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Effects of a French remedial program on pupils' educational outcomes

Claire Bonnard, Jean-François Giret, Céline Sauvageot

Institute of Research in Education (IREDU), University of Burgundy-Franche-Comté, Pôle AAFE – Esplanade Erasme, BP 26513, 21065 Dijon Cedex, France

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Abstract : Few studies have examined the French "Networks for Specialized Assistance to Pupils in Difficulty" (Rased). In this article, we evaluate the impact of receiving Rased services in the first year of primary schooling on academic success. Using data from a national panel study, we find inconsistency in student selection within Rased. Using matching methods, our results reveal that pupils who benefited from the program school have a higher probability of grade repetition and obtain significantly lower scores on the third grade national assessment, particularly in mathematics, compared to pupils with similar characteristics who did not take part in the program. This impact seems particularly negative for pupils with less prior academic and behavioural difficulties

Keywords : Remedial program Educational outcomes Primary school, Labelling effect, crowding-out effect, Teacher effect, Propensity score matching

1. Introduction

Since its creation in 1990, the French remedial program "Réseaux d'Aide aux Elèves en Difficultés"[1] (Rased) has aimed to provide specific and differentiated services to pupils in difficulty who are enrolled in pre-primary and primary schools. These services are complementary and do not substitute classroom learning. Specialist teachers and psychologists help teaching teams inside or outside of the classroom take charge of the learning and behavioural challenges of pupils who have been identified by their teacher as in difficulty. Three types of services are offered: pedagogical, re-educative or psychological follow-up services. One of the characteristics of this remedial program is that admission decisions are decentralized to the level of each class, and there are therefore no norms at the national level. In fact, the teacher of each class must judge the difficulties of his or

[1] "Networks for Specialized Assistance to Pupils in Difficulty"

her pupils and determine who should benefit from this aid. This selection method risks creating two problems: student selection depends, on the one hand, on the judgement of the teacher, and on the other hand, on the availability of places in the program in each school (Gossot, 1997). While the Rased program covers the entire country, there are local tensions and trade-offs that happen within departments, which result in very different levels of availability within each region (Delaubier & Saurat, 2013). Furthermore, Rased's existing supply structure does not seem to be correlated with the socio-economic characteristics of departments.

To date, few evaluations of Rased's effectiveness have been carried out. Previous studies focused on local initiatives with limited samples of beneficiaries. Guillarmé and Luciani (2011), and more recently Liraud and Roditi (2016), found that the Rased intervention had a positive effect. However, this most recent study concerns one specific pedagogical experiment and shows a stronger positive impact for pupils with greater academic difficulties. Furthermore, this study included a limited number of pupils: only 25 pupils in difficulty in third grade, without a comparison group.

The only study where beneficiaries are compared with a control group is Mingat's 1991 study, which used a regional survey. However, this study looked at the GAPP program ("Groupe d'Aide Psychopédagogique"[2]), a remedial program preceding the Rased program, and highlighted strong variations in its functioning and negative effects in terms of student progress. The author proposed two possible explanations for this result: First, these pupils were deprived of classroom learning time, and second, they may have been subject to a "labelling" effect insofar as this program identifies them as "pupils in difficulty." Since this study, no other research has been conducted using national data with a comparison group.

In this article, we evaluate the effect of Rased services on academic success. More precisely, we focus on the effect of having benefited from Rased services in primary school on grade repetition and success on third-grade national evaluations. We use data from the "Primary Panel 1997", produced by the French Ministry of National Education. This panel followed a cohort of pupils who entered the first year of primary school in 1997 until their second year of secondary school. Interviews were conducted with a representative sample of 10,000 pupils in 1570 public or private schools. This survey includes information not only on the socio- demographic characteristics and academic progress of the pupils, but also on their skills and attitudes when entering the first year of primary school.

In the first section, we review the literature on the evaluation of remedial programs. Then, after discussing the data and methodology used, we determine which criteria were used to select pupils for the Rased program. Using the methodology pioneered by Mingat (1991) for

[2] "Psycho-pedagogical Support Group"

GAPPs, we identify several groups of pupils based on their success on first-grade assessments, language level, social skills, and classroom behaviours. Finally, we establish the impact of the Rased program on academic achievement by analysing first-grade repetition and the results of the third-grade national assessments.

2. Evaluations of remedial programs

Remedial programs for pupils in difficulty can take multiple forms. Notably, they differ by whether aid is given during or outside of class time. Below, we present quantitative evaluations of remedial programs in France and in other countries.

2.1. Programs conducted during class time

The first type of program offers pupils in difficulty a different division of instruction time in certain subjects during regular class hours. In this type of program, the pupils identified as in difficulty may be removed from the class in order to work in a smaller group or the class teacher or a teaching assistant may offer them pedagogical assistance within the classroom.

2.1.1. Evaluations of remedial programs in France

Mingat (1991) conducted one of the first studies on this topic. His study aimed to evaluate the GAPP program, which preceded the Rased program and where pupils identified by the teacher as having difficulties benefited from extra help outside of the classroom with a specialized teacher during school time. This study showed that, first of all, there was inconsistency and heterogeneity in the availability of this program to pupils. It was not necessarily the pupils with the most difficulties who benefited from the program. This was explained by the fact that, on the one hand, the selection made within the GAPP program depended on the academic history and socio-economic characteristics of the other pupils in the class. On the other hand, the administrative resources and personnel available differed from one GAPP to another, which caused there to be differing modes of selection of beneficiaries across regions.

Furthermore, it appeared that pupils having benefited from the GAPP program in first grade had significantly lower results in terms of improvement and academic success as compared to other pupils with comparable characteristics. The author explained these results as due to two main effects. Firstly, this type of program has a strong likelihood of creating labelling effects. By definition, the children selected for the GAPP program are explicitly identified by teachers as having difficulties. Teachers may then lower their expectations for these children, who in their turn become less motivated to learn and less invested in their work. Rosenthal and Jacobson (1968) have popularized this effect with the term “Pygmalion effect.” The second

explanation relates to the existence of a "substitution effect". The pupils, during the time that they receive assistance from the GAPP program, are not benefiting from regular instruction in class. Their learning time is therefore reduced in certain subjects, despite the fact that it is the pupils with the most difficulties who need the greatest amount of learning time.

In a more recent study, Piquée and Suchaut (2004) examined the program of "a supplementary teacher in the class," which was an experiment in one French department. This program consisted of putting a supplementary teacher in the third cycle classes of priority education schools, and also allowing class division for the pupils with the most difficulties. They showed that this program only had a weakly significant impact on student progress in mathematics and French in the third cycle. The effect was even negative for the pupils who were initially the weakest. One possible explanation given by the authors was the grouping of pupils by academic level. The formation of a group of the weakest pupils risks creating peer effects that are detrimental to student learning, in particular for those who present the greatest difficulties initially.

Based on a survey of teacher practices in France, Piquée (2007) analyses the effects of different pedagogical practices on pupils in difficulty, including peer tutoring, differentiated instruction and external assistance, on the academic success of pupils in first grade. The author shows that peer tutoring and differentiated instruction can have significant positive effects on student success, notably in mathematics. However, pupils in classes where the teacher systematically resorts to using Rased services have significantly weaker results than those pupils with teachers who make less use of Rased services. The author highlights that this result is more pronounced in mathematics than in French and also for those pupils who initially had less difficulty.

2.1.2. Evaluations of remedial programs in other countries

Programs with similar modes of application have been evaluated in other countries, most notably in the United States. This is the case for the program "double-dose" algebra that was put into place in Chicago public schools. This program consists of doubling the teaching time in algebra for pupils in grade nine who obtained a math score lower than the national median on their grade eight mathematics test. These algebra courses replace one of the student's elective courses, such as music or art. The objective of this program is to offer more teaching time in a subject where the pupils do not have the level of achievement judged as necessary in order to succeed in the regular curriculum and are therefore offered more instruction time with more suitable pedagogical methods to meet their needs. Nomi and Allensworth (2009) evaluated this program. They show that this program has a positive effect on scores in grade nine algebra and grade ten geometry for the beneficiary pupils. This effect is more pronounced for pupils who had less difficulty initially. However, this program did not have an effect on the

failure rate of these pupils, and could even have a negative effect for pupils who did not benefit from the program. This counter-intuitive result can be explained by the modification of class composition that results from this program, particularly through the creation of classes by groupings of achievement levels.

Furthermore, in a more recent study, Nomi and Raudenbush (2016) underline that this program has little or no effect on the achievement of "median-skills" pupils when, within a school, they are grouped with pupils at a lower academic level. Conversely, the effect of the program is significantly positive in schools where there is no pupil grouping. Moreover, when analysing the long-term effects of this same program, Cortes, Goodman, and Nomi (2015) find significant positive effects on student success in high school and also on post-secondary studies at university for beneficiary pupils. Taylor (2014) evaluates a relatively similar remedial program in Miami schools that increases instructional time in mathematics by reducing time in other subjects for pupils with difficulties. The author shows a positive impact of this program on short-term results in mathematics; however, he also finds a crowding-out effect of the program on other subjects, such as foreign languages. Furthermore, this positive effect in the remediated subject sharply decreases in subsequent school years. In this study, pupils were grouped with others with the lowest academic achievement during the program.

Other remedial programs consist of offering teachers a teaching assistant (TA) in order to help the teacher with the pupils who have the most difficulties and also allow for an improved learning environment within the class. Great Britain has particularly developed this type of aid. Based on a quantitative survey and observations within classes, Blatchford, Russell, Bassett, Brown, and Martin (2007) show that this type of program does not necessarily have significant effects on student success but allows for a better quality learning environment, notably by favouring student-teacher interactions. Farrell, Alborz, Howes, and Pearson (2010) com- piled the results of different academic studies analysing the impact of TA interventions on the success of pupils in primary school. They distinguish between two types of programs: interventions where TAs target pupils in difficulty and more global interventions where they help all the pupils in the class. They show generally positive effects when the TAs' interventions are targeted, especially for pupils who initially had problems with reading and writing. In contrast, the effect on student results does not seem to be significant when global interventions are assessed.

2.2. Programs outside of class time

Remedial programs can also take an "after-school" or "outside of school" form. Within these programs, pupils in difficulty are offered supplementary instruction time either after regular school classes or during school holidays.

2.2.1. Evaluations of remedial programs in France

In France, Goux, Gurgand, and Maurin (2017) study examines the "Coup de Pouce Clé" program in three school districts (Lille, Créteil, and Versailles). This program consists of proposing a 90-minute activity aimed at learning how to read to five pupils selected from first-grade classes every weeknight for the entire school year. Using a randomized experiment approach, the authors find that pupils who participated in this program did not present more elevated reading skills than other pupils with similar characteristics. It would seem, however, that this program did increase these pupils' appreciation of reading.

The programs for academic success ("les programmes de réussite éducatives," or PRE), put into place in France in 2005, have, for their part, the goal of offering individualized assistance, including scholastic, cultural, and health support, to the most disadvantaged pupils and their families. Again using an experimental approach, Bressoux, Gurgand, Guyon, Monnet, and Pernaudet (2016) found fairly mitigated results for this program. In fact, the evaluation did not find a significant effect on student success for beneficiaries of the program, and the only positive effect they found was on school attendance. Furthermore, the PRE did not appear to have an effect on the well-being or behaviours of the children as compared to the control group. The effect was even negative for certain dimen- sions, such as self-esteem and relationships with others. The authors explain these results with a possible "labelling effect." The authors highlight that the cost of this program per student is quite low, which may explain these results.

2.2.2. Evaluations of remedial programs in other countries

These types of remedial programs, and especially "summer schools," have become more common in recent years in the United States and in Europe. Based on a meta-analysis of 35 OST programs in the United States, Lauer et al. (2006) show that they can have a (modest) significant effect on success in mathematics and reading for pupils who have difficulties in these subjects. The authors stress that programs offering individual tutoring in reading seem to be the most effective. Other recent studies find relatively similar results.

In fact, Jacob and Lefgren (2004), using a regression discontinuity approach, illustrate that summer schools have a positive impact on achievement in both reading and mathematics for pupils in third grade in Chicago. The positive effect of summer schools persists after two years. However, the effect does not seem to be significant for pupils in higher grades. In Israel, Lavy and Schlosser (2005) evaluate a remedial program offered to the weakest performing high school pupils. In order to better prepare these pupils for university entrance exams, this program offers individualized assistance after class to these pupils from their own

teacher. The authors show that this program greatly increases beneficiary pupils' chances of completing their high school diploma.

Other remedial programs aim to offer schools supplementary resources or reallocate the school budget according to the number of pupils in difficulty. This is notably the case for the English program "Special Educational Needs," where each school determines which pupils are in difficulty and then resources of school budget are allocated for this pupils, who can put into place, depending on the nature of the student difficulties, individual assistance either within the class with the teacher or with a support teacher, or with an external specialist. Keslair, Maurin, and McNally (2012) attempted to evaluate this type of program. First of all, the authors show that the decentralization of decision-making to the school level causes the decision of whether a pupil will benefit from the program or not to depend on the scholastic level of the other pupils in the school. This can lead to situations where pupils are misclassified. Furthermore, they determined that this program had a non-significant impact on the academic performance of pupils with moderate difficulties in primary school. Likewise, they did not find evidence for the existence of a "spillover effect," as the pupils who did not participate in the program did not achieve higher scores as a result of better learning practices and a better learning environment. Multiple explanations were offered by the authors in order to understand these results. First of all, as already emphasized by other studies, they highlight that this type of program can lead to the stigmatization of the student. They also underscore that it is possible that teachers pay less attention to the pupil in class because they know that she or he is receiving extra help outside of class. Comparing the results of different remedial programs is challenging. These programs are strongly heterogeneous in both their content and modalities of application. Furthermore, they are difficult to evaluate because it is hard to find comparison groups, i.e. pupils with the same difficulties but who are not beneficiaries of the program. There is no consensus in the literature on the most effective methods for these types of programs. In France, regardless of the type of program, no previous studies have illustrated a significant positive result.

3. The present study

The aim of this study is to undertake a global evaluation of the Rased program using national data to identify a control group for the study. First, we question the basis on which the selection of pupils takes place within this program. These decisions are made at the local level and depend on each teacher's judgment, which may be influenced by the average level of their class. As a result, Rased selection may be very heterogeneous according to school context. Second, we evaluate the effectiveness of this program in boosting pupils' achievement.

The present study will address the following research questions:

1 By what criteria are pupils selected for this remedial program?

2 What is the impact of this program on the scholastic path and academic success of pupils in the short and medium term? Do pupils' initial academic levels differentiate these impacts?

4. Methods

4.1. Data

The data used are taken from the "Primary Panel 1997" produced by the French National Ministry of Education. This panel follows a cohort of pupils who enrolled in their first year of primary school in 1997, and follows them until their second year of secondary school. The sampling frame included all public and private schools. Using a stratified sampling approach, 1570 public and private schools were randomly selected. In each school, 10 pupils were chosen for the survey. The final sample size was approximately 10,000 pupils. According to Colmant, Jeantheau, and Murat (2002), the final sample is representative of the French population at both the level of the individual characteristics of pupils and the types of schools.

As part of this survey, the skills and competences of the children at the start of first grade one were assessed. Upon beginning first grade, each student was evaluated in five main areas of skills: general knowledge, verbal skills and familiarity with writing, logical skills and familiarity with numbers, concepts related to time and space, and behaviours related to paying attention in class. For the cognitive skills, a global score was constructed. For the evaluation of student behaviours, the teacher completed an observational grid for each student. Additionally, several other actors were interviewed in order to collect data on the pupils. First, school principals completed a questionnaire on the characteristics of their primary school (class size, type of school, etc.), pupils' educational back- grounds, as well as pupils' family environments. The dataset also includes the pupils' results on the third grade national assessment in September 1999 and 2000. This assessment includes a French language test and a mathematics test. We have information on ap- proximately 9500 pupils at the start of grade one and about 7700 pupils in grade three, which represents an attrition rate of 20%. Few studies have used this panel data (Grenet, 2010; Ichou, 2015; Piketty & Valdenaire, 2006). The ministry has also developed a more recent panel, but this data is not yet available for research purposes.

4.2. Measures

4.2.1. Remedial program

For each year of schooling, the data indicate if the pupil received Rased services or not.[3] We are aware that this binary measure is a limitation of our study. Indeed, on the one hand, we cannot distinguish between the different types of aid offered by this program (pedagogical, rehabilitative or psychological). On the other hand, the measure does not allow us to measure the intensity of the program for the participating pupils. A recent study by Piquée and Viriot-Goeldel (2016) shows that program intensity can differ even when it is relatively weak. In their sample, only a quarter of pupils participating in Rased received assistance for 25 h or more during the school year.

4.2.2. "Ability group"

There are no official national criteria that determine student selection for Rased. The circular explains in a very general manner that the pupils targeted by this program are those who "face persistent difficulties that disrupt their learning." Each teacher de- termines which pupils she or he judges to be in difficulty and to whom they can propose Rased services. In order to better identify the characteristics of pupils accessing Rased services, we have constructed "ability groups" of pupils within our sample. Following the example of the methodology used by Mingat (1991), we determine whether academic and/or behavioural difficulties exist for each of the pupils. Thus, in order to construct ability groups, we take into account:

1 The evaluation of the pupil's behaviour and social skills by his or her teacher. Specifically, teachers were asked to appraise pupils on their confidence in school activities, usual level of attentiveness, active participation in group work, speed and effectiveness in performing tasks, autonomy, ease in activities involving the control of gestures, fatigue during school activities, active participation and appropriate intervention in class conversations, and their anticipation and organization in the execution of a task.

For each item, the teacher had four possible responses: he or she has never noticed this behaviour, sometimes noticed, often noticed, or usually noticed. From these different items, a "behaviour score" was calculated using principal component analysis (PCA). We kept only the first axis, which accounts for 58% of the variance. We assume that pupils have "behavioural difficulties" when they obtain a score at least one standard deviation below the mean of all

[3] This question was posed to the school principal for each pupil

the pupils in the sample.

2 The scores from the skills assessment at the beginning of the first grade. We assume that these scores enable us to measure prior academic achievement. As before, pupils are considered as having academic difficulties if they obtained a score at least one standard deviation below the sample average.

3 The language competency of the pupil in comparison with the average level of his or her class. When the teacher has evaluated the pupil's language level as insufficient, he or she is considered to be in difficulty.

The correlations between these three dimensions are presented in Table A1 in the Appendix A. The significant correlation coefficients larger than 0.5 suggest that there is an important relationship between these three dimensions, as Mingat noted already in this 1991 study.

Using this information, four groups were created: a group with "substantial difficulties," which included pupils judged to have difficulties by all of these criteria; a group "with difficulties," which included pupils with difficulties in at least two of the three criteria; a group with "few difficulties," with pupils who had difficulties in one of the three criteria; and finally a group considered "without difficulties" by all of the three criteria. In our sample, 73% of pupils were considered "without difficulties," 14% with "few difficulties," 8% with "some difficulties," and 5% with "substantial difficulties."

4.2.3. Educational outcomes

First, we analyse the impact of this program on first-grade repetition. This information was obtained from a questionnaire addressed to school principals. This variable provides a measure of short-term academic achievement.

In order to examine the program's impact on academic success over the medium term, we look at pupils' results on third grade national assessments. It is important to measure the impact over the medium term as well as the short term because some studies point out that the effects of this type of program can decline rapidly over time (Taylor, 2014), while other studies (Mingat, 1991) show a persistent effect on academic achievement.

4.3. Analysis

In order to determine which characteristics were used to select pupils for Rased services, we estimate a probit model. In this model, we attempt to explain the fact of having participated in Rased or not during the first grade.

After analysing the selection factors for Rased, it is important to determine its effects on the scholastic path and academic success of pupils. First, we look at the effect of benefiting from Rased services on pupils' positions on their scholastic path the following year: first-grade repetition/specialized class, or second year of primary school. Next, we mobilize their results on the national French and mathematics tests in third grade in order to focus on the pupils' academic success.

Table 1

Socio-demographic characteristics of pupils benefiting or not from Rased.

	Rased pupils	Non-Rased pupils	All pupils (N = 8869)
% Foreign nationality	14.2%	4.4%	5.2%
% Family head's occupation: Executive profession	5.8%	17.1%	16.1%
% Family head's occupation: Unemployed	7.6%	2%	2.4%
% Enrolled in Priority Education schools	27.8%	10.6%	12.1%

When evaluating this program, it is important to take into account that pupils receiving Rased services are likely to have very different educational and socio-demographic characteristics than those who do not. In order to control for these different biases, we use propensity score methods. This method is generally used for the evaluation of special education services (Morgan, Frisco, Farkas, & Hibel, 2010; Sullivan & Field, 2013). First, a score[4] is calculated corresponding to the probability of pupils benefiting from the service based on their different characteristics. Second, from this score, pupils receiving Rased services are matched with pupils not receiving Rased services, allowing us to have relatively similar groups. Different methods can be used to form these groups, such as matching or weighting methods.

To determine the pupil's scholastic path after the first grade (repetition/specialization or transition to second grade) we use inverse weighting of the propensity score (ipw), since the variable of interest is binary. To analyse the pupils' scores on the third grade national French and mathematics tests, different methods are used: matching by the nearest neighbour, the nearest neighbours, and inverse weighting of the propensity score.[5]

We assume that the effect of Rased services may differ depending on pupils' prior academic and behavioural skills. In order to test this hypothesis, we conduct the same estimates, distinguishing between pupils in the "without difficulties" and "few difficulties" groups, and

[4] This score was estimated using the probit model

[5] All of the estimations were conducted in Stata. The method by the nearest neighbour consists of pairing each pupil who participated in Rased with the pupil from the control group who has the closest propensity score. In the method by nearest neighbours (n = 5), each pupil is paired with the five pupils from the control group who have the closest scores. The inverse weighting of the propensity score is a weight method by which the inverse of the probability of having received the treatment (estimated using the propensity score) is used as a weight for each individual

those in the “with difficulties” and “substantial difficulties” groups.

5. Results

5.1. Access to Rased

In our sample, about 8.4% of pupils received Rased services during grade one. Table 1 illustrates that pupils selected for Rased have particular socio-demographic characteristics compared to other pupils. Indeed, while 5.8% of Rased pupils have a head of family with a high occupational status, the share is 17.1% for non-Rased pupils. Additionally, a larger proportion of the Rased pupils are of foreign nationality and are enrolled in schools in designated “Priority Education” zones.

Admission to Rased seems to depend on the pupil’s behavioural and scholastic difficulties as measured at the start of first grade (see Table B1 in the Appendix B). Among the pupils for whom their level of language competence was judged as insufficient by the teacher, 30.9% participated in Rased. Likewise, approximately one quarter of pupils who had the weakest behavioural scores par- ticipated in the program. The same rates are observed when we examine the entrance scores for first grade.

However, Table 2 seems to indicate a certain misclassification of pupils in Rased according to these different criteria. 40% of the pupils who had important academic and behavioural difficulties participated in the Rased program, while 11.4% and 3.9% of pupils with little and no particular difficulties also took part in this program.

Furthermore, in terms of enrolment, the 3.9% of pupils without difficulties represent 34% of the children selected to participate in Rased. This represents a large number of children who receive Rased services but may not require them, excluding many other children who actually need them (see Fig. 1). Mingat (1991) found relatively similar results in the 1990 s. These findings impel us to question how Rased pupils are selected within classrooms and schools.

In order to examine these differences holding all other variables constant, we conducted further analyses for which the estimates are presented in Table C1 in the Appendix C. Two models were estimated, the first with the three types of difficulties introduced separately, and the second with the constructed groups by level of difficulties.

Firstly, socio-demographic characteristics seem to have a significant impact on access to Rased services. All other things being equal, a girl is less likely to benefit from Rased services than a boy. Similarly, the socio-professional status of the head of the family of the pupil structures access to Rased, with children from most disadvantaged backgrounds being the most likely to access these services. The birth month of the pupil is also a significant factor, with younger pupils being more likely to participate in this program.

In addition, educational backgrounds are decisive for predicting entry into the Rased program. Having repeated at least one year in pre-primary school increases the probability of participating in the Rased program. Teachers also appear to rely on the academic and behavioural level of their pupils when selecting them, as they are more likely to select those who belong to the groups most in difficulty.

There is also a significant effect of classroom characteristics. It appears that pupils have a lower chance of accessing Rased when there are a larger number of pupils in a class. Thus, there appears to be a fixed number of pupils per class who benefit from these services. In addition, if the student is in a "disadvantaged" class (with many repeating or foreign pupils), the probability of participating in Rased is higher. Students in applied programs and priority education schools are also more likely to receive Rased services.

Table 2

Student access to Rased services by ability group.

	"Without difficulties" group	"Few difficulties" group	"Some difficulties" group	"Substantial difficulties"	Total
All pupils (n)	6505	1258	675	431	8869
% of pupils receiving Rased services	3.9%	11.4%	25.5%	39.9%	8.5%

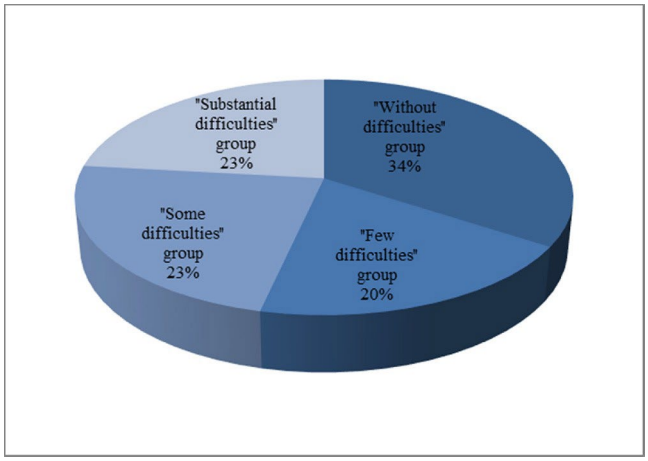

Fig. 1. Distribution of pupils receiving Rased services by ability groups.

Table 3

Results on repetition of the first year of primary school or moving to a specialized class[6].

	Probit model	Ipw model
All pupils	0,301***	0,068***
Pupils without difficulties or with few difficulties	0,525***	0,057***
Pupils with some or substantial difficulties	0,163*	0,05

***, **,* respectively significant at 1, 5 and 10%.

(Note: The coefficients of probit and propensity score models are not comparable, we can only judge their significance.).

Finally, the location of the school seems decisive. Students in rural schools are significantly less likely to receive Rased services. In general, these results question a "supply effect," especially since it appears that different regions do not have the same resources available for this program (Delaubier & Saurat, 2013).

5.2. Generally negative effects on pupils' academic paths and achievement

5.2.1. Short-term effects: repetition of the first year of primary school

First, we analyse the effect of Rased services on the pupil's academic position the following year. After his or her first year of primary school, the student can either repeat the grade, move to a specialized class, or pass to the second grade. The following Table 3 presents the results of the different estimates according to the method used and the different groups of pupils.

The results for all pupils clearly indicate that the fact that they have benefited from Rased services is significantly associated with a greater probability of repeating the first grade or moving to a specialized class. However, the effect for pupils with "some difficulties" or "substantial difficulties" is not significant when the propensity score method is used. In other words, the effect is significantly negative only for pupils with little or no difficulty

[6] The same model was estimated excluding those pupils who were participating in a special education class. The results were similar.

Table 4

Results on national French tests.

	OLS	Propensity score – ipw	Propensity score – nearest neighbour	Propensity score – 5 nearest neighbours
All pupils	−1,1*	−1,4*	−0,11	−0,74
Pupils without difficulties or with few difficulties	−1,8***	−1,4*	−1,1	−1,4*
Pupils with some or substantial difficulties	−1,6	−1,9	1,5	−2,3

***, **,* respectively significant at 1, 5 and 10%.

Table 5

Results on national mathematics tests.

	OLS	Propensity score – ipw	Propensity score – nearest neighbour	Propensity score – 5 nearest neighbours
All pupils	−2,4***	−2,7***	−3,3***	−2,2**
Pupils without difficulties or with few difficulties	−3,1***	−2,7***	−3,8***	−3,0***
Pupils with some or substantial difficulties	−3,1**	−2,5	−3,1*	−3,8**

***, **,* respectively significant at 1, 5 and 10%.

5.2.2. Medium-term effects: test results in the third year of primary school

Next, we determine the impact of Rased services on student achievement on national standardized tests in grade three. Our models for the French and mathematics tests are presented in Tables 4 and 5 respectively.

Overall, Rased services have a negative effect on student test results on early third grade evaluations. This impact is more pronounced and highly significant in mathematics. On average, pupils who have benefited from Rased have mathematics scores that are 2 to 4 points lower than other pupils with comparable characteristics. This difference is clearly smaller on the French evaluation, and is not even significant in two of the estimates. That is to say, when comparing pupils who are fairly similar in terms of individual characteristics, the negative effect of the Rased program on French scores disappears.

As we saw earlier, the effect of Rased services also differs according to the initial level of the student. Having participated in the

Rased program has an even more pronounced negative impact if the student initially

presented fewer academic and behavioural difficulties. Indeed, when examining the sub-sample of pupils who presented few difficulties initially, the coefficient associated with participating in Rased is between −2.7 and −3.8 on the mathematics score and −1.4 for French. However, the effect becomes less statistically significant on the mathematics score and appears to be neutral on the French score for the pupils judged to be in the most difficulty.

6. Discussion and conclusion

Our findings generally illustrate that Rased services increase the chances of student grade repetition and have a negative effect on student results on third grade evaluations. Indeed, with similar characteristics, pupils who benefited from the Rased program during first grade have a higher probability of repeating their grade and achieve significantly lower scores on third grade tests than those who did not. Our analyses also reveal that the effect of Rased is fairly neutral for pupils in difficulty, but pupils with fewer difficulties perform much less well if they receive Rased services. There are several possible and non-exclusive interpretations for these results.

These results are consistent with the labelling effect observed by Mingat (1991) in a previous study. This hypothesis is further supported by the fact that the effect of having participated in Rased is particularly negative for pupils who are closer to the average student level. However, we cannot determine if this "labelling effect" is caused by participation in this program or comes from the subjective evaluations of the teacher. Indeed, studies on the "Pygmalion effect" show that when teachers develop a negative initial judgement of certain pupils, they develop a particular way of interacting with these students that differs from their interactions with other students and lasts for the entire school year (Brophy & Good, 1970). Both grade repetition and participation in Rased may result from this initial judgement.

A second result also merits discussion: Rased services reinforce pupils' difficulties in mathematics, while the effect is relatively neutral for French, which is the content focus of the Rased program. A substitution effect could account for this counterintuitive finding, which has already been identified in the literature (Mingat, 1991; Taylor, 2014). Instruction time is often not the same in certain subjects for pupils who are absent from classes during the Rased program. However, we cannot exclude the possibility that the teacher may also modify his or her teaching practices with these pupils. Certain teachers might, for example, choose to focus on learning French to the detriment of other subjects. In other words, this compensation effect might also result from the teacher's choices within the class and not the fact that the pupil was taken out of the class. Moreover, as suggested by Piquée and Suchaut (2004), grouping students by level during the program may lead to negative peer effects that are unfavorable to learning. These effects are likely to counterbalance the potential positive effects

of the program, which may explain the neutral result on the score in French.

6.1. Limitations

This study has several limitations. Firstly, our data do not allow us to identify the different types of Rased services and their respective effects on academic achievement. We are only able to highlight the average effect of the program. Differentiated effects due to the diversity of modes of functioning and organization within the program cannot be analysed here. In particular, among the different types of assistance offered within the Rased program, some that are more oriented towards psychological problems may have a different impact on student success. Moreover, the data used also do not make it possible to take into account the evolution of Rased program in recent years. For example, the number of specialized teachers in this program has decreased by a third since the time period of the survey. Nevertheless, the main attributes of this program have remained the same.

Secondly, it would be interesting to analyse the effect of one pupil's participation in Rased on the progression of the other pupils in the class. Some studies have attempted to measure the existence of a "spillover effect" when examining this type of student aid. On the one hand, we might assume that remedial programs should also positively benefit pupils who do not participate themselves due to a better school environment and improved classroom management. On the other hand, Piquée (2007) suggests that taking these pupils out of class during class time might negatively impact the other students. In fact, the teacher risks slowing down the learning of the rest of the class while waiting for the students in the Rased program to return to class. The author also emphasizes that it would be interesting to analyze the profile of classroom's teachers most frequently involved in this program. Indeed, we can assume that these teachers are less experienced in classroom management. Studies by Keslair et al. (2012) and Lavy and Schlosser (2005) were not able to provide significant evidence of either of these effects. Our data, which reflect only a sample of students from each class, do not allow us test the total effects of this program corresponding to both participating pupils and the other pupils in the same class. Additional data would be necessary to carry out these further analyses. A "teacher effect," which may be independent from the program itself, is also an avenue for future research. A complementary study could be undertaken on the teaching practices of teachers with pupils in difficulty and their organization of classroom time. This would allow for a better understanding of how this program is used by teachers.

6.2. Implications

Nevertheless, the results of our study have the advantage of questioning, on the one hand, the

overall effectiveness of the program and, on the other hand, the problems it faces in attempting to target the weakest pupils. We assert that refocusing the resources of this program on the pupils in greatest difficulty appears to be the most pertinent change to make, although of course one must surmount the problem of the regional variations within Rased. Indeed, the mode of selection at the local level necessarily involves inconsistency in the targeting of the program. It generates very different thresholds for access to the program according to the socio-spatial inequalities of the educational system. As pointed out by Keslair et al. (2012), although the decentralization of selection decisions makes it possible to adapt to local educational needs, national coordination, such as national selection criteria, may still be relevant. More specific formalized admission criteria for the program would allow for better targeting of pupils who need the program the most and would reduce the subjectivity of teachers' judgements. In parallel, it would be useful to adjust the availability of places in the program in relation with regional scholastic disparities.

We might also question if the means put in place to assure the quality of program delivery are sufficient. In concluding their study of a different French remedial program ("Support for the Success of All Students"), Piquée and Suchaut (2004) emphasized that only a sufficiently intensive program can be effective. In another recent French study, Piquée and Viriot-Goeldel (2016) show that 34% of pupils benefitting from school support receive less than 8 h of annual assistance and that only 29% receive more than 25 h annually, in their sample. This volume of support is very different from the one advocated by Elbaum, Vaughn, Tejero Hughes, and Watson Moody (2000), who, in a meta-analysis, show that the most effective reading aid programs are those that are intensive in terms of hours. We also note that no other study in France has attributed the low efficacy of these remedial programs to a lack of quality in the work of Rased stakeholders. The results of our research do not in any way address this question. However, our study supports other findings on the insufficient means and targeting of remedial programs in France (Bressoux et al., 2016). More generally, the results explored in our literature review as well as our own results show that remedial programs aiming to specifically target pupils in difficulty do not appear to be successful. Furthermore, even if research results are inconclusive on the most effective modes of delivery for remedial programs, it does however appear that the most effective programs are those where the pupils are not taken out of the class during class time and where they receive additional instruction outside of class time.

The results of the present research need to be replicated and confirmed with more recent data. According to Piquée and Viriot-Goeldel (2016), approximately 33% of pupils receive academic assistance and among these pupils almost half participate in multiple programs[7].It would be

[7] In their study, they investigated three programs: Rased, speech therapy, and complementary learning assistance.

particularly interesting to know how these different types of assistance work together and if the com- plementarity between certain types of assistance could be beneficial to pupils.

Appendix A

Table A1

Correlation coefficients.

	Behaviour score	Test score on entry to first grade
Behaviour score		
Test score on entry to first grade	0,638***	
Language level	0,6394***	0,5899***

Note : *** significant at 1%.

Appendix B

Table B1

Rate of admission to Rased by the three types of difficulties.

	Rate of access to Rased
Behaviour score	
More than 1 SD below the mean	23%
1 SD below the mean	9%
1 SD above the mean	3,4%
More than 1 SD above the mean	2,4%
Language level	
Insufficient	30,9%
Average	11,1%
Good	3,5%
Test score on entry to first grade	
More than 1 SD below the mean	26%
1 SD below the mean	9,4%
1 SD above the mean	3%
More than 1 SD above the mean	2,4%

Appendix C

Table C1

Probit model of receiving Rased services or not.

	Model 1: Academic and behavioural variables	Model 2: "Ability groups"
Constant	−0,460*	−2,465***
Female	−0,0811*	−0,0966**
French nationality	−0,0799	−0,111
Ref. On time and born in the first quarter		
In advance	−0,221	−0,143
On time and born in the second quarter	−0,00193	0,0630
On time and born in the third quarter	0,0683	0,148**
On time and born in the fourth quarter	0,0451	0,148**
Repetition	0,867***	0979***
Occupation of head of family		
Ref. Executives		
Farmers	0,231	0,347**
Tradesmen, shopkeepers	0,00986	0,134
Intermediate professions	0,0621	0,129
White collar workers	0,174*	0318***
Blue collar workers	0,195**	0346***
Unemployed	0,490***	0670***
Not specified	−0,340	−0,136
Number of pupils in class		
Ref. Less than 22 pupils		
Between 22 and 25 pupils	0,00536	0,00914
More than 25 pupils	−0,245***	−0,245***
Number of foreign pupils in class		
Ref. None		
Between 1 and 5	0,0248	0,0179
More than 5	0,362***	0357***
Number of repeaters in class		
Ref. None		
Between 1 and 3	0,126***	0128***
Greater than 3	0,137	0,147
Application school	0,303**	0287**
Priority Education School	0,207***	0243***
Location of the municipality		
Ref. Rural area		
Between 5000 and 20,000 inhabitants	0,232***	0255***
Between 20,000 and 200,000 inhabitants	0,121	0,124*
Between 200,000 and 2 million inhabitants	0,291***	0315***
Agglomeration of Paris	0,362**	0383**
Ability Group		
Ref. Without difficulties		

Few difficulties		0,422***
Some difficulties		0,953***
Substantial difficulties		1,296***
Test scores on entry to first grade	−0,0204***	
Language Level		
Ref. Insufficient		
Intermediate	−0,330***	
Good	−0,425***	
Behaviour score	−0,196***	
School Area		
Ref. Aix-Marseille		
Amiens	0,0525	0,0447
Besançon	1,044***	0928***
Bordeaux	0,827***	0,741***
Caen	−0,0388	−0,0733
Clermont-Ferrand	0,423**	0390**
Dijon	0,610***	0584***
Grenoble	0,381**	0310**
Lille	0,0667	0,0489
Limoges	0,490*	0,493*
Lyon	−0,00321	−0,0407
Montpellier	0,0817	0,0877
Nancy-Metz	0,263*	0,213
Nantes	0,405***	0,345**
Nice	−0,0435	−0,0590
Orléans-Tours	0,565***	0508***
Paris	0,306	0,229
Poitiers	0,496***	0478***
Reims	0,926***	0885***
Rennes	0,400**	0,360**
Rouen	−0,182	−0,192
Strasbourg	−0,144	−0,179
Toulouse	0,700***	0658***
Créteil	0,324*	0,272
Versailles	0,182	0,143
Corsica	−0,354	−0,389
N	8869	8869

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