(0.053)	(0.090)	(0.155)
Obs	1458	1458	1458	1458	1458	1458

RESULTS: MAIN EFFECTS, VIDA BASIS+

	Emotional symptoms	Conduct problems	Hyper-activity	Peer relationships	Pro-social behavior	Total SDQ score
VIDA +	0.018	-0.326**	-0.398	-0.115	0.105	-0.821
	(0.182)	(0.161)	(0.301)	(0.209)	(0.354)	(0.649)
Time	0.014	0.041	-0.445*	-0.372**	1.121***	-0.762
	(0.143)	(0.114)	(0.242)	(0.150)	(0.251)	(0.525)
Constant	1.359***	1.115***	2.534***	1.436***	7.108***	6.444***
	(0.044)	(0.041)	(0.072)	(0.053)	(0.090)	(0.155)
Obs	1458	1458	1458	1458	1458	1458

RESULTS: MAIN EFFECTS

	SDQ impact score
VIDA	-0.183**
	(0.079)
Time	0.138**
	(0.068)
Constant	0.262***
	(0.018)
Obs	1340

	SDQ impact score
VIDA +	-0.154*
	(0.081)
Time	0.138**
	(0.068)
Constant	0.284***
	(0.019)
Obs	1432

RESULTS: MAIN EFFECTS

	SDQ impact score
VIDA	-0.183**
	(0.079)
Time	0.138**
	(0.068)
Constant	0.262***
	(0.018)
Obs	1340

	SDQ impact score
VIDA +	-0.154*
	(0.081)
Time	0.138**
	(0.068)
Constant	0.284***
	(0.019)
Obs	1432

SUMMARY OF MAIN EFFECTS

- Positive effects for different dimensions of SDQ
- VIDA Basis: ‘emotional symptoms’, ‘conduct problems’ (and total SDQ score)
- Effect sizes are approx. 0.25
- VIDA Basis+: ‘conduct problems’
- The VIDA Basis+ intervention is generally less efficient
- Both interventions improve the impact score, but less significance for VIDA Basis+

HETEROGENEOUS EFFECTS

- Main effects are average effects for the whole intervention group
- Are there different effects for different groups of children?
- We analyze differences across various subgroups
 - Children's gender, Children's ethnicity
 - Mother's education
 - Family income, Family status

RESULTS: HETEROGENEOUS EFFECTS, VIDA BASIS

	Emotional symptoms	Conduct problems	Hyperactivity	Peer relationships	Pro-social behavior
VIDA	-0.459**	-0.441***	-0.460	-0.173	0.154
	(0.192)	(0.160)	(0.338)	(0.223)	(0.347)
Time	0.014	0.041	-0.445*	-0.372**	1.121***
	(0.143)	(0.114)	(0.242)	(0.150)	(0.251)
Boy*VIDA	-0.009	-0.238	-0.013	-0.210	0.194
	(0.189)	(0.143)	(0.302)	(0.170)	(0.260)
Constant	1.601***	1.188***	2.657***	1.338***	7.093***
	(0.051)	(0.044)	(0.083)	(0.055)	(0.076)
Obs	1372	1372	1372	1372	1372

RESULTS: HETEROGENEOUS EFFECTS, VIDA BASIS

	Emotional symptoms	Conduct problems	Hyperactivity	Peer relationships	Pro-social behavior
VIDA	-0.459**	-0.441***	-0.460	-0.173	0.154
	(0.192)	(0.160)	(0.338)	(0.223)	(0.347)
Time	0.014	0.041	-0.445*	-0.372**	1.121***
	(0.143)	(0.114)	(0.242)	(0.150)	(0.251)
Boy*VIDA	-0.009	-0.238	-0.013	-0.210	0.194
	(0.189)	(0.143)	(0.302)	(0.170)	(0.260)
Constant	1.601***	1.188***	2.657***	1.338***	7.093***
	(0.051)	(0.044)	(0.083)	(0.055)	(0.076)
Obs	1372	1372	1372	1372	1372

RESULTS: HETEROGENEOUS EFFECTS, VIDA BASIS

	Emotional symptoms	Conduct problems	Hyperactivity	Peer relationships	Pro-social behavior
VIDA	-0.547***	-0.647***	-0.568	-0.374	0.308
	(0.201)	(0.188)	(0.344)	(0.224)	(0.319)
Time	0.007	0.052	-0.458*	-0.358**	1.111***
	(0.145)	(0.118)	(0.242)	(0.146)	(0.253)
Single par	0.714***	0.639**	0.917	0.666*	-0.397
*VIDA	(0.254)	(0.308)	(0.591)	(0.378)	(0.467)
Constant	1.609***	1.182***	2.665***	1.340***	7.093***
	(0.051)	(0.045)	(0.084)	(0.055)	(0.076)
Obs	1360	1360	1360	1360	1360

RESULTS: HETEROGENEOUS EFFECTS, VIDA BASIS

	Emotional symptoms	Conduct problems	Hyperactivity	Peer relationships	Pro-social behavior
VIDA	-0.547***	-0.647***	-0.568	-0.374	0.308
	(0.201)	(0.188)	(0.344)	(0.224)	(0.319)
Time	0.007	0.052	-0.458*	-0.358**	1.111***
	(0.145)	(0.118)	(0.242)	(0.146)	(0.253)
Single par	0.714***	0.639**	0.917	0.666*	-0.397
*VIDA	(0.254)	(0.308)	(0.591)	(0.378)	(0.467)
Constant	1.609***	1.182***	2.665***	1.340***	7.093***
	(0.051)	(0.045)	(0.084)	(0.055)	(0.076)
Obs	1360	1360	1360	1360	1360

RESULTS: HETEROGENEOUS EFFECTS, VIDA BASIS+

	Emotional symptoms	Conduct problems	Hyperactivity	Peer relationships	Pro-social behavior
VIDA +	0.051	-0.231	-0.309	-0.033	0.147
	(0.193)	(0.165)	(0.320)	(0.212)	(0.362)
Time	0.008	-0.004	-0.470*	-0.395***	1.079***
	(0.151)	(0.114)	(0.243)	(0.142)	(0.243)
Low inc.	-0.320	-0.331	-0.438	-0.703**	0.382
*VIDA+	(0.312)	(0.339)	(0.413)	(0.333)	(0.498)
Constant	1.366***	1.119***	2.521***	1.437***	7.103***
	(0.045)	(0.043)	(0.076)	(0.053)	(0.093)
Obs	1340	1340	1340	1340	1340

RESULTS: HETEROGENEOUS EFFECTS, VIDA BASIS+

	Emotional symptoms	Conduct problems	Hyperactivity	Peer relationships	Pro-social behavior
VIDA +	0.051	-0.231	-0.309	-0.033	0.147
	(0.193)	(0.165)	(0.320)	(0.212)	(0.362)
Time	0.008	-0.004	-0.470*	-0.395***	1.079***
	(0.151)	(0.114)	(0.243)	(0.142)	(0.243)
Low inc.	-0.320	-0.331	-0.438	-0.703**	0.382
*VIDA+	(0.312)	(0.339)	(0.413)	(0.333)	(0.498)
Constant	1.366***	1.119***	2.521***	1.437***	7.103***
	(0.045)	(0.043)	(0.076)	(0.053)	(0.093)
Obs	1340	1340	1340	1340	1340

SUMMARY OF HETEROGENEOUS EFFECTS

- (Almost) no significantly different effects across
 - Children's gender, Children's ethnicity
 - Mother's education, Family income
- **Family status** is very important for the effect of VIDA: there are very strong positive effects for children living with both of their parents, whereas there are no effects for children living with a single parent

ADDITIONAL ANALYSES

- We find a few differences between municipalities
- We investigate differences between daycare institutions with many socially disadvantaged children (>40%) and with fewer
- Only significant differences for emotional symptoms, but in different directions for VIDA Basis and VIDA Basis+

SENSITIVITY ANALYSES (1)

- We use a different method to estimate the effects
- Main effects are very similar
- Main effects increase slightly when including background characteristics
- Background characteristics have expected effects (compared to previous studies):
 - Girls score higher than boys
 - Parents' education improves scores

SENSITIVITY ANALYSES (2)

- How quickly does the effect appear?
- Analyzing separately 2011-2012 and 2012-2013
- We can include more children in these analyses
- The overall pattern is confirmed, but the effects during the two subperiods are smaller and most of them are not statistically significant
- For the second subperiod, this may be due to age effects

DATA ON COGNITIVE MEASURES

- In addition to the socio-emotional skills (non-cognitive) measured by the SDQ scale, we also have measures of cognitive skills
- The questions are inspired by the EPPE project (and QCA – the Qualifications and Curriculum Authority)
- First, the data from these questions have been used to construct indices of cognitive skills (this is done by an external researcher using Rasch models)

ANALYSIS OF COGNITIVE MEASURES

- We analyze the indices constructed this way, using the same method as for the SDQ scores
- The indices summarize the answers from many questions into one single value, but this also reduces the variation in the data

RESULTS ON COGNITIVE MEASURES, VIDA BASIS

	Language competence	Mathematical competence	Science competence	Cultural competence
VIDA	-0.123	-0.194	-0.018	-0.012
	(0.132)	(0.218)	(0.145)	(0.130)
Time	2.643***	2.667***	0.729***	0.999***
	(0.079)	(0.144)	(0.115)	(0.088)
Constant	0.308***	0.560***	0.950***	1.104***
	(0.036)	(0.059)	(0.035)	(0.035)
Obs	2549	2516	2509	2513

SUMMARY OF EFFECTS ON COGNITIVE MEASURES

- We find no effects on the cognitive measures (from neither VIDA Basis nor VIDA Basis+)
- This is the case for measures on both cognitive skills and learning competences
- Analysing the two subperiods separately, we also find no effects

COULD ANYTHING HAVE GONE WRONG IN THE ANALYSIS?

- Other interventions at the same time as VIDA in three of four municipalities
-> *potential downward bias of effects*
- Turnover of daycare teachers – real **dosage**?
-> *potential downward bias of effects*
- Systematic differences between responses in questionnaires among daycare teachers (e.g. when using the SDQ scale)
-> *but probably at random*

WHAT DID WE NOT ANALYZE (YET)?

- How effects depend on structural quality (e.g. the stability of staff, the staff-child ratio, etc.)
- - could be analyzed based on the survey information about daycare institutions, teachers, and managers
- Long-term effects
- - could be done as time goes by

- ... plus lots of other things

CONCLUSIONS

- It is possible to improve children's socio-emotional skills through an indirect intervention – i.e. by training daycare teachers
- The VIDA Basis intervention was more efficient than the VIDA Basis+ intervention (involving parents)
- However, it did not succeed in additionally improving the socio-emotional skills of the most disadvantaged children (i.e. no extra effect)
- It did not succeed in improving cognitive abilities