Work engagement among school directors and teachers' behavior at work

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Abstract

Using data from a representative sample of public primary schools in Madagascar, this paper analyzes engagement at work among school directors and investigates the impact of school heads' supervisory roles on teachers' behavior at work. The results show clear signs of weak management within public primary schools. We find that school heads' engagement at work is positively associated with their employment conditions, job satisfaction, and overall working environment. The results also indicate that principals' management styles have a positive effect on teachers' commitment at work, but no significant impact on absenteeism.

Key-words: work engagement; school heads; primary education; Madagascar.

1. Introduction

In recent years, a large body of literature has shown that school leaders play important roles in developing successful schools and are vitally important for student learning (Branch, Hanushek, and Rivkin, 2013; Leithwood et al., 2004). School directors can improve the quality of education through various channels, including monitoring and supervising attendance, providing support to teachers, tracking progress and performance, facilitating school-community interactions, and promoting accountability. Despite an extensive empirical literature on school leadership in industrialized countries (for a review, see Ärlestig, Day, and Johansson,

2016), there is still much to learn about school leaders in poor countries and what makes some school directors more engaged with their work than others.

This paper explicitly considers these rather neglected aspects of educational achievement. It documents and presents information on how public primary school directors in a developing country conduct their work and manage their school. By taking advantage of survey data of uncommon richness, it also analyzes how principals in public primary schools handle tasks that educators deem essential to their role and examines the effects of select characteristics of school heads and school demographics on engagement at work among school directors. The paper also explores the influence of school heads' supervisory roles on teachers' engagement at work. To our knowledge, it is the first to investigate school leadership practices in an African setting. In addressing these questions, the paper contributes to the current base of knowledge on education quality and provides insightful lessons for the development of policies that seek to improve the management of primary schools in low-income countries.

To summarize our findings briefly, we find that many aspects of the pedagogical process are poorly managed and that far too many administrators neglect tasks deemed essential for student learning. Only 15 percent of school directors execute all of the tasks deemed essential to their role. Although principals' background and school characteristics are not found to be associated with engagement at work, all else remaining the same, employment conditions, job satisfaction, and working environment have a positive and significant effect on school heads' commitment at work. Moreover, seniority does not translate into improved school management practices, and school inspection services and in-service programs do not seem to improve principals' management practices. In contrast, the principal's management style does have a significant and positive impact on teachers' behavior at work and a central role to play in developing effective schools. The empirical evidence shown in this paper is suggestive and potentially useful for policy makers in designing policies and initiating interventions to improve the management of pedagogical processes. The results are also likely to enrich the discussion of promising approaches for improving educational outcomes, both in Madagascar and in many other low-income countries.

The remainder of the paper is organized as follows. Section 2 briefly reviews the existing literature on school heads' engagement at work. Section 3 introduces the data. Section 4 provides empirical evidence on how school directors conduct their work and identifies predictors of principals' engagement at work. Section 5 investigates the impacts of school heads' management style on teachers' behavior at work. Section 6 draws some conclusions and policy implications.

2. Literature review

Work engagement is a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption (Schaufeli et al., 2002). An engaged employee is highly motivated, is committed to his job, and believes that his job is meaningful and challenging (see, for example, Brown, 1996). Engaged workers perform better than non-engaged workers because they often experience positive emotions, have better health, have the ability to mobilize job and personal resources, and transfer their engagement to others (Bakker and Demerouti, 2008). Thus, work engagement is a worthy indicator of both the occupational well-being of workers and the occupational health of organizations.

In a general setting, previous studies have consistently shown that job and personal resources such as social support from colleagues and supervisors, performance feedback, variety of skills, autonomy, and learning opportunities are positively associated with work engagement (Bakker and Demerouti, 2008; Schaufeli and Salanova, 2007). Others studies conclude that job satisfaction drives job performance (Böckerman and Ilmakunnas, 2012; Fisher, 2010; Judge et al., 2001; Wright and Cropanzano, 2007). Within the field of educational research, several studies have focused on work engagement among teachers and the factors influencing their engagement at work (see, for example, Campbell and Neill, 1994; Hakanen, Bakker, and Schaufeli, 2006; Hilsum and Caine, 1971; Hilsum and Strong, 1978; Rutter, 1986). In the context of developing countries, researchers have paid little attention to what is occurring in classrooms when teachers are present and to how schoolteachers execute the tasks for which they are responsible. Some commendable exceptions are Adekanmbi, Blimpo, and Evans (2009), Basikin (2007), Lassibille (2013), and Pandey, Goyal, and Sundararaman (2008). This partial attempt suggests that better management of workflow processes is needed to improve the performance and efficiency of the education system in developing countries.

While there is an abundant literature about how school processes, programs, and structures affect instructional change, much less is known about how school principals undertake these changes at work. School principals have complex jobs. School leadership encompasses the identification, acquisition, distribution, coordination, and use of the physical, social, and cultural resources necessary to establish the conditions that make teaching and learning possible (Spillane, Halverson, and Diamond, 2001). Principals perform "macro-functions" and "micro-tasks." Macro-functions are essential for instructional innovation—for example, constructing an instructional vision, distributing resources, or providing both summative and formative monitoring of instruction and innovation (Spillane, Halverson, and Diamond, 2004). Meanwhile, micro-tasks are day-by-day duties that contribute to the execution of macro-functions. To understand leadership practice, it is important to identify and analyze micro-tasks. The inattention to principals' practice is surprising considering that the ways in which principals perform their tasks may be one of the most relevant factors influencing

teachers' behavior at work (Blasé, 2001), students' engagement at school (Leithwood and Jantzi, 1999), teachers' and parents' assessment of schools (Horng, Klasik, and Loeb, 2009), school innovation (Koch, Binnewies, and Dormann, 2015), and school culture (Engels et al., 2008). Ultimately, principals affect student outcomes by influencing the school's teaching and learning environment (Branch, Hanushek, and Rivkin, 2013; Hallinger and Heck, 1996; Horng, Klasik, and Loeb, 2009; Leithwood et al., 2004).

However, little evidence exists on the factors that determine principals' work engagement. On the one hand, Federici and Skaalvik (2011) conclude that self-efficacy, understood as an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance outcomes, is a strong predictor of principals' work engagement in Norwegian public elementary and middle schools. On the other hand, evidence on principals' retention, one of the most extreme manifestations of lack of work engagement, suggests that schools with higher proportions of at-risk students and less-qualified teachers are more likely to fail to retain principals in New York State public schools (Papa, 2007). Regarding the consequences of principals' engagement at work, Alcázar et al. (2006) conclude that monitoring activities are not associated with lower absence of Peruvian primary schoolteachers. For a sample of teachers in Indonesian schools, Hariri, Monypenny, and Prideaux (2012) show that only some effective decision making by principals will potentially help teachers to achieve job satisfaction after controlling for the possible effects of gender, marital status, teacher certification, and school location. Gamero Burón and Lassibille (2016) conclude that, in Malagasy schools, supervision by the school director has a negative impact on teachers' job satisfaction, suggesting that, in Madagascar, neither school directors nor teachers have adopted an organizational culture based on trust and cooperation.

3. The data

Data for the analysis come from a longitudinal survey conducted in two consecutive school years ending in 2006–07 by the Ministry of Education and the World Bank, in the framework of a broad program for analyzing primary education in Madagascar (AGEMAD, Amélioration de la Gestion de l'Éducation à Madagascar). For the purposes of AGEMAD, data on a representative sample of about 1,200 public primary schools were collected during unannounced visits. The questionnaire precisely details the administrative and pedagogical organization of schools as well as the characteristics, level of qualifications, type of employment, professional career paths, and absenteeism of teachers. It also gathers extremely rare information on several aspects of the staff's behavior at work and on the tasks performed as part of their workflow. Each sampled teacher and school director was asked to answer a series of questions about their administrative and pedagogical practices, such as controlling absence,

preparing lesson plans, monitoring student learning and helping lagging pupils, and communicating with parents and the local community. The survey also measured overall job satisfaction of school personnel and gathered information on various facets of job satisfaction.

In each school, the principal and a maximum of five randomly selected teachers were surveyed.[1] In total, the survey provided information on just over 4,300 school personnel in 30 school districts. The sample of districts is representative of all geographic areas of the country and comparable to the country's other 81 districts in number of students and teachers.

The data are, on the whole, of reasonable quality. However, given our focus on school heads' management style, we excluded schools with just one teacher.[2] To address problems associated with endogeneity (see section 4), we also dropped school heads who did not participate in the survey for the entire period. Applying these criteria left us with 952 school directors, 90 percent of whom combine teaching with school management duties. Results not reported here to save space indicate that schools in the resulting sample are comparable to the original sample in terms of size and number of teachers, with a typical school head managing slightly more than four teachers and 230 pupils on average.

In addition, a survey of workflow processes was conducted at the end of the 2006–07 school year. Administrative and pedagogical work flow artifacts that provide a record of the work of school personnel over a full school year were collected in 20 randomly selected schools. This unique database reveals how school directors perform their duties throughout the school year, in particular regarding monitoring and following up on student absenteeism, supervising lesson plans, tracking progress in student learning, and following up on teacher absenteeism. This information provides an independent external check on the data reported by school personnel to the survey enumerators.[3] As indicated below, there is a high degree of consistency between the two sources of information, which strengthens confidence in the analytical results based on the reported data.

4. School directors at work

School heads in Madagascar are responsible for only a few staff. Each school head manages about four teachers and hardly more than 200 students on average. Despite this, their work engagement is generally low. Results from a survey conducted to analyze primary education in Madagascar are particularly telling in this regard. Pupil absenteeism is poorly supervised: only one-third of attendance records are signed by school heads. Essential

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[1] In schools with fewer than five teachers, all teachers were surveyed.
[2] Less than 5 percent of the schools have one teacher only.
[3] Detailed data such as those collected in the framework of this research are extremely rare. This rarity is not surprising given that school personnel may be unwilling to part with a source of information that provides a relatively complete record of their work.

pedagogical tasks are often neglected: one-third of school heads never discuss with teachers their daily lesson plans. School directors seldom follow up on student performance: three-quarters do not discuss learning outcomes with teachers, and 80 percent of test results and student report cards are not signed by school heads. The same goes for teacher absences, which average nearly 10 percent—hardly a negligible figure.[4] Only 20 percent of school directors monitor teacher absences by taking daily attendance and posting a monthly summary of absences, with attendance taken, on average, less than one day in three during the school year; more than 80 percent of school directors fail to report teacher absences to administrators at the sub-district and district levels. The general impression that emerges from these results is a lack of organization, control, and accountability—all of which can compromise the performance of the system and the chances of success for the many ongoing reforms.

Following Republic of Madagascar (2004), this paper focuses on the tasks that Malagasy educators deem essential to the mission of managing for results. Six tasks are considered essential for school heads: keeping a register of enrollment, analyzing student absences on a regular basis, following up with teachers on lesson planning, reviewing pupils' test results, discussing student learning issues with teachers, and informing sub-district and district officers about teacher absences. According to the school survey data, a typical school head performs fewer than five of the six essential tasks on average (Table 1). However, this average number of tasks hides substantial heterogeneity. About one-third of school heads perform four or fewer of the tasks deemed essential for good school management. In only 15 percent of schools does the director execute all of the essential tasks. Many aspects of the pedagogical process clearly are poorly managed, and far too many school directors neglect tasks deemed essential for student learning.

<<Table 1 about here>>

The picture that emerges is that school heads' engagement at work is low. To examine which attributes are associated with principals' commitment at work, we regressed the number of essential tasks executed by a school head on his or her personal characteristics and on school-level variables representing the workplace environment.

One important issue related to the information used in this paper concerns the hierarchical structure of the data. Because schools are grouped in districts, school directors within the same district share the management style of the district officers who supervise teaching and learning practices. Otherwise stated, observations within the same school district are correlated. This characteristic violates the traditional ordinary least squares assumption of uncorrelated error

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[4] For more information on teacher absences in Madagascar, see, for example, World Bank (2008).

terms, leading to incorrect estimates of the standard errors of the parameters. Specifically, the estimated standard errors involved in traditional statistical tests are clearly underestimated, causing most of the results to be significantly spurious (Hox, 1995). The correlation structure underlying this kind of clustered data can be captured using two-level models. Such models consider random effects at the district level in the intercept, slopes, or both. Here, we consider the simplest case, the existence of randomness only in the intercept—that is, in the average number of tasks per district.

Formally, for each district j, with $j=1,...,J$, we observe n_j principals identified by the following subscript $i=1,...,n_j$. The multilevel model for the number of tasks executed by principal i in district j is as follows:

Level 1 (principals): $\quad tasks_{ij} = \beta_o + \beta_p'x_{pij} + \beta_s' x_{sj} + \varepsilon_{ij}$ [1]

Level 2 (districts): $\quad \beta_{oj} = \beta_o + u_{oj}$, [2]

where $tasks_{ij}$ represents the number of tasks executed by principal i in district j, x_{pij} is a vector of his or her personal characteristics, x_{sj} is a vector of school characteristics, β_p' and β_s' are vectors of unknown parameters, and u_{oj} and ε_{ij} are error terms at the district and principal levels, respectively. The parameter β_o represents the grand mean—that is, the mean of $tasks_{ij}$ over the entire population. Substituting [2] into [1] leads to the following reduced form:

$$tasks_{ij} = \beta_o + \beta_p'x_{pij} + \beta_s' x_{sj} + u_{oj} + \varepsilon_{ij}.$$ [3]

The individual factors postulated to influence school heads' behavior include gender, marital status, residential location, attachment to the local community, employment conditions, and professional experience, including whether the principal was previously employed in a private school, held a second job at the time of the survey, combined teaching with management duties, and had received in-service training in school management. Variables at the school level include the number of teachers in the school, an index of school conditions—constructed using principal components analysis based on the quality of the physical facilities of the school,[5]

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[5] The following items are included in the construction of the index: the structure is permanent, the number of classrooms is sufficient, and the school is equipped with electricity, water, latrines, and chairs for all pupils. The index ranges from about 126 in schools with all of these features to 75 in schools with none of them.

number of books per student, an index of students' parental wealth,[6] and whether the school had been supervised recently by the district officers.[7]

Two basic specifications are adjusted: first, reduced models that only control for school head characteristics and, second, full specifications that include school-level variables. The results are shown in Table 2 along with the summary statistics of the variables for the data set.

<<Table 2 about here>>

The findings indicate that personal demographics explain little of the variation in the behavior of school directors. As shown in Table 2, taken together, the variables used in the analysis account for less than 5 percent of the variation in the number of essential tasks executed by a school head. To some extent, this result is at odds with what is observed in other countries. To illustrate, Rutter (1986) finds very moderate relationships between the characteristics of teachers and their commitment at work in the United States; Basikin (2007) obtains a similar result for secondary schoolteachers in Indonesia.[8]

Focusing now on the characteristics of individual school heads (model 1), the results from the regressions presented in Table 2 show no significant gender effect on the number of essential tasks performed. Several studies have argued that motivation and incentives to help the community are probably higher among local teachers because of their ties to the local area and greater sense of accountability (see, for example, Alcázar et al., 2006). However, the results of this study indicate that attachment to the local community—measured by a dummy indicating whether the principal was born in the region where the school is located—has no significant impact on directors' behavior at work. In a similar vein, school heads who were previously working in the private sector are not more conscientious than their counterparts. One possible reason may be that the public sector is not able to attract the best private sector principals or that school personnel in the private sector who move to the public sector tend to adapt their level of work effort to the level of commitment of their new peers. Attachment to the present school, measured by the years of service in the school, has no significant impact on directors'

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[6] Parents' wealth is defined as the mean parental wealth in the school and is derived from data collected on a randomized sample of students in each school. The wealth index is constructed using principal components analysis (see, for example, Filmer and Pritchett, 2001). It is based on a family's ownership of the following assets: a refrigerator, tap water, electricity, a television, a radio, a phone, and a fan. The index ranges from approximately 132 for a family who owns all of the items to approximately 96 for a family who owns none of them.

[7] All of the regressions are controlled for the month of random school visits to account for seasonal variation.

[8] However, the definition of engagement at work used by these authors departs from the one used here, as they also take into account attitudes and predispositions at work. In Rutter (1986), for example, engagement at work includes the following aspects: how successful teachers feel in doing their work, how much time they spend helping students outside of class, how much acceptance and respect they feel from their colleagues, and whether they have changed their teaching practices in recent years.

commitment at work. Otherwise stated, the ability of teaching principals or school directors to manage the pedagogical process in their school does not improve with accumulated experience. This result also suggests a low probability for an experienced director to be a good mentor and a low probability for a novice teacher to learn good practices from his supervisor in the school. In Madagascar, as in many other poor countries, school heads do not receive specific pre-service training on school management, and very few attend in-service training modules specifically designed to help school leaders to accomplish their tasks. According to Table 2, less than 5 percent of school heads had received in-service training on school management. The regression results raise questions about the effectiveness of existing training and development programs for school heads and imply that there is scope for improving the design of programs that seek to build skills for good school management.

Another noteworthy feature in the results presented in Table 2 is that the type of employment contract held by school directors has a significant impact on principals' work behavior. Based on their job status, there are two broad categories of school personnel in Madagascar. The first group consists of permanent civil servants who are recruited and paid by the government. The second group consists of school personnel employed on temporary contracts. Recently, communities have hired contract staff to address the lack of publicly paid education workers; contract staff are paid entirely by the parents' association through fees paid by pupils' families. Since 2002–03, the government has contributed to the pay of contracted school personnel (Republic of Madagascar, 2012; World Bank 2002). In 2007, about 5 percent of school directors hold a non-permanent contract in Madagascar. The vast majority of principals appointed on fixed-time contracts have more years of formal schooling than their counterparts,[9] they have little prior exposure to teacher training programs and their professional qualifications are generally lower. They are paid considerably less than civil servants for doing the same job. Their monthly salary is 55 percent below that of regular directors on average, and they are only paid for 10 months out of 12. According to the results in Table 2, school heads with a non-permanent contract are significantly less likely to execute the tasks considered essential to their role, ceteris paribus. The lower engagement at work of school directors who hold a non-permanent contract may reflect a weaker attachment to the post. To a considerable extent, it reflects lower motivation due to a combination of weak incentives, fairly limited promotion opportunities, and low job satisfaction. When teacher pay is low, the incentives to generate additional income from secondary activity are generally high. In the sample, around 12 percent of school heads held a second job. Contrary to what could be expected, having a second

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[9] Results not reported here to save space show that 18 percent of school heads with a non-permanent contract have an upper-secondary education diploma compared with only 9 percent of school directors in the civil service.

job does not significantly affect work effort in the main job. The results also show that school heads who combine teaching with management duties execute significantly more essential tasks than their counterparts. This result is particularly important in a country like Madagascar, where 90 percent of public primary schools are managed by directors who simultaneously teach and manage the school.

The survey offered particularly telling observations regarding job satisfaction among school personnel. Respondents were asked to rate their overall job satisfaction using a Cantril ladder question with the following formulation: *"In general, what level of satisfaction does your current job provide? Score this level on a scale of 1 (very dissatisfied) to 10 (very satisfied)."* The questionnaire also included information on wage, salary payment,[10] relationsh ip with pupils, school infrastructure and teaching materials, and school location. Unlike overall job satisfaction, respondents only indicated whether they are satisfied or not with these different aspects of their work. Results not shown here to save space indicate that 37 percent of the respondents expressed high overall satisfaction with their job (levels 8–10 on the scale). As shown on Table 2, only 15 percent of school heads said they are satisfied with their wages, 47 percent are satisfied with the school conditions, and 67 percent are satisfied with salary payment. In contrast, for more than 90 percent of school directors, pupils' behavior and school location are not reasons for job dissatisfaction. The effects of job satisfaction on various labor market outcomes such as employee retention, absenteeism, and discretionary work behaviors have been the topic of hundreds of studies in industrial and organizational psychology. Following this tradition*, models 2 and 3 in Table 2 include overall job satisfaction and various facets of job satisfaction as determinants of the number of essential tasks performed by school heads.[11] While job satisfaction may affect involvement at work, involvement at work can also affect job satisfaction. Following common practice in applied econometrics work (Reed, 2015), we minimized the possibility of simultaneity between job satisfaction and the number of essential tasks performed by lagging the job satisfaction variables by one period.

The results show a highly significant and positive relationship between lagged overall job satisfaction and the number of tasks performed by school principals. This result implies that polices that aim to improve job satisfaction among school personnel (Gamero Burón and Lassibille, 2016) may have positive effects on school heads' commitment at work and job productivity and might favorably translate into improved student learning. As far as the facets of job satisfaction are concerned, the results show weak or no significant impacts on principals'

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[10] Many school personnel in Madagascar must travel long distances from their place of work to collect their salaries; late payment of salaries is also very common, mainly among contract personnel.
[11] For a review of the literature on the relationship between job satisfaction and productivity at both the employee and firm level, see, for example, Bockerman and Ilmakunnas (2012), Fisher (2010), Judge et al. (2001), Warr (1999), and Wright and Cropanzano (2007).

behavior at work. The negative and counterintuitive effect associated with wage satisfaction points to the existence of a complex relationship between monetary compensation and principals´ effort at work. In this regard, more research is needed to understand the reasons for the negative correlation between engagement at work and satisfaction with salary. Results in Table 2 also show that satisfaction with pupils' behavior is positively associated with school directors' involvement at work, although the effect is significant only at a low level of confidence. One possible explanation is that school principals could consider that well-behaved students are worthy of a greater effort at work. Beyond that and because overall job satisfaction has a highly significant impact on school directors' behavior, job facets different from those on which we have information are more relevant in explaining principals' behavior at work. Among them are the relationships with school personnel and district supervisors, the work content itself, the principals' ability to take their own initiative executing their tasks, the level of job stress experienced by school administrators, and the future prospects offered by the job.

Regarding school characteristics (model 4), no significant relationship is found between the number of teachers in the school and how school heads handle the essential aspects of supervising. The intuition of this result is clear with regard to the nature of many of the elemental tasks that school heads have to perform. Obviously, keeping a register of enrollment, analyzing student absences, following up with teachers on lesson planning, reviewing pupils' test results, or informing sub-district and district officers about teacher absences are largely "fixed-cost tasks"—that is, the cost of performing one of these tasks stays the same regardless of the number of teachers in the school. Results in Table 2 also show a significant relationship between the overall working conditions at the school—measured through an infrastructure index—and the number of essential tasks executed. This finding is at odds with others studies that have investigated the impact of working conditions on school staff's commitment at work (Firestone and Pennell, 1993). Although principals tend to do a better job and to be more motivated in a good physical working environment, no significant relationship is found between principals' engagement at work and the availability of pedagogical material in the school. In the same vein, parental wealth is not found to have a significant impact on school heads' work behavior. Although wealthier parents may be better equipped to monitor school activities and better able to take responsibility for school management, their capacity to exercise control over school managers and to motivate them to execute conscientiously the tasks considered essential to their role is probably low. Inspections are infrequent in Madagascar, especially in more remote schools. According to school survey data, one-third of the schools are never supervised or guided by sub-district officers. Regression results in Table 2 indicate that the absence of supervision has no significant impact on the management style of school principals. Obviously

this finding casts doubt on the effectiveness of supervision in Madagascar, a common concern in many poor countries (De Grauwe, 2007).

5. Does school management affect teachers' behavior at work?

It is generally accepted that school leaders are vitally important in influencing teachers' behavior and have a central role in developing effective schools. As far as we know, no research has been carried out to investigate the influence of school heads' behavior at work on teachers' engagement at work in poor countries. This section estimates the impact of school management style on two dimensions of work engagement among public primary schoolteachers in Madagascar: teachers' attendance and teachers' practices. We study two measures of teachers' attendance at the school level. These two measures were reported by the director to the survey enumerator during the unannounced visit to the school. The first one consists of the percentage of teachers who were absent one day or more during the week previous to the survey. The second measure consists of the average number of days that teachers were absent from school during the week previous to the survey. The mean attendance rate in Table 3 suggests that absenteeism is less than 10 percent in Malagasy public primary schools, which is lower than teacher absence in other developing countries such as Bangladesh, India, and Uganda (Chaudhury et al., 2006). Table 3 also shows that teachers are absent from school for one day a month, on average; results not shown here to save space indicate that this average is exceeded in approximately one-quarter of schools. Regarding teachers' practices, we focus on the tasks that Malagasy educators consider essential for teachers' role (Republic of Madagascar, 2004). The list contains seven tasks—for example, taking daily roll call, preparing the lesson of the day, monitoring student learning, and helping lagging pupils. As a strategy for keeping the analysis tractable, a "good" teacher (or, more accurately, a minimally conscientious teacher) is defined as one who performs all seven work flow tasks that Malagasy educators deem essential to the mission of managing for results. According to Table 3, around 52 percent of teachers in the sampled schools are minimally conscientious.

To estimate the impact of school heads' management style on teachers' engagement at work, we regressed the three components of teachers' behavior on the average teacher characteristics for the school, school-level variables representing teachers' workplace environment, school heads' personal characteristics, and the number of essential tasks performed by the school director. As an econometric specification, we used the random effects models described in section 5. We minimized the possibility of simultaneity between school heads' management style and teachers' behavior at work by lagging by one period the number of essential tasks performed by the directors. Table 3 presents descriptive statistics on the variables

for the data set along with the estimation results. The analysis refers to the sample of 952 schools.

<<Table 3 about here>>

The results reveal a statistically insignificant impact of school director's management style on both indexes of teacher attendance, all else remaining the same. This result is not surprising in a country like Madagascar. Teacher absenteeism is linked mostly to the fact that many teachers must travel to a central location, often far from their place of work, to collect their salaries. In this context, absenteeism cannot be tackled simply by tightening supervision to ensure that teachers report to work. The problem may require action outside the education sector—for example, replacing the current method of paying teachers with a more convenient and secure system.

With regard to the execution of tasks, results in Table 3 show that the principal's management style has a significant and positive impact on teachers' commitment at work. Otherwise stated, teachers in schools administered by a "good" school head have a significantly higher probability of performing all of the essential tasks than their counterparts. This finding is at odds with the commonly held belief that school leaders are vitally important in influencing teachers' behavior and have a central role in developing effective schools (see, for example, Bennell, 2004; Dinham, 2005; Purkey and Smith, 1983). Where teachers' motivation and incentives are low and professional qualifications are scarce, making explicit to teachers their responsibilities, giving them proper support, and supervising their work are crucial elements in promoting excellence among staff. For these reasons, particular attention should be paid to the recruitment and training of head teachers in order to ensure that every school is placed under the control of a strong and engaged principal.

6. Conclusion

Many aspects of the pedagogical process in Malagasy schools are poorly managed, and far too many administrators neglect tasks deemed essential for student learning. A survey of workflow processes revealed that school directors rarely discuss with teachers their daily lesson plans. They are seldom involved in following up on student performance. Only 20 percent of school directors monitor teacher absences, and more than 80 percent of them fail to report teacher absences to administrators at the sub-district and district levels. Survey data based on self-reported information confirm the low engagement at work of school directors in Madagascar. To illustrate, only 15 percent of school directors consistently perform the package of tasks considered essential by Malagasy educators. There is thus substantial scope to improve

management of the pedagogical process as part of the country's effort to improve the performance and efficiency of public primary schools.

Every school leader is different, but successful or engaged leaders share some key characteristics. In this regard, our results clearly show that principals who are highly committed to their work are more likely to hold a permanent contract, to be satisfied overall with their job, to have a dual role of teacher and administrator, and, to a lesser extent, to work in schools with good physical conditions. The social environment in which the school operates is not a major determinant of principals' engagement at work. Current school inspection services and in-service training programs are largely ineffective. As far as teachers' conscientiousness is concerned, school leaders do matter. All else remaining the same, school heads' behavior at work has a positive and significant impact on teachers' engagement at work. However, in Madagascar, principals' management style has no significant effect on teachers' absenteeism, mainly because most absences are linked to the current method of paying teachers and are thus unavoidable.

In light of these results, policy makers and managers in the education sector should ensure that every primary school is placed under the control of a strong and engaged principal, and special attention should be paid to their recruitment and training. In this regard, recruiting motivated principals, improving their job satisfaction, granting them stable employment with decent career prospects, and giving them better school conditions may help to strengthen their commitment to work and improve learning outcomes. As school heads in Madagascar do not receive specific training on school management, ongoing pre- and in-service training programs for school leaders could include short modules on management of the pedagogical process. Operational tools designed to help school heads to accomplish their tasks should also be developed; in addition, inspection services should be reinvigorated and brought closer to the schools. These changes would lead to better-functioning schools, which would positively influence the quality of education and translate into improved student learning.

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Table 1. Distribution of the number of tasks executed by school heads [a]

Number of tasks	Percent
1	0.32
2	2.31
3	5.88
4	22.69
5	53.99
6	14.81
Total	100.00
Mean	4.72
Standard deviation	0.89
Number of observations	952

a/ Percent, unless otherwise indicated.
Source: Authors' calculations based on the 2007 AGEMAD school survey.

Table 2. Impact of personal characteristics and school environment on the number of tasks executed by school heads

Variables	Mean	Standard deviation	Model 1	Model 2	Model 3	Model 4
Personal characteristics						
Male	0.627	0.484	0.024	0.012	0.016	0.010
Married	0.851	0.356	0.116+	0.127+	0.115+	0.119+
Attachment to local community	0.027	0.163	-0.065	-0.063	-0.076	-0.056
Travel time from home to school						
Between 15 and 30 minutes	0.163	0.369	0.120+	0.132*	0.124*	0.137*
Between 30 minutes and 1 hour	0.124	0.330	0.063	0.075	0.063	0.076
More than 1 hour	0.045	0.208	-0.052	-0.046	-0.032	-0.045
Previously employed in a private school	0.139	0.346	-0.093	-0.103+	-0.099	-0.116+
Holding a second job	0.123	0.328	0.068	0.074	0.063	0.080
Experience in current school (in years)	10.55	8.21	-0.000	-0.001	-0.001	-0.001
Working also as a teacher	0.094	0.291	0.191**	0.186*	0.177*	0.077
Civil servant	0.959	0.198	0.395***	0.369***	0.380***	0.324**
Trained in school management issues	0.041	0.198	-0.150	-0.169	-0.142	-0.178
Overall job satisfaction (in t–1)	6.74	1.51		0.054***		0.054***
Facets job satisfaction (in t–1)						
Wage	0.289	0.453			-0.088+	
Salary payment	0.817	0.387			0.009	
Pupils' behavior and attitude	0.949	0.221			0.179+	
School conditions	0.620	0.486			0.039	
School location	0.936	0.245			0.100	
School characteristics						
Number of teachers in school	4.37	3.37				0.007
Index of school conditions	100.42	10.02				0.005+
Books per student	0.76	0.462				-0.064
Parents' wealth index						
Second quartile interval	0.258	0.438				0.046
Third quartile interval	0.244	0.430				0.030
Fourth quartile interval	0.256	0.437				-0.000
School no visited by sub-district officers	0.369	0.483				-0.002
Constant			3.921***	3.594***	3.687***	3.269***
Number of observations	952	9520	952	952	952	952
Number of districts	30	30	30	30	30	30
Var(Level 1: school heads)			0.614	0.608	0.611	0.605
Var(Level 2: sub-districts)			0.180	0.184	0.174	0.188
LR test[a]			118.86***	123.62***	110.56***	124.3***
Snijders/Bosker R^2 Level 1			0.043	0.044	0.053	0.045
Snijders/Bosker R^2 Level 2			0.076	0.059	0.102	0.046

a/ Test of multilevel model versus linear model.
Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.10$, + $p<0.20$
Source: Authors' estimates based on the 2006 and 2007 AGEMAD school surveys.

Table 3. Impact of the number of tasks executed by school heads on teachers outcomes

| Variables | Mean | Standard deviation | Indexes of teacher absenteeism | | Minimally conscientious teachers |
			Attendance rate	Days of absence	
Indexes of teacher absenteeism					
Attendance rate	0.095	0.179			
Days of absence	0.237	0.477			
Minimally conscientious teachers	0.524	0.438			
Teachers characteristics (means)					
Male	0.331	0.313	0.018	0.012	-0.024
Married	0.664	0.342	0.006	-0.018	0.019
Attachment to local community	0.150	0.265	0.035+	0.148***	-0.017
Experience in current school (in years)	4.67	4.67	-0.003*	-0.009***	0.003
Civil servant	0.396	0.311	0.091***	0.164***	-0.038
Number of students	44.56	16.21	-0.000	-0.001	0.002**
School characteristics					
Number of teachers	5.37	3.367	-0.003+	0.049***	-0.021***
Index of school conditions	100.42	10.02	-0.001+	-0.003**	0.002+
Parents' wealth index					
Second quartile interval	0.258	0.438	-0.002	-0.060+	-0.054*
Third quartile interval	0.244	0.430	0.022+	0.040	-0.070**
Fourth quartile interval	0.256	0.437	0.026+	0.026	-0.037
School head's characteristics					
Male	0.627	0.484	-0.011	-0.043+	0.035+
Married	0.851	0.356	-0.005	0.052	-0.030
Attachment to local community	0.027	0.163	-0.032	-0.052	-0.051
Previously employed in a private school	0.139	0.346	0.020	0.040	-0.047+
Holding a second job	0.123	0.328	0.035*	0.074+	0.015
Experience in current school (in years)	10.55	8.21	-0.000	-0.002	-0.001
Trained in administrative issues	0.041	0.198	-0.036	-0.010	0.046
Number of tasks executed (in t−1)	4.68	0.91	-0.004	-0.014	0.058***
Constant			0.218***	0.402**	0.031
Number of observations	952	952	952	952	952
Number of districts	30	30	30	30	30
Var(Level 1: schools)			0.027	0.172	0.095
Var(Level 2: districts)			0.004	0.028	0.032
LR test[a]			53.57***	41.95***	134.81***
Snijders/Bosker R^2 Level 1			0.042	0.172	0.093
Snijders/Bosker R^2 Level 2			0.076	0.286	0.140

[a] Test of multilevel model versus linear model.
Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.10$, + $p<0.20$
Source: Authors' estimates based on the 2006 and 2007 AGEMAD school surveys.