9. Effectiveness of Dutch targeted preschool education policy for disadvantaged children: Evidence from the pre-COOL study

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PERSISTENT EDUCATIONAL DISADVANTAGES[1]

Persistent educational inequalities are a major concern in Dutch society. Despite decades of educational priority policy, the gaps in educational achievement between mainstream (native-born) children and children from low-income Dutch families and non-Western immigrant families remain substantial. Although some intergenerational upward social mobility has been reported, which is higher in immigrant groups than in native low-income groups, the basic picture remains remarkably stable over the years (Roeleveld et al. 2011). According to the aforementioned nationally representative study, differences in language and cognitive skills assessed shortly before the start of formal primary education between the ages of five and six years amount to more than one standard deviation when native mainstream children are compared to non-Western immigrant children. These differences are strongly related to achievement in core school subjects such as reading comprehension and mathematics, and early differences in these school skills between children from different social and cultural groups do not diminish (reading comprehension) or diminish only slightly (mathematics) during primary school (Levels and Dronkers 2008; Roeleveld et al. 2011). The consequences are far-reaching because achievement in these core subjects at the end of primary school at age 12 strongly determines allocation of students into secondary education tracks (Blossfeld and Timm 2003; Van de Werfhorst and Mijs 2010). This chapter gives a concise overview of the policy approaches implemented to combat educational disadvantages in the Netherlands in the past decades,

and how and why the emphasis has shifted towards intervention in early childhood. Next, the chapter discusses the contested initial findings on the effectiveness of this policy shift. Finally, evidence is reported from a recent longitudinal study on the effects of the current early childhood education and care (ECEC) policy for two to six year olds, the national pre-COOL[2–5] cohort study.

EARLY POLICIES TO COMBAT EDUCATIONAL DISADVANTAGES

The history of policies to combat educational inequalities in the Netherlands goes back to the 1960s. Sociological studies provided a strong impetus for education policy aiming at equity by revealing how social class and gender inequalities in educational attainment had persisted over several generations (Matthijssen and Sonnemans 1958; Meesters et al. 1983). In the spirit of the 1960s, the idea emerged that a large pool of talents was not being employed sufficiently to the benefit of both individuals and society (Van Heek 1968). As a result, several school reforms were introduced. At the institutional level, the so-called Mammoth Act became operative in 1968, introducing new secondary school types and leading to the formation of comprehensive secondary schools with one- or two-year bridging periods to postpone the allocation into tracks, and with ample opportunities for upstreaming and accumulating diplomas. During the past decades however, the institutional reforms initiated by the Act have been partly withdrawn. Broad comprehensive schools for secondary education are rare nowadays, as is the two-year bridging period (Inspectorate of Education 2014); and opportunities for upstreaming have been limited, resulting in the current system with relatively early sorting of children at age 12 into two main secondary education tracks: a general-academic and a vocational track. Several reforms were also introduced at the primary school level. These reforms included the use of standard assessments to avoid social class biases in schools' recommendations for secondary education.[2] Schools serving a relatively large proportion of disadvantaged children – initially mainly children from native-born, low-income, working class homes, but later increasingly also the offspring of guest workers from Morocco and Turkey along with children from families coming from the former Dutch colonies in the Caribbean – received extra money to enable smaller class sizes, the appointment of remedial teachers, and the introduction of new instruction methods (for example, for Dutch as second language).

Unlike policies in other countries such as Head Start in the United

States, early childhood education was not a main focus of these reforms. Interest in early childhood as a phase for interventions to combat inequalities increased when evaluations of the aforementioned reforms reported disappointing results (Scheerens 1987) and showed that social class differences in cognitive and social-emotional skills were already established at an early age and did not decrease during primary school (Leseman 1989). In the 1990s, first home-based programmes were introduced to involve parents of young children in stimulating their children's cognitive and social-emotional development. Evaluations showed partial effectiveness, but also revealed that Dutch language skills could not be effectively improved by implementing home-based programmes in non-Dutch speaking families (Van Tuijl et al. 2001). As a next step, centre-based programmes were introduced in the existing playgroup system for two-and-a-half to four-year-old children and in the kindergarten classrooms of primary schools for four to six year olds, after the previously independent kindergartens had been merged with primary schools in 1985. The playgroup system was initially a universally accessible welfare service providing safe spaces for play and social interaction for two and a half to four year olds during a few half days per week and existed next to the child day care system for zero to four year olds providing support for families with two working parents. With the expansion of the Dutch day care system after 1995, following an increase in labour market participation of Dutch mothers, the population served by the playgroup system changed. Children from middle class homes increasingly used full-time day care, with children from lower class and immigrant families remaining the main users of the half-day playgroups. Participation of these groups of children, deemed at risk for educational disadvantage, was encouraged increasingly along with an increasing emphasis on the educational function of the playgroups, turning the playgroup system into a preschool system for two and a half to four year olds preceding the kindergarten that serves all children from age four to age six.

CURRENT DUTCH EARLY CHILDHOOD EDUCATION POLICY[3]

The current early childhood educational priority policy was established around the year 2000. Following the recommendations of an advisory committee of national education experts, the national government invited curriculum development institutes to design developmentally appropriate education programmes for preschools and kindergarten classrooms, both together spanning the age range from two and a half to six years. These programmes, or 'methods', provided state-of-the-art examples of

playful education activities in the areas of language, literacy, and maths; suggested a planned curriculum for implementing these activities through the day, the week, the year, and the whole three-year period (assuming close collaboration between preschools and the kindergarten departments of primary schools); and provided teacher professionalization. Along with implementing these programmes, preschools and kindergartens were facilitated to hire extra staff to obtain a staff-to-children ratio of 1:8 in preschool and 1:15 in kindergarten. Evaluation of these two programmes in two independent studies using a quasi-experimental pre-test–post-test design showed at least partial added value compared to treatment as usual, with small- to medium-effect sizes according to Cohen's (1992) criteria (De Goede and Reezigt 2001; Veen et al. 2000). For part of the control children, treatment as usual meant that they had spent some time in low-intensive regular playgroups from age two and a half to age four; for all control children, that they had attended regular kindergarten without a special education programme in classrooms with a regular group size (27) and staff-to-children ratio (1:27) during two years from age four until age six.

Following these initial findings, the Early Childhood Education Ruling (Regeling Voor- en Vroegschoolse Educatie) became operative in the year 2000 requiring municipalities and primary schools to provide pre-school education to eligible children while using recognized education programmes such as the ones that were initially evaluated and a few new ones that were officially approved. Since this Ruling, municipalities have received subsidies to raise the participation of eligible children in centre-based early education and care provisions, to increase the number of places and hours per week available for these children in preschools for two and a half to four year olds (and since 2010 also in day care centres for zero to four year olds), to lower the age of entry to two years, and to improve structural quality conditions. Ambitious targets were set in terms of outreach and these were largely met according to recent reports (Veen et al. 2012; Inspectorate of Education 2014). Although no exact numbers are available, the number of eligible children attending an educational preschool or day care centre before kindergarten has risen substantially, and structural quality and emotional and educational process quality have improved, as will be discussed later in this chapter (note that participation in kindergarten was already close to 100 per cent before the ruling became operative). However, a key question remains: does early childhood education as currently implemented in the Netherlands effectively prevent or reduce early developmental and educational disparities? This issue has been contested ever since the start of current early childhood education policy.

Figure 9.A1 in the online appendix provides a schematic overview of

the 'split' ECEC system in the Netherlands along with estimates of the percentages of children attending the different (and sometimes combined) forms of ECEC. There are three main components (see also van Schaik et al. forthcoming).

1. The day care system for zero to four year olds (and the related after-school care system for four to 12 year olds) has been privatized since 2005. About one-half of the day care providers work for profit; the other one-half are previously non-profit foundations that have been privatized. Day care is universally accessible, but fees are relatively high. Families receive a means-tested voucher (tax allowance) that covers on average about one-third of the costs, but only if both parents are working or following a course of study that will improve their labour market position. Municipalities can subsidize parents who do not meet these criteria if use of day care is deemed in the interest of the child. In the past years, an increasing number of educationally disadvantaged children have been enrolled in day care. Day care before age four is used by almost 50 per cent of the zero to four year olds. About 13 per cent attend a day care centre that implements a targeted education programme. Day care centres provide full-day (10 to 12 hours) care during five days per week. Modal use is two full days per week.
2. The preschool system for two and a half to four year olds is run mainly by municipal welfare organizations and occasionally by day care organizations or primary schools. It receives supply subsidies from the municipalities; occasionally preschools start at age two. Preschools are also universally accessible (every child is entitled to participate), but ask for an income-dependent fee from families. For children targeted by the national educational priority policy, fees are zero or very small; real costs are covered by the subsidy to municipalities within the Early Childhood Education Ruling. Preschools in areas with a high representation of disadvantaged families serve almost exclusively children from these communities. Preschools are used by almost 35 per cent of two and a half to four year olds. About 22 per cent follow a targeted education programme implemented in the preschool. Preschools provide a half-day programme (2.5 hours per day). Regular use is two half days (five hours in total), but for children targeted by educational priority policy, modal use is four half days (ten hours in total).
3. The kindergarten system, integrated in the primary school system since 1985, starts at age four. Children are entitled to enrol right after their fourth birthday; attendance is compulsory from age five. Kindergarten is universally accessible and free of charge. In areas with a high representation of low-income and immigrant families, the proportion of

disadvantaged students can be rather high. In response to this, some kindergartens implement targeted education programmes along with extra staff, and this is usually carried out in collaboration with the targeted preschool in the same neighbourhood. Kindergarten use is close to 100 per cent for four year olds and 100 per cent for five to six year olds. Kindergartens provide a morning and afternoon programme for all children during five days a week (with a free Wednesday afternoon) for a total of 25 hours per week.

PREVIOUS EVALUATION STUDIES

Over the years, the initial quasi-experimental evaluation of two of these programmes has been followed by a number of studies on the effectiveness of these and other educational programmes for disadvantaged children implemented in preschools and kindergartens (for reviews, see Doolaard and Leseman 2008; Leseman and Veen 2016). Most studies reported zero results, but lacked methodological rigour. The vast majority of studies used a retrospective post-test only design. Participants were children who had entered primary school and were assessed in the areas of language and maths for the first time at the age of five or six (in the second grade of the kindergarten department) or at the age of six or seven years in the first grade of primary school. The preschool trajectories of these children were then reconstructed using information from the schools' intake records and occasionally also parent reports to determine whether children had been participating in a preschool and kindergarten classroom with a targeted education programme or not (and, instead, attended a playgroup, day care centre, or kindergarten classroom without such a programme). Information obtained in the same way on the family's socio-economic status (SES) and ethnic cultural background was used to control for selective referral and placement. These studies have been criticized for exerting insufficient control over selective placement (referral to targeted preschools is frequently based on positive screening for language delays at the infant-toddler health centres around age two), home background effects (SES and ethnic background are rather unprecise indicators of the actual home learning environment), implementation quality of the programmes that were evaluated retrospectively (no precise data on age of entry, intensity of participation, or degree of programme implementation were available), and possible spillover of the experimental treatment to the comparison preschool and kindergarten classrooms.

One of the earlier evaluation studies used a prospective cohort-sequential design with latent growth modelling to follow a small sample

(N = 91) of disadvantaged, mostly immigrant children from age two and a half to age six participating in preschools and kindergarten classrooms (De Haan et al. 2013). About one-half of the preschools in this study reported working with an approved education programme focusing on language, emergent literacy, and emergent maths skills through the planned provision of instruction in small groups. The other half did not use such a programme, but were actually found to provide similar activities as well. In addition to determining the use of a targeted education programme, the study conducted fine-grained classroom observations focusing specifically on the occurrence of teacher-initiated instructional activities in the domains of language, literacy, and maths. The main results were twofold. First, observations indicated an, on average, low occurrence of the intended instructional activities and no difference in this respect between classrooms working with and without an official education programme, suggesting not only low implementation fidelity of the education programme but also spillover of the principles and activities of such programmes to treatment-as-usual arrangements. Second, there was a high degree of variation between classrooms in the occurrence of instructional activities; and, importantly, this variation had a statistically significant relation to differences among children in growth of vocabulary, emergent literacy, and emergent numeracy. According to the observations, the more instructional activities were provided, the more rapidly children progressed in these domains with results showing medium-effect sizes (De Haan et al. 2013).

THE PRE-COOL STUDY

The pre-COOL longitudinal cohort study was launched in 2009. One of its purposes was to settle the issue of effectiveness of ECEC as a means to combat early educational inequality. The study was commissioned by the National Ministry of Education, Culture, and Sciences and the Dutch Science Foundation and conducted by a consortium of the Kohnstamm Institute of the University of Amsterdam, the Institute of Applied Social Sciences, Nijmegen, and the Department of Child, Family, and Education Studies of Utrecht University.

The choice of a cohort study instead of a prospective experimental study with random assignment to experimental and control conditions was due to the fact that, in the meantime, the vast majority of Dutch two to four year olds (85 per cent by then; see Veen and Heurter 2010) used some form of ECEC before entering kindergarten at age four, whereas nearly 100 per cent used kindergarten from age four to age six. This severely limited the

possibility of finding an appropriate control group. Moreover, random assignment was not deemed feasible because the vast majority of the playgroups in the Netherlands serving disadvantaged children had become preschools working with approved education programmes. To determine the added value of ECEC use, a two-fold strategy was applied. First, ECEC centres were sampled that represented a wide variation in region of the country, urban versus rural, type of provision (day care, playgroup, preschool), structural and process quality, curriculum, and the use of approved education programmes (see above). In total, 263 day care centres and preschools agreed to participate in pre-COOL (a positive response rate of 52.6 per cent). Second, within centres, a cohort of children was selected in which roughly one-half of the children represented a typically developing group of children without socio-economic, ethnic-cultural, or linguistic disadvantages according to current criteria of the national education policy. These could serve as a norm group to which the development of disadvantaged children could be referenced. Details of the sampling procedures have been reported elsewhere (Mulder et al. 2014; Slot et al. 2015).

A next challenge was to find adequate measures of children's initial cognitive and social-emotional skills at the planned starting age of two years. Moreover, measures should be chosen that could be used throughout the entire preschool period until age six. Based on an extensive literature review, the choice was made to focus on age-appropriate skills that can be considered 'learning skills'; that is, skills that help children to learn and develop from the educational opportunities in a broad sense provided through ECEC. At the first measurement wave around the average age of two years and three months, 2635 children were tested; at the second measurement wave around age three and a half, an additional 626 children were added to the cohort who had started later in ECEC classrooms (around age three). Children were tested with an extensive battery of tests administered through laptop computers and tangible play materials in short playful sessions (for an overview, see Mulder et al. 2014 and Verhagen et al. 2016). In the language domain, tests of (Dutch) speech perception, vocabulary, sentence comprehension, and verbal short-term memory were used, all presupposed to support further language learning from ambient speech and discourse (Newman et al. 2006; Messer et al. 2015). In the cognitive domain, tests of spatial short-term memory, spatial working memory, verbal inhibitory control, and selective-sustained attention were included – measures of executive functions known to be related to cognitive development, knowledge acquisition, language learning, and behavioural control (Diamond et al. 1997; Gerhardstein and Rovee-Collier 2002).

In the domain of affective control, delay of gratification tasks were used which can be regarded as predictors of emotional and behavioural

self-regulation (Kochanska et al. 2000). In addition, parent and teacher ratings of focused attention, effortful control, work attitude, social competence, and externalizing–internalizing behaviour were obtained with shortened forms of standard instruments such as the Early Childhood Behavior Questionnaire (ECBQ; Putnam et al. 2006) and the Brief Infant and Toddler Social and Emotional Assessment (BITSEA; Briggs-Gowan and Carter 2001). For part of the cohort ($N = 735$), tests were continued at the third and fourth measurement wave at age four years and five months and five years and eight months, respectively. Results of these tests are not reported in this chapter. In addition, a new series of tests was added to measure emergent school skills using tests of the widely used student monitoring system developed by the national educational testing service CITO along with several other tests that are also not reported in this chapter. For the rest of the cohort ($N = 2526$), only the CITO tests were used at waves three and four.

Classroom observations were conducted twice in the period before transition to the kindergarten department of primary school between children's ages two and three and three and four years, respectively. For logistic reasons, observations were conducted only in classrooms with at least four children who had been tested at waves one and two. Classroom observations were conducted using the Classroom Assessment Scoring System, CLASS Toddler version (La Paro et al. 2011; Slot et al. 2015). Classroom process quality was evaluated on a number of dimensions constituting two broad domains: the emotional support provided (through a positive affective classroom climate, teacher sensitivity, and child-centredness) and the instructional support provided (through opportunities for learning and concept development, feedback, and language modelling). During the first observation round, observation measures were obtained for 271 classrooms (60.9 per cent of all classrooms) of which 45 per cent were in day care centres and 55 per cent in preschools; during the second observation round, for 228 classrooms (51.2 per cent) of which 44.5 per cent were in day care centres and 55.5 per cent in preschools. In addition, teacher questionnaires were sent out to all classrooms twice requesting information on structural characteristics of the classrooms (group size, staff-to-children ratio, group composition), teacher characteristics (pre-service training, work experience, work satisfaction), organizational characteristics (provision of in-service professional development, team cohesion), implemented curriculum (frequency of pretend play, language, maths, and science activities provided), and the use of one of the officially approved education programmes referred to above (for further details, see Slot et al. 2015). Information through teacher questionnaires was obtained for 295 classrooms (66.2 per cent) at the first and 253 (56.9 per cent) at the second

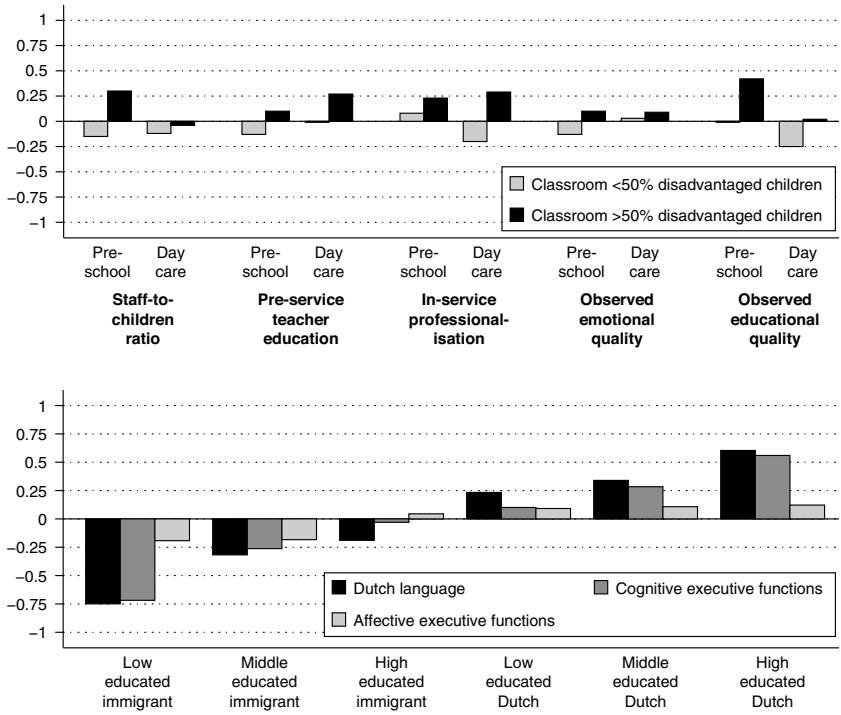
measurement wave; overlap of classrooms with both observations and teacher reports was about 60 per cent.

Finally, information on children's background was obtained through parent questionnaires, teacher reports per child, and centre records concerning educational attainment of the parents (used to construct a measure of the family's SES), immigrant status, ethnic-cultural background, and home language use (along with several other characteristics not reported here). Due to non-response, information from teachers and centres on these characteristics was used to complete the data. The final positive response rate on core measures was about 75 per cent.

FIRST FINDINGS OF PRE-COOL

This section reports part of the first results; additional initial findings are reported in Leseman and Veen (2016), Mulder et al. (2014), Slot et al. (2015), Verhagen et al. (2016), and a number of technical reports. Further results will become available in the years to come and will include data on the effects of kindergarten quality. An important first finding of the pre-COOL study is shown in the first graph in Figure 9.1 (based on Van Schaik et al. forthcoming). This figure shows both observed process quality and report-based structural quality and curriculum characteristics of the classrooms attended by the pre-COOL children broken down by type of provision and proportion of disadvantaged children in the classroom. The figure clearly shows that, in the Netherlands, ECEC classrooms for two to four year olds with a larger proportion of disadvantaged children provide higher process and structural quality with a stronger curriculum emphasis on pre-academic activities and guided (pretend) play. Preschools, attended mainly by disadvantaged children, provide an overall higher quality than day care centres, but day care centres with a larger proportion of disadvantaged children provide higher quality than day care centres with a smaller proportion of disadvantaged children. These results indicate that the targeted preschool policy in the Netherlands succeeds in providing higher quality ECEC to those who need it most.

A second important finding is shown in the second graph in Figure 9.1, presenting the *z*-transformed scores on a number of the cognitive and language tests used in the study at the first measurement wave, at age two years and three months broken down by the combination of parental education and non-Western ethnic minority status. The figure shows that, at age two years and three months, the differences between groups of children according to background are already quite large, amounting to 1.5 standard deviations for Dutch language skills and 1.3 standard



Note: Presented in mean *z* scores.

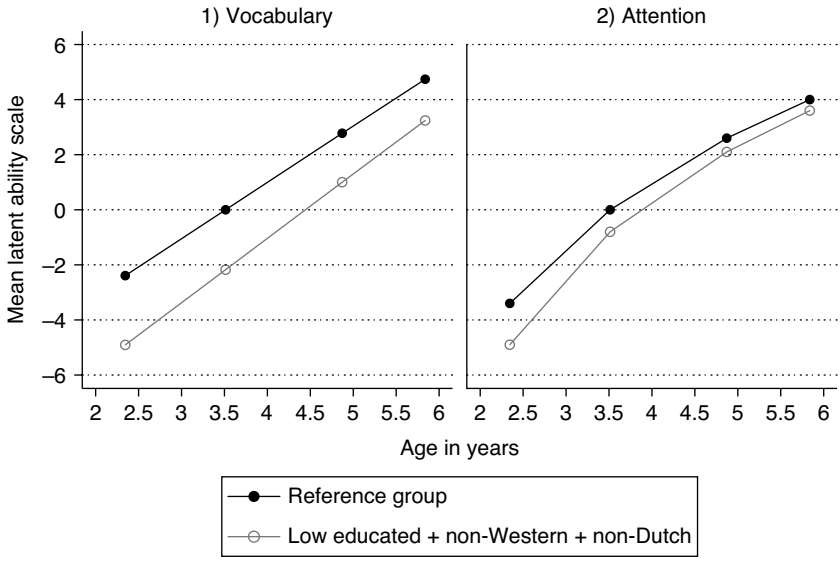
Figure 9.1: Structural quality characteristics and observed emotional and instructional quality of day care and preschool classrooms serving disadvantaged children (first graph) and language skills, cognitive executive functions, and affective executive functions at age 2 years and 3 months by parental education level and non-Western ethnic background (second graph)

deviations for selective attention and related executive functions when the most disadvantaged group is compared with the most advantaged group.

Latent growth modelling was applied for Dutch receptive vocabulary and selective attention using all available data at waves one to four with a varying sample size of $N = 735$ (waves three and four) to $N = 2635$ (wave one) and $N = 3361$ (wave two). The analysis proceeded in two steps (for more details, see Leseman and Veen 2016). First, measurement models

of the test items were estimated using an item response theory (IRT) approach and Full Information Maximum Likelihood (FIML) estimation to deal with planned and randomly missing values. Items were modelled as indicators of latent factors representing the intercept and slope of the underlying latent skill (vocabulary, selective attention). Items that overlapped between measurement waves were used to calibrate the other items in terms of item difficulty. Corrections for differences in age of testing were included in the models. Model estimation was done with Mplus 7 for categorical data (Muthén and Muthén 1998–2012). For vocabulary, a linear model fitted the data best, spanning a period of about three and a half years in which children attended ECEC, including kindergarten, before starting first grade of primary school. For selective attention, a quadratic model was found, indicating rather rapid growth between the ages two years and three months and three and a half years that levelled off thereafter. Second, indicators of group membership of the children were added as regression terms to examine differential growth. The regressions showed that children's background characteristics correlated with the intercept in the expected direction, indicating substantial differences between groups in their initial level. Several partially overlapping group divisions were tested: children from low-educated families (maximum level of education of their mother: preparatory vocational training) versus children from higher educated families; children from non-Western ethnic-cultural (for example, Turkish, Moroccan, Surinamese, Antillean, Somalian) background versus children from native-Dutch and non-Dutch Western (British, German, French) background; children speaking other languages next to, or instead of, Dutch at home versus children speaking only Dutch at home.

Overall, the patterns of growth showed statistically significant small to medium-sized catching-up effects for disadvantaged children. For vocabulary, the biggest catching-up effect was found for children with a non-Western ethnic-cultural background (Cohen's $d = .48$; Cohen 1992). For selective attention, the biggest catching-up effect was found for children of low-educated mothers ($d = .46$). A further descriptive analysis, based on exported latent intercept and slope scores, was conducted to compare the three overlapping disadvantaged groups with a more 'pure' reference group that was considered non-disadvantaged with respect to all three criteria (that is, children who had middle to high-educated parents, a Western ethnic-cultural background, Dutch as home language), revealing stronger catching-up effects with medium to strong effect sizes for the comparison of the most disadvantaged children (low education level of the parents, non-Western ethnic-cultural background, other home language than Dutch) with the 'pure' reference group (roughly estimated at $d = .8$



Notes: Disadvantaged children defined by combined low parental education, non-Western background and non-Dutch home language. Reference group: native Dutch children of middle- to high-educated parents with Dutch as only home language.

Figure 9.2: Average growth curves of Dutch vocabulary (Graph 1) and selective attention (Graph 2) for groups of disadvantaged children

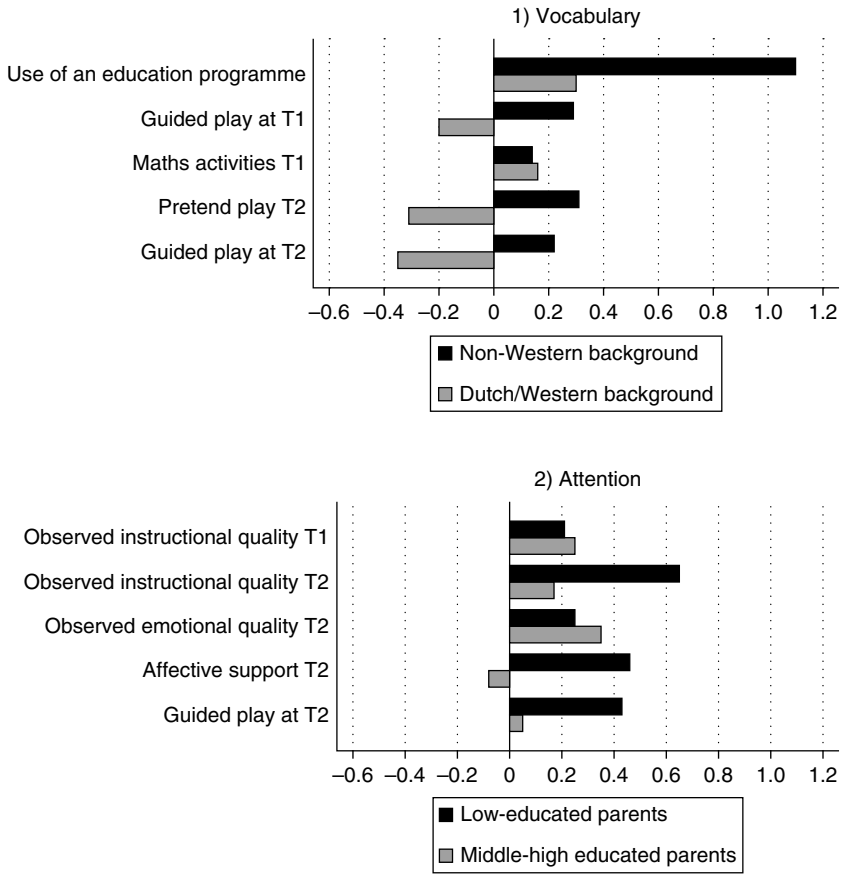
for vocabulary and $d = .7$ for selective attention). The results are displayed in Graphs 1 and 2 in Figure 9.2.

Next, models were tested in which the observed and reported quality characteristics of the early childhood classrooms were included as regression terms while controlling for children's age at testing, gender, and family background. Regressions of both the intercept and the slope on the quality characteristics were modelled. Overall, few significant effects were found in the whole sample. To test whether effects of quality characteristics were moderated by disadvantaged status, multi-group analyses were conducted to compare effects across groups of children with and without disadvantages. Only a few significant, small positive and sometimes negative effects of the quality characteristics were found for non-disadvantaged children, but small to medium (and occasionally even strong) positive effects for disadvantaged children. Effects on the intercept in the samples of disadvantaged children were generally negative in line with the finding that children with lower initial scores on vocabulary and attention attended classrooms

with higher quality, as discussed before. Note that effects on the slope, in contrast, are related to the observed catching-up effects for disadvantaged children and were all positive. For vocabulary, teacher-reported provision of maths activities (small effect, not fully consistent), guided pretend play (medium effect), and, in particular, the use of a targeted education programme (strong effect) appeared to be significant predictors of growth in disadvantaged children. Note that the effects of the quality characteristics were tested separately and only controlled for background characteristics and intercept. Thus, the effects do not add up, but may partially overlap. For selective attention, observed instructional quality (medium to strong effect) and, to a lesser extent, observed emotional quality and provided guided play (weak to medium effects) were significant predictors of growth – partly also in the group of non-disadvantaged children though smaller in size in this group. An overview of the standardized effects is presented in Graph 1 and Graph 2 in Figure 9.3.

DISCUSSION

The design of the pre-COOL study does not allow for strong conclusions about the effectiveness of participating in centre-based ECEC for developmental and educational outcomes. The catching-up effects that were found cannot be attributed unambiguously to participation in ECEC because no meaningful comparison could be made with equivalent children without any ECEC experience. Although the possible influence of home factors was controlled, the measures used as covariates were rather global (education level of the parents, ethnic-cultural background, home language). Possible effects on skills growth of more subtle aspects of the home learning environment with increasing age of the children cannot be ruled out. The finding that the quality of ECEC correlated with variation in growth for disadvantaged children (thus with differences among children in the degree of catching up) provides tentative support for a causal interpretation and, indeed, suggests added value of participating in high-quality ECEC for these children; but possible effects of other factors cannot be ruled out either. Two studies, one involving a large sample in the United States (Farkas and Beron 2004) and one with a large sample in the German states of Bavaria and Hessen (Ebert et al. 2013), followed the language development of disadvantaged children in a comparable age range who did not use ECEC until age five (United States) or who used provisions of low intensity and low quality from age three to age five (Germany). Both studies found a further *increase in the gap* between advantaged and disadvantaged children in language skills from age three



Notes: All coefficients statistically significant at $p < .05$. Controlling for intercept effects, gender, SES, and home language (Graph 1). Controlling for intercept effects, gender, ethnic background, and home language (Graph 2).

Figure 9.3: Overview of significant standardized effects of observed and reported quality characteristics of ECEC on growth of vocabulary in children with a non-Western ethnic-cultural background (Graph 1) and on growth of selective attention in children of low-educated parents (Graph 2)

to age five. Likewise, in a study with a small sample of younger children in the United States who did not attend day care or preschool, Fernald et al. (2013) found that SES-related differences in vocabulary and language processing efficiency (referring to an attention-based language-learning

mechanism) substantially increased between the age of one and a half and two years. In a Dutch study, small samples of bilingual Moroccan-Dutch and Turkish-Dutch pre-schoolers were followed from age three to age six using equivalent parallel tests to assess the development of Dutch and first language vocabulary. A catching-up effect was found for Dutch vocabulary relative to a native Dutch reference group, possibly due to increased participation in Dutch-language ECEC, but also a further *increase of the gap for first language vocabulary*, which was only supported by first language input at home and not in ECEC (Van Dijk et al. 2015). Taken together, these findings can be regarded as supportive circumstantial evidence indicating that the catching-up effects found in the current study probably do not reflect mere 'natural' development or 'spontaneous recovery', but can be regarded as a consequence of the use of centre-based ECEC.

It could be argued that the catching-up effects are relatively small. Indeed, the remaining differences in Dutch vocabulary (but not in selective attention) are still substantial close to age six and shortly before the start of formal instruction in primary school. It should be noted, however, that the current study shows that catching-up effects relative to a 'pure' non-disadvantaged reference group are bigger when more risk factors are present in the target group. It should also be noted that ECEC quality characteristics (especially in the instructional domain) that proved relevant for decreasing the early educational and developmental gap were, on average, still in the low to medium range (Slot et al. 2015), whereas findings reported elsewhere have shown that the implementation of approved education programmes is, overall, far from optimal and especially of low fidelity in classrooms with a smaller proportion of disadvantaged children (Doolaard and Leseman 2008; Leseman and Veen 2016). All these findings indicate that there is room for improvement. Finally, it should be noted that current ECEC for disadvantaged children in the Netherlands is of relatively low intensity and that most children start at a relatively late age. Thus, both an earlier start and perhaps a more intensive programme are possible ways to enhance the effectiveness of preschool education priority policy.

The current study did not find clear effects of ECEC quality on non-disadvantaged children's development. This should not be taken as indicating that ECEC does not affect the development of these children at all, but only that the current level of and variation in quality of Dutch ECEC cannot be related systematically to inter-individual differences in the growth of vocabulary and attention skills in these children. The average quality of Dutch provisions, which are based on international standards as represented in the CLASS observation instrument, is comparable to that found in other studies in Europe and the United States (Slot et al. 2015).

Therefore, the lack of clear correlations between the quality measures and developmental outcomes in the general sample may be explained by the low intensity of ECEC use in the Netherlands, which is modally 18 hours in day care (but for many children less) and ten hours per week in preschool (but for non-disadvantaged children only five). In a separate study on part of the pre-COOL data concerning day care centres only, Broekhuizen et al. (forthcoming) contrasted low intensity of use (less than two days) with high intensity of use (three days or more) and found a clear positive effect of observed emotional quality on behaviour (less externalizing behaviour with high quality) when use was intensive, but no effects when use was low-intensive. The relatively low intensity of use is related to the Dutch part-time work culture.

There are a number of dilemmas for policy. Whereas disadvantaged children do appear to profit from higher quality ECEC that can partly compensate for a lack of resources and stimulation in the home environment, other children apparently do not. This may be related to low intensive use as was argued above. System-wide quality improvement of current ECEC provision in the Netherlands and expansion of a universally accessible and (largely) free of charge, high-quality system for all children to younger ages than the current starting age of universal kindergarten at age four may therefore not be very efficient from an economic point of view unless use of ECEC before age four intensifies significantly and is accompanied by significant quality improvement – especially in the domain of education quality. The catching-up effects and the differential relations between skill growth and quality characteristics for disadvantaged versus non-disadvantaged children found in the pre-COOL study are in line with recent studies on the effects of universal ECEC systems on the population scale that revealed no or only modest effects of massively increased access to universal provision in the general population, but robust positive effects on short- and long-term outcomes for disadvantaged groups (Datta Gupta and Simonsen 2010; Havnes and Mogstad 2014). Likewise, Akgündüz and colleagues (2015), in a review of the evidence, argue that economic returns on investments in ECEC depend largely on the compensation effects obtained for disadvantaged children. In this regard, the main foci of the Dutch preschool educational priority policy seem well chosen, and the current findings support a continuation of the targeted approach.

A major drawback of this targeted approach, however, is that it reinforces socially selective use of ECEC provisions. Indeed, in the Netherlands, disadvantaged children far more often attend preschools with a targeted education programme than non-disadvantaged children, whereas non-disadvantaged children far more often attend day care centres, although a

significant proportion of disadvantaged children can be found in day care centres as well (for example, 10 per cent of children with low-educated parents, 25 per cent of children with a non-Western immigrant background in the pre-COOL cohort; van Schaik et al. forthcoming), and these centres are also increasingly using an official education programme. Critics maintain that a targeted policy, through reinforcing selective use, stimulates early social and ethnic-cultural segregation, and this can be regarded as undesirable for many reasons (Vandenbroeck 2015). Moreover, the policy leads to a concentration of children with disadvantages in particular preschool classrooms, which, in itself, can have unintended negative side effects on children's outcomes (Schechter and Bye 2007; De Haan et al. 2013). It should be noted, however, that the concentration of children with disadvantages in certain preschools depends strongly on social-demographic factors and housing policy and not so much on education policy, and that it correlates highly with the concentration of low-income families and immigrants in certain neighbourhoods (Boterman et al. 2010). Current developments in the Dutch ECEC field towards a universal and integrated system are, as such, to be welcomed (Socioeconomic Advisory Council 2016), especially for reasons of integration and inclusion, but they run the risk of losing the specific focus on the needs of disadvantaged children and, thereby, part of the potential contribution of ECEC to society and the economy.

NOTES

1. Additional material for this chapter is provided in the online appendix at: https://sites.google.com/site/edulifeproject2016/phase-4-pre-school-education.
2. Interestingly, in 2015 the central role of objective standardized assessments in the primary school's recommendation for secondary education was abandoned in favour of a holistic assessment by the teacher in the final grade. Recently, the Inspectorate of Education has reported the alarming finding that social class bias in the transition to secondary education has increased since then.
3. Dutch Early Childhood Education Policy covers education in day care (zero to four year olds), preschool (two and a half to four year olds), and kindergarten (four to six year olds).

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