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**Alexandra Schwarz
Stefan Brauckmann**

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For editorial correspondence please contact
SSBEditor@wiwi.uni-wuppertal.de

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Between facts and perceptions: The area close to school as a context factor in school leadership⁺

Alexandra Schwarz* and Stefan Brauckmann**

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* Wuppertal Research Institute for the Economics of Education, University of Wuppertal, Germany, schwarz@wiwi.uni-wuppertal.de

**Department of Instructional and School Development, Alpen-Adria-University Klagenfurt, Austria, stefan.brauckmann@aau.at

Abstract. Concepts of new school governance did considerably change the role and responsibilities of school principals. Due to the shift in their role from administrator to manager, recent research tends to focus on management activity, but little is still known about the interrelation between changing contexts and management activities. In the present paper we propose to expand the school context to embrace the school-related environment, and we examine this broader context with respect to its impact on leadership activities. We illustrate our approach by combining German survey and administrative data to analyze the social composition of schools and their environment. Our results suggest that using administrative data to identify objective challenges to leadership improves the measurement of contextual conditions at school.

Keywords. school leadership; school quality; disadvantaged areas

JEL classification. I20; I21; I28

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1 Introduction

Concepts of new school governance introduced since the 1990s (van Amelsvoort & Scheerens, 1997) aim at moving the competencies of school leaders towards greater autonomy and accountability. These concepts have indeed considerably changed school leaders' responsibilities. In particular, they now manage their schools and implement and improve instruments of quality-oriented internal control. In accordance with specific legal and administrative provisions, they have to acquire new skills that address personnel management, curriculum development, and administrative tasks. Due to the shift in the school leadership role from administrator to manager, research on school leadership now tends to focus on management activity (Brauckmann & Herrmann, 2013). Yet the interrelation between changing contexts and management activities has not become a central issue of leadership research (Brauckmann & Schwarz, 2014). Researchers have even criticized formal professionalization as producing uniformly designed school leaders (Southworth, 2002) who are not able to respond adequately to their own specific management context (Goldring et al., 2008; Heck & Moriyama, 2010).

Information on contextual conditions is typically collected by analyzing qualitative school portraits or survey data, where the characteristics of schools are measured on the organizational level (e.g. type and size of school, personnel and material resources). So far, little is known about contextual conditions of schools (neighborhood, school catchment areas, supply of schools and competition between schools) and their impact on school management. Leadership research seeks to provide insight into actual activities of school leaders. This requires a detailed analysis of the individual school context (which goes beyond controlling for school and class sizes). The present paper contributes to leadership research by expanding the still "under-researched" (Gronn & Ribbins, 1996) school context to embrace the school-related environment, and by examining this broader context with respect to its impact on leadership activities.

We are generally interested in the explanatory power of school environmental characteristics (e.g. socio-economic structure, demographic development, competitive situation) with regard to school leadership, especially instructional, organizational and human resource development. Using administrative data we describe this wider context in terms of what we call the 'area close to school' (ACTS). Differences between the variables of this context and the way they are perceived by school principals yield parameters by

which the challenges school leaders face can be measured. We expect challenges – like a high proportion of students from low-income families – to be linked to supporting activities and to coincide with time spent on management tasks (personnel, curriculum and organization development). Since we can compare subjective and objective measures of social composition, we can gain insights into how school leaders deal with context factors.

In the present paper, we analyze the social composition of schools and the ACTS using survey data collected in the project ‘School leaders’ activities between more responsibility and more power’ (SHaRP). In this project, German school principals were asked about the regional, institutional, situational and personal settings of their school management activities. We enrich this survey with administrative data on the district level. Based on a sample of 79 school leaders we (1) analyze the extent to which the reported social context in terms of poverty risk at school corresponds with a more objective description of the school’s social environment; and (2) investigate how the social composition of the student body, and poverty risk in the ACTS, relate to the workload and satisfaction level of school leaders. Due to a lack of identical measures of poverty at both the school and the district level and of data on a lower aggregation level (e.g. postal zip code areas) this first empirical example serves as an illustration only. Nonetheless, we can draw relevant conclusions on the value added by our proposal to explicitly consider the school environment in leadership research.

Our results suggest that school principals’ perceptions of challenges at school (e.g. low ability students) differ by social school context (students from low income families, welfare dependency rate). We also observe a high variation in both facts and perceptions. Principals acting at objectively disadvantaged schools are markedly more satisfied with their work and their situation at school than principals acting in less challenging environments (e.g. more wealthy districts). Social context and challenges are not only linked to school leaders’ satisfaction, but also to their workload in specific areas of leadership activity (e.g. time spent on counseling students and teachers, personnel management and development). From these results we conclude that the individual context level, in terms of personality, motivation, experience etc. of the school leader, may contribute significantly to leadership activities, work satisfaction and workload. Our results also bring up the question as to the factors that drive a school principal’s perception of her/his own school context; this seems to be affected more by the principal’s responsiveness than by the school environment itself. However, we also discuss the extent

to which management – and thus school – quality does actually depend on socio-spatial conditions, as is often postulated in needs-based resource allocation.

The remainder of the paper is structured as follows. In the following section, we briefly describe the impact of “New Governance” concepts on school leadership in Germany, and we summarize the state of research on contextual conditions of leadership activity on the system, organizational, and individual level. In Section 3 we introduce the area close to school as an intermediate contextual level. In Section 4 we exemplify our proposed approach in terms of the school’s social environment and its relation to challenges at school, leadership workload, and (dis)satisfaction of school leaders. Section 5 draws relevant conclusions and outlines further research.

2 Background

International assessments of student achievement such as TIMSS and PISA have contributed to the introduction of the “New Governance” model, initially practiced in local administration, to the domain of educational policymaking in Germany (Döbert, 2010; see also Füssel & Leschinsky, 2008). Together with accountability measures, decentralization, growth of autonomy and competition (use of market mechanisms and competitive elements that aim to boost the quality of educational processes) this gradually became the new yardstick in educational politics (Weiss, 2001).

2.1 Relevance of contextual conditions to school leadership

School leaders at schools with increased autonomy are faced with new tasks, in particular strategic leadership tasks. School leaders are no longer only concerned with operative management in terms of administrative and pedagogical daily routine. They are additionally charged with defining organizational and human resource development objectives, as well as ensuring compliance with externally set instructional standards and their underlying concepts. As conditioning factors for school leadership actions, contextual factors have, therefore, become a focal point of interest in school leadership research (Bonsen et al., 2002). These conditions include the system level (political and legal framework), and organizational level (institutional characteristics of an individual school and characteristics of the learning and teaching situation), as well as the individual level (individual characteristics, personality, leadership experience etc.).

School leadership action is oriented towards increasing school quality, and school leaders' knowledge about their own school context can be viewed as a central characteristic of school quality, as is the case in the reference framework for school quality adopted by the German federal state of Hesse (Steffens et al., 2011). School quality is strongly influenced not only by educational and legal conditions and the educational opportunities available in the region, but also by accessible support measures and human and material resources, and moreover by the social composition of the student population and the school environment. The authors of this reference framework conclude that neither educational policy and legal conditions nor the dimension of "student population and school environment" can be assigned as criteria for measuring quality, because these framework conditions are predetermined. Schools will first of all be confronted with a particular student population and its potentials and traits, without being able to influence, let alone govern, these factors. To a certain extent this also applies to the human and material resources, external support and educational opportunities available in a region, as well as to the factor of competition. There is no direct way of influencing these dimensions of school quality either, but, the authors argue, they can be tested as to whether the given situation allows for an adequate realization of the remit to care and educate (Steffens et al., 2011). Especially as to the social background, migration status and basic cognitive skills of a student population, school processes targeting that population should comply with de facto conditions.

2.2 Related research

While the situation outlined above might present a normative frame of reference for school quality characteristics, it also demonstrates significant research needs. Models for the systematic description of contextual factors that are relevant in school leadership research are mainly oriented toward an "input-throughput-output model" proposed by school effectiveness research (Hanushek, 1979; Scheerens et al., 1989). This was further developed into a model for school and instructional quality assurance (Scheerens & Bosker, 1997; Ditton, 2000). In very general terms, context factors determine the conditions given by an environment within and outside school that impact student learning outcomes, but they also affect school leadership actions and thus school quality as a whole. A context can be regarded as a multilevel model distinguishing between a micro-level (learning and instruction), a meso-level (conditions at school, family, peer group), and a macro-level (systemic setting of a school) (Baumert et al., 2000). Hence, a distinction is made regarding proximal factors that are immediately associated with leadership action

(individual characteristics of a leader, personality) and more distal variables at the meso- or macro-level which are assumed to have a weaker influence on individual actions (Scheerens & Bosker, 1997; Scheerens 2000).

Altogether, the corpus of empirical findings is slim concerning organizational influences on school leadership actions, with a predominant focus on internal situational conditions (Brauckmann, 2012b). Research is comparatively substantial concerning the impact of school form and size on leadership conduct (Bolman & Deal, 1992; Wagner, 2011; Brauckmann & Pashiardis, 2011a,b; Keller-Schneider & Albisser, 2012; Thillmann, 2012; Brauckmann, 2012a). For instance, several studies have demonstrated a more instructional leadership style at primary and smaller schools (Salley et al., 1979; Hallinger & Murphy, 1985; Heck, 1992). Regarding the area of human resource development, there is indication that the implementation of training and support measures is more widespread at larger schools (Appius et al., 2012). In part, findings are furthermore contradictory regarding the possible influence of social composition of a student population and school leadership action (Lortie et al., 1983; Hallinger & Murphy, 1985, 1986; Day et al., 2009). As far as the area of human resource development is concerned, findings further indicate a positive relationship between the age of teachers and their rejection of training, as well as demonstrating the relevance of teachers' willingness to innovate in implementing human resource development measures (Meetz, 2007).

Besides systemic and organizational factors, school leadership actions are also marked by individual personal (context) characteristics (Hallinger et al., 1996). Currently, only a limited amount of systematic research is available on the influence of personality traits of school leaders, and clear-cut research findings on consequent leadership actions are likewise scarce. Bearing this in mind, putatively gender-specific school leadership styles have received a comparatively broad coverage. In this regard, however, the studies have delivered results that are sometimes contradictory. More recent studies, in particular, do not suggest that leadership styles differ between female and male leaders (Barbuto et al., 2007). With respect to possible links between professional experience and leadership actions, Gross & Herriot (1965) demonstrated that greater professional experience does not automatically lead to an increase in professionalism concerning leadership actions (Brauckmann, 2012b).

2.3 Research needs

Most of all, insights are needed not only into the interplay of contextual characteristics and school action strategies, but also into the context itself. To date, context has been considered to some extent in empirical educational research debates, i.e. when control of a context variable is necessary for measuring school achievement as an output variable of an educational process, to allow for a “fair” comparison of schools (e.g. with respect to the social composition of a student population, see e.g. Fiege et al., 2011). However, while the context is then taken into consideration, there has generally been no research on the topic itself. So far, context variables have been tested by multilevel analyses, yet assessments of context itself are scarce. Instead of merely controlling for context, the contextual nature of school leadership actions should be empirically investigated in its own right, paying more attention to the conditions of a school and its students. There is a particular need for research focusing on closer consideration of the school’s environment as a separate context level, understanding it as an intermediate variable that might moderate the relationship between systemic, organizational and individual contexts on the one hand, and school leadership actions on the other. This is not to say that composition of a student population and school environment could serve as a criterion of school quality. But examination of school leadership actions against the background of this context level might enable deductions to be made regarding an individual school’s self-governance capacity.

Conceiving a school environment as a regional structure, the area close to school (ACTS) represents the catchment area of a school, which may largely determine the composition of its student body, e.g. with respect to social background and economic resources. The school environment also represents the market within which a school and its leader must position themselves. And school leaders can be expected to relate the environment to their own (school) situation and student population. Hence objective non-reactive regional structural characteristics of an ACTS may serve not only to describe individual school contexts; they may also be useful for categorizing subjective statements made by school leaders with respect to their areas of activity, experience, and workload. The interplay of different context levels may also evoke strengthening, compensatory or possibly even leveling effects (see e.g. Shamir, 2013).

Against this background we derive competing hypotheses concerning the interrelation of leadership activity and characteristics of a school’s environment. We may expect school leaders working under more challenging circumstances (a high proportion of poorly

educated parents and/or families threatened by poverty) to spend less time on the fulfilment of necessary management and improvement tasks, because they are concerned with orienting their daily business toward their students' preconditions and needs. As conditions in the ACTS are not immediately manageable, but assuming that they have been anticipated, we may expect to find priorities set on management and improvement tasks.

3 The area close to school: an intermediate level of context?

From the perspective of social theory, not only the internal conditions of a school and the structure of the educational system, but also the particular school environment is generally taken to be highly influential for the individual development of students and their educational success. It is to these contexts that individuals owe the shaping of their educational expectations, assessments, and actions (Becker & Schulze, 2013). Yet it remains unclear whether school leaders and their actions are also – and comparably – influenced by the school environment. Nor, in fact, does an exact definition of school environment exist. The function of interest here – the area close to school (ACTS) – has not so far been investigated, especially in its role as moderator between structural characteristics (notably student composition) and school leadership action. What is needed, therefore, is a determination on the one hand of what is actually meant by “school environment”, and on the other of theoretical points of reference framing the relationship between school leadership actions and the area close to school.

3.1 Terminology and theoretical points of reference

We refer the term “area close to a school” (ACTS) to the school's immediate environment, first of all in terms of a spatial milieu that affects the thoughts and actions of students, teachers, parents, and school leaders (Ditton, 2013). Several competing theories exist regarding the explanation of such effects. The collective socialization model assumes that role models observable and available in the immediate environment will likely be adopted, while the relative deprivation model appears more suitable for explaining the individual's perception of contextual conditions. Thus school leaders tend to judge their own situation by placing it in the context of the school environment, and an objectively identical starting point can be subject to very different assessments. In so-called happiness research, differences in subjective perception of social status, income or satisfaction are explained in

relation to objective parameters (based on Jackman & Jackman, 1973). Here, role models as such are less relevant than the yardstick by which (one's own) conduct is measured (Ditton, 2013).

Considering their actions, we might deduce that school leaders judge their own school situation against the background of the school environment, and that time spent on central fields of action is relative to that context – a relation that is, moreover, subject to modifying, leveling, and strengthening effects. For instance, studies have demonstrated that in schools with an allegedly unfavorable composition (high proportion of poorly educated families, low level of achievement and skills, family problems, low income, unemployment) more time and effort must be invested to achieve an improvement of (academic) outcomes, i.e. to achieve a compensating effect from schooling (Racherbäumer et al., 2013). So-called 'Matthew' effects are thus more likely to occur when beneficial context conditions accumulate, while compensation effects are more likely to occur when disadvantages resulting from one context condition can be redressed at least partially by advantages in another (Ditton, 2013). A cumulative (Matthew) advantage might be expected if a school is located in a particularly good catchment area and the staff members are highly committed, taking on responsibility for the school, and finding their own room to maneuver beyond what is legally stipulated. The example is one in which characteristics of the ACTS have a reinforcing effect on particular areas of action (see e.g. Hannah et al., 2009).

Another explanatory approach to the relevance of the ACTS for school leadership actions is offered by the theory of competition and the concept of the (quasi) markets in which school leaders operate. Particularly regarding general education in Germany, this market is increasingly characterized by a rising private sector, choice of schools and rivalry (Bellmann & Weiss, 2009; Weiss, 2001). As is the case in many industrialized countries (with the exception of the United States and the United Kingdom), this development can only in part be traced back to political reform (e.g. abolition of catchment areas). The development is most of all driven by a marked drop in student populations, resulting in school closures and parents increasingly voting by feet. Hence school leaders face an increasingly competitive environment and need constructive strategies to position their own school.

Against this background, indications of the relevance of the area close to school can more readily be found in the context of school quality assurance and developmental planning. In

the German context, a school program encompasses not only a pedagogical concept, but also the identification of areas for improvement and a work program of pedagogical development targets (Holtappels, 2001). This includes stocktaking of the existing situation and analysis of the state of development regarding not only material and human resources, but also external framework conditions (structural, socio-cultural environment, social composition of student population and parents, supportive resources, institutions and cooperation partners, cf. Holtappels, 2001, p. 65). Accordingly, a specific meaning is also attributed to structures in the school environment that impact school management and strategic development – although the regional point of reference is not precisely defined in the concept suggested by Holtappels (2001). The social environment surrounding a school is moreover a fundamental parameter for establishing reliable cooperations with external bodies such as youth welfare organizations, e.g. for providing extracurricular or after-school opportunities in an all-day setting (Thimm, 2006; Deinet & Icking, 2006).

The significance of a school's environment is also recognized in learning achievement assessments (standardized comparative assessments at different levels conducted in certain German federal states), indicating official recognition of the fact that differences between classes and schools might result not only from differences in instruction but also from different starting conditions. Fiege et al. (2011) present different social reference norms applied in the German federal states to reach achievement scores that are comparable across a state. Each of these norms presents a social background reference value by means of which findings on learning achievement can be adjusted. Whether the approach taken concerns a “typification of location”, a comparison of four schools with similar composition, or the concept of expected contextual values, it is, however, always the school leader who is in charge of allocation to the reference group (which is in some cases determined with great methodological effort, but still prone to systematic distortion). Nevertheless, such approaches to adjustment highlight the relevance of the structural characteristics of a student population and catchment area. This is also reflected in concepts according to which in some federal states schools with an unfavorable student composition are allocated additional human and/or material resources (Makles, 2014). Against this theoretical background, we should expect characteristics of the ACTS (e.g. social composition, market situation, resource allocation) to be linked to processes of school management and school improvement and hence to leadership activity.

3.2 Theoretical classification

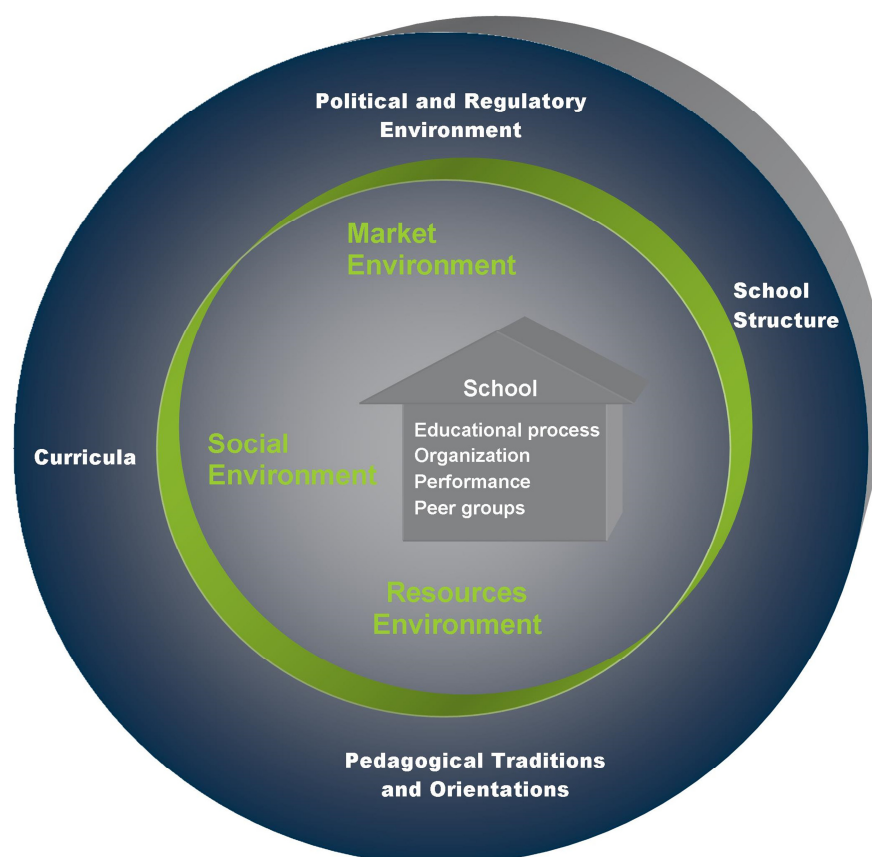
At several points we have already referred to framework models delivered by empirical school effectivity research which serve to systematize characteristics that are relevant to (measuring) school quality. The majority of internationally applied models of systematization are oriented toward the integrated school effectivity model proposed by Scheerens (1990, reproduced in Scheerens & Bosker, 1997). This model presents a distinction between governable external factors of an education process (especially those inputs that are estimable regarding their effect on school quality) and non-governable context factors. According to Scheerens, the latter are governance measures at a higher administrative level, the general development of demand for education as well as so-called co-variables, e.g. school size, composition of student population, school form and regional location (urban/rural environment). Ditton (2000) adapted Scheerens' model to the German context and further developed it into a model for the assessment of school quality. Klieme & Rakoczy (2008) expanded and further defined the non-governable context factors, mentioning school structure, curricula, pedagogical traditions and orientations, teacher training, funding, and governance of the education system, as well as the socio-economic and socio-cultural environment.

Regarding the ACTS as it is conceived here, it seems inappropriate to assign school area conditions to the further context as suggested by Scheerens (1990). For instance, the ACTS is surely more distal regarding school internal processes than the composition of student population, yet it is more proximal and more adjacent in a regional and geographical sense to these processes – thus to school quality – than school legislation (Figure 1). As will be outlined in the context of operationalizing the ACTS, the immediate school environment is not a clear-cut characteristic of a school. Even if no clearly defined catchment areas of a school exist, it is unlikely for two schools to recruit their students from exactly the same area; thus their immediate school environment will vary. Therefore, the ACTS counts as a non-governable context factor but has to be measured on the organizational level. We might, therefore, assume that the ACTS will moderate school leadership activities in different fields of action that are relevant for the management and development of an organization (instructional, organizational, and human resource development).

The assumption that the ACTS provides an intermediate level of context for leadership activity receives further support from an alternative model of systematization based on the distinction between inner “near-to-experience” from outer “distant-to-experience” context

factors (Bate 2014). Here, the inner context “includes things like organizational and divisional cultures, group norms, leadership, local champions, political processes” whereas the outer context consists of “broader economic, social and political trends and events” (Bate, 2014, p. 10). Hence, the outer context is “too distant to be managed” but the inner context includes manageable features through which implementation and innovation processes proceed. Evidently, the ACTS cannot be clearly assigned to either inner or outer context but its characteristics, e.g. with respect to the social composition of the student body, should have a significant impact on the planning and development strategies of school leaders.

Figure 1: The ACTS as an intermediate level of context



4 The social context: a first illustrative example

In this section, using German survey data from the SHaRP project, we exemplify the ACTS as an intermediate contextual level and outline its relation to leadership activity by considering the *social* environment of schools. In the nationwide SHaRP project, school principals of primary and secondary schools in six German federal states ('Länder') were asked about the regional, institutional, personal, and situational settings of their school management activities, and about their own work satisfaction and workload, with respect to predefined areas of activity (e.g. organizational and personnel development, and their own teaching activities). We have enriched the survey data with administrative data on the level of districts (*Kreise*), assuming that characteristics of the district where a school is located provide us with a reasonable description of key features of the ACTS. Due to a relatively small non-random sample and a lack of identical measures of social composition at both the school and the district level and of data on a lower aggregation level (e.g. postal zip code areas) our first empirical example serves as an illustration only. Nonetheless, we can draw relevant conclusions on the value added by our proposal to explicitly consider the school environment in leadership research. With regard to the social environment, we focus on poverty risk at school and within districts. We describe differences between the social context at school as reported by school leaders and the social composition of the ACTS. In a multivariate regression framework we investigate how the social composition of the student body and poverty risk in the area close to school relate to the workload and satisfaction of school leaders.

4.1 Institutional background: some remarks on rights and duties of school leaders

The Federal Constitution of Germany states that the entire school system is subject to state supervision (Basic Law §7, 1), therefore fully autonomous schools are prohibited. Nowadays, schools have become contractually capable, although, due to the principle of federalism in Germany, their responsibilities take different forms. The following paragraphs give a brief overview of rights and duties of school leaders. Due to the wide variation in legal requirements between federal states, we restrict the description to the six federal states from which school leaders participated in the SHaRP study (Brandenburg, Berlin, Hesse, Hamburg, Lower Saxony, and North Rhine-Westphalia).

In Germany, the function of a school leader is not standardized; “school leader” is not an official, generally applicable title or post. In Brandenburg, Hesse and North Rhine-Westphalia, school legislation distinguishes between school leadership tasks on the one hand and the school leader’s tasks on the other. Only in the case of Hamburg can we state that school leaders function as supervisors. In all other states, school leaders have limited decision-making authority, e.g. concerning recruitment. Even if staff is appointed on the basis of adverts posted by a school, the ultimate right of decision rests with the authority of the state in question.

In contrast to many other countries, school leaders in Germany are obliged to teach. Based on a previous analysis of the SHaRP data, Brauckmann & Schwarz (2015) discuss whether school leaders are hindered in their management function by having to teach. Particularly in Hamburg and in Lower Saxony school leaders are relieved of teaching duties. Their working time is allocated primarily to leadership tasks (“leadership time”); the teaching mandate is handled subordinately. In all other federal states in this study, leadership time primarily depends on type and size of school. In Brandenburg, for example, leadership time is seven hours per week at primary schools with additional 0.6 hours per school class. In North Rhine-Westphalia, leadership time depends on the number of teaching posts at the school; in Hesse, it depends on the size of the student body. Nonetheless, leadership time can hardly be pre-defined or even estimated, as many other factors influence it, e.g. working time model (part vs. full time), the principal’s age (reduction of working hours), and type of collaboration in leadership (leadership tasks allocated to teachers other than the principal, as mentioned above).

4.2 The link between challenges at school, leadership workload, and (dis)satisfaction

We restrict our sample to $n=79$ school leaders ($N=236$) who answered all the items of the questionnaire used below, and for whom we can determine the relevant school district. Initially, we are interested in the association between poverty risk and the extent of student-related challenges at school as reported by school leaders. School leaders report the share of students from low income families in three categories ($\leq 10\%$, $10-20\%$, $>20\%$). Student-related challenges are measured by a one-factor score scaled between 0 and 1 with higher values representing stronger challenges. The score particularly represents problems due to the heterogeneous composition of the student body, aggressiveness among students,

lack of motivation, and lack of stimulation at home. We find that a high share of students from low income families (>20%) is strongly linked to the student-related challenges school leaders claim to face at school (Table 1).

In a second step we focus on two outcomes: leadership activity in terms of weekly workload and (dis)satisfaction at work. The SHaRP study identifies seven areas of school leaders' activities (for details see Brauckmann, 2012b and Brauckmann & Herrmann, 2013). Besides specific school management activities – instructional, personnel and organizational management and development – the identified areas include the school leader's own teaching tasks, counseling students and parents, administration (e.g. reporting to the school authority), and representing the school to the public and external partners. We sum all activities apart from their own lessons (which include time for preparation etc.) as leadership tasks. Workload is measured as hours per week from which we generate the relative workload in each task area, i.e. all seven individual relative workloads sum up to 100% of working hours per week. The workload of leadership tasks then reflects the proportion of weekly working time spent on the six areas of leadership activity. To measure school leaders' work (dis)satisfaction we extracted the first principal factor of 16 items on occupational stress. Items with highest negative loadings (in the direction of dissatisfaction) represent statements like "I enjoy my job very much", "I am entirely satisfied with my job", "I really like staying at my working place". Items positively loading on dissatisfaction are "I often have a bad conscience towards my colleagues" and "In my position, I cannot achieve my professional ideals".

Table 1 shows that both the leadership activity workload and work (dis)satisfaction are linked to the intensity of student-related challenges at school. While dissatisfaction significantly increases with challenges due to a heterogeneous student body, lack of stimulation etc. the time spent on leadership tasks decreases with the intensity of challenges. This means that principals who see themselves as leading more challenged schools spend significantly (10%-level) more time in class and less time on organizing, managing, and developing their schools. This is unexpected, and we can only speculate on possible reasons. In more challenging settings, more teaching personnel, including school principals, may be needed in class, but a strong and visible head of school is just as important. In Germany, school leaders are trained initially as teachers who – sooner or later in their career – opt for the principal's position. Thus a possible explanation may be, as

Brauckmann & Schwarz (2015) argue, that school leaders facing problems at school may retreat to the classroom, where they feel more secure and comfortable.

Table 1: Correlation between share of students from low income families, challenges at school, workload of leadership tasks and dissatisfaction of school leaders (OLS results, n=79)

		Student-related challenges ($R^2 = 0.22$)
Share of students from low income families (ref: $\leq 10\%$)	>10%-20%	0.3988 (0.0514)
	>20%	0.1851** (0.0533)
		Workload of leadership tasks (% of weekly working hours, $R^2 = 0.47$)
Student-related challenges		-13.7504 ⁺ (7.4658)
		Dissatisfaction (score 0 to 1, $R^2 = 0.11$)
Student-related challenges		0.2210* (0.1094)

Note: ⁺p<0.1; *p<0.05; **p<0.01; standard error in parentheses; additional control variables: type of school (primary school/gymnasium), system level (federal states)

4.3 A preliminary operationalization of the ACTS

In the context of school management activities we propose to describe the ACTS in terms of features of the school-related environment that are of administrative origin (e.g. administrative data on population structure). In the ideal case, we would use individual, student-specific information not only on disposition (learning prerequisites) and the learning environment at home, but also on social background. In Germany, individual level data is only available through surveys; administrative data on the student level (like, e.g. the National student data base in the UK) does not exist. As a consequence, data on the student or class level is not available, nor does it exist at school level; hence in leadership research in Germany, but also when adjusting external exams for the social composition of the student body (e.g. Fiege et al., 2011), the school principal is asked to assess social composition, as well as specific challenges the students and school are facing. Since the collection of contextual information (e.g. immigrant status of students, socioeconomic resources in families) is based on interviews with school principals, the information gained is inevitably exposed to subjective distortion, which can be considerable (Anderson, 1982;

Bonsen et al., 2008). The same applies to the school environment if it is assessed by the school principal.

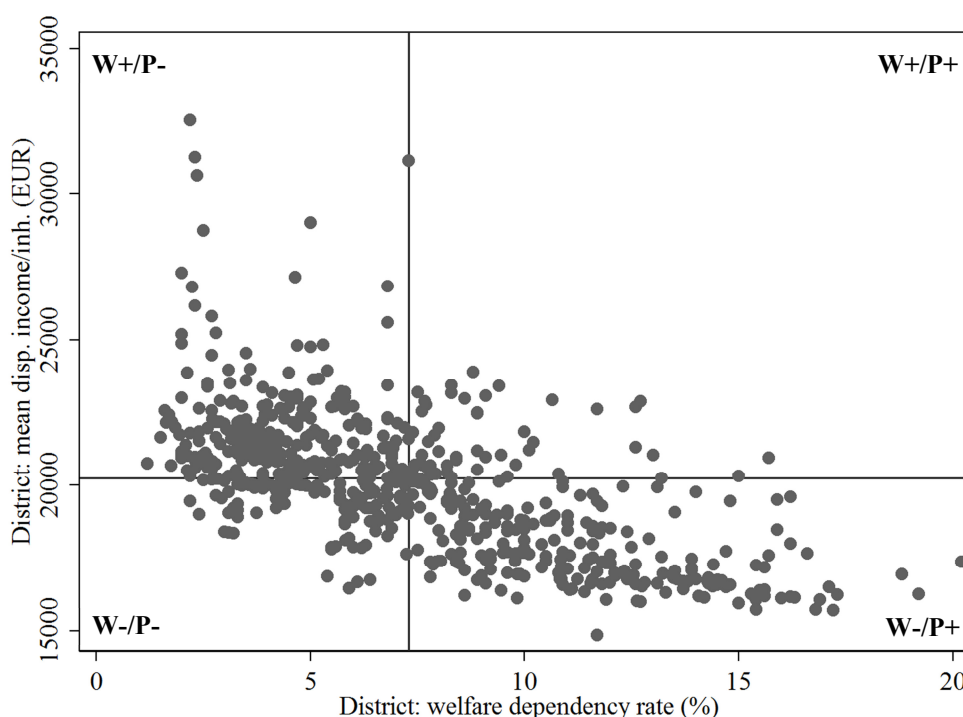
As argued above, we hence propose to measure characteristics of the school environment (the ACTS) using administrative data, and we propose the concept of ACTS to cover the geographical region and the cultural and social area in which the school operates, where it has to position itself relative to competing schools and from which the school primarily recruits its students (catchment area). However, in order to consider geographical and political administrative data as describing the ACTS, we have first to find a spatial definition of the ACTS. An obvious suggestion would be to use a school's catchment area. But while some German states (e.g. Hesse) still have fixed administrative catchment areas, other (e.g. North Rhine-Westphalia) do not. As 'exceptions to the rule' school choice is legally permitted, and is in practice always possible, and studies show that parents choose even in the presence of catchment areas (Makles, 2014; Makles & Schneider, 2014; Schneider et al., 2012). Hence, actual catchment areas are not well-defined regional areas, nor are they free from overlaps.

We suggest the political district (*Kreis*) in which the school is located as a preliminary, crude approach to defining the ACTS, and use the welfare dependency rate and mean disposable income per household (in EUR) in 2011¹ to describe the social composition of the ACTS. It has to be noted that the welfare dependency rate turns out to be the most powerful indicator in socio-spatial analyses, especially in studies focused on the settings and outcomes of schooling and the social deprivation of students (Makles, 2014). For a first description of school districts regarding their social composition we classify the districts at the median of disposable income (horizontal line in Figure 2) and at the median of the welfare dependency rate (vertical line in Figure 2).²

Judging by the disposable income and welfare dependency rate, about 32% of all German districts are relatively wealthy (W+/P-) whereas about 40% of all districts are at a relatively high poverty risk (W-/ P+). Nationwide only about 10% of all districts reveal both a disposable income and a welfare dependency above average. In our sample, this type of district, as well as districts with low disposable income and high poverty risk, are overrepresented (24 and 35 of a total of 79 observations).

¹ The SHaRP study was carried out in 2011.

² Median of disposable income (in EUR) on district level in 2011: 20.234 [EUR]; median of welfare dependency rate on district level: 7.3[%].

Figure 2: Classification of German districts (n=402) based on welfare dependency and disposable income

We are interested in differences between the perceived and objectively measured social composition of schools. To assess such differences we compare the perceived prevalence of poverty (self-reported share of students from low-income families) to our objective measurement of poverty risk on the district level (see Table 2). With regard to our sample, 21 of 79 of school leaders' assessments of poverty risk match the poverty risk on district level measured by the welfare dependency rate (light gray shaded fields of Table 2). 17 school leaders report a lower poverty risk at their school than in the ACTS, but the majority of 41 school principals report a (much) higher share of students from low-income families than we would expect based on the ACTS (dark gray shaded fields of Table 2).

Table 2: Differences of perceived poverty at school and objectively measured poverty in the ACTS

ACTS: Welfare dependency rate (district level)	SCHOOL LEADERS: Reported share of students from low income families			Total
	≤ 10%	10% to ≤ 20%	> 20%	
≤ 10%	10 (33.3%)	16 (53.3%)	4 (13.3%)	30 (100.0%)
> 10% to ≤ 20%*	17 (34.7%)	11 (22.5%)	21 (42.9%)	49 (100.0%)
Total	27 (34.2%)	27 (34.2%)	25 (31.7%)	79 (100.0%)

Notes: *maximum welfare dependency rate in our sample is 18.8%; row-wise percentages in parentheses, rounding differences not offset.

There are three possible explanations of these differences between perceived (self-reported) and (more) objective poverty risks. The first is perception bias; school principals may underestimate, but especially *overestimate* the share of students from low income families. A second explanation is segregation, i.e. differences between the social composition of the school and its environment are due to the unequal distribution of students from low income families over schools. However, if segregation was an issue we would have expected a different picture of self-reported social composition, especially at *Gymnasiums* (academic track secondary schools), which constitute 50 out of 79 schools in our sample. *Gymnasiums* lead to the general university entrance qualification (*Abitur*) and usually show a high proportion of students from well-educated and high income families compared to other German school types. Splitting Table 2 by type of school we find comparable differences between perceived and objectively measured poverty risk by type of school. A third reason, of course, is our preliminary operationalization of the schools' social environment and thereby induced differences in measures of poverty risk. That is, the true composition of each school is unknown (lack of data) and cannot be compared to the composition of its ACTS and to the school leader's perception. Hence, we cannot verify whether the welfare dependency rate and the share of students from low income families really do reasonably measure the same construct (poverty risk). For the time being we have to assume that these three reasons for observed differences are present in our analysis, but magnitudes cannot yet be disentangled. However, trusting our operationalization, the frequencies given in Table 2 reveal that school principals tend to overestimate poverty risk among their students. At schools located in ACTS with welfare dependency of up to 10%, two thirds of the school leaders report a higher share of students from low income families (>10%). At schools in areas with welfare dependency of more than 10% about 43% of school principals report a higher poverty risk at their schools.

4.4 Objectively challenged schools, leadership workload, and dissatisfaction of school leaders

The next step is to introduce a categorical variable reflecting the objectified challenge of poverty risk at school. The first category is observed if the perceived share of students from low income families does not exceed the welfare dependency rate in the ACTS (Poverty: schools \leq ACTS, i.e. schools are objectively not challenged by poverty risk). A school belongs to the second category if poverty risk at school does exceed that measured in the ACTS (Poverty: schools $>$ ACTS, i.e. schools are objectively challenged by poverty

risk). Table 3 shows OLS results using the objectified measure of poverty risk to explain the association between challenges at school, workload of leadership activity and work dissatisfaction of school leaders.

Table 3: Correlation between objective challenges at school, workload of leadership tasks and dissatisfaction of school leaders (OLS results, n=79)

		Workload of leadership tasks (% of weekly working hours, $R^2 = 0.48$)
Interaction of objective challenge of poverty risk and student-related challenges	Poverty: school \leq ACTS	-20.0910* (9.3739)
	Poverty: school $>$ ACTS	-12.7012 ⁺ (7.5123)
		Dissatisfaction (score 0 to 1, $R^2 = 0.11$)
Interaction of objective challenge of poverty risk and student-related challenges	Poverty: school \leq ACTS	0.2298 (0.1385)
	Poverty: school $>$ ACTS	0.2194 ⁺ (0.1110)

Note: ⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; standard error in parentheses; additional control variables: type of school (primary/secondary), system level (federal states)

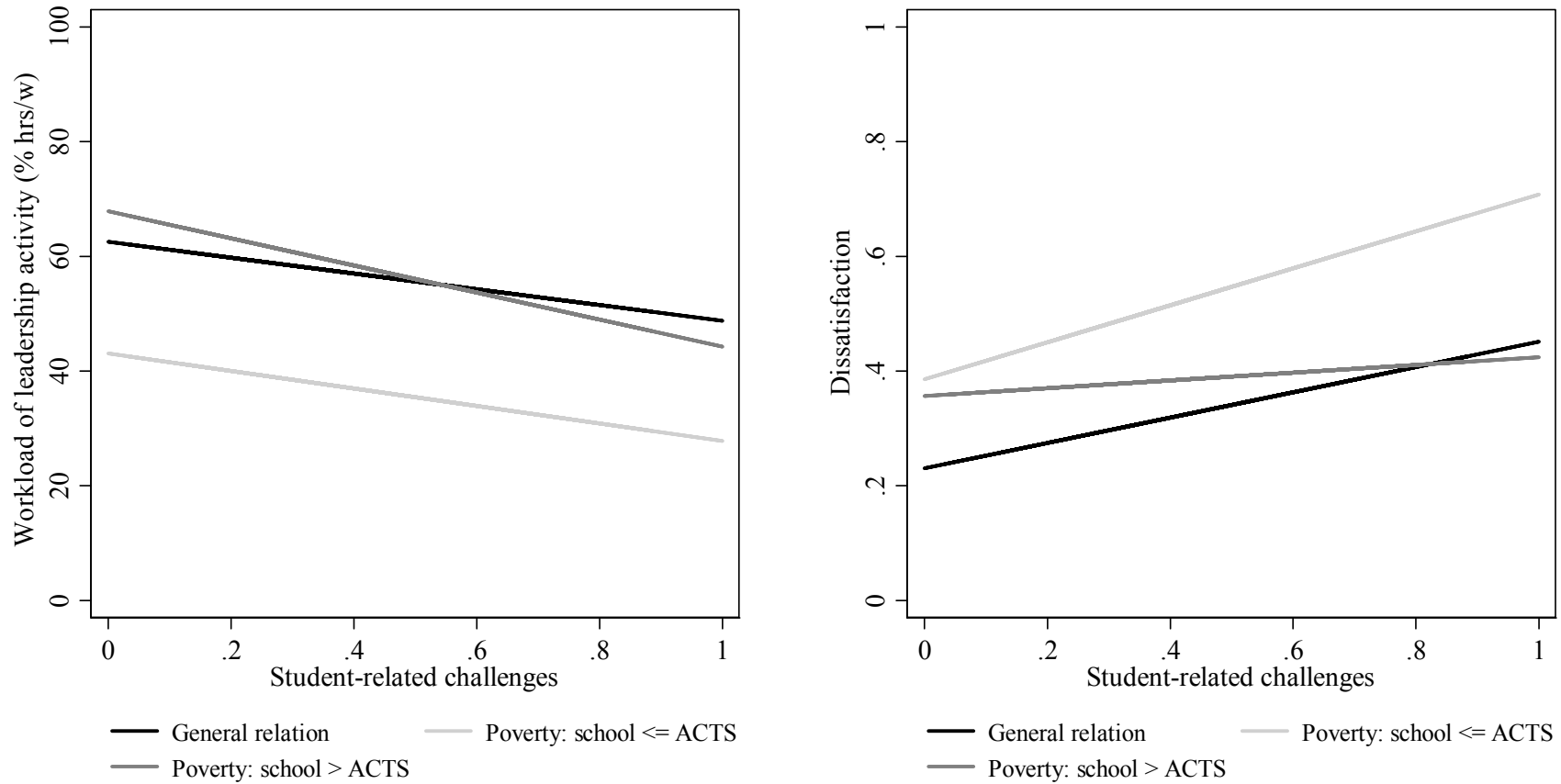
Using the interaction of the two categories of a school being objectively challenged by poverty risk and student-related challenges, we get estimates for gradients of workload and dissatisfaction depending on group membership. Principals leading schools with a poverty risk not exceeding that in the ACTS show a stronger negative association between student-related problems and their workload of leadership tasks, but such a strong link is not found with respect to their work dissatisfaction. For principals leading schools which are even objectively challenged by poverty risk at school (Poverty: school $>$ ACTS) we find a significant (10%-level) association of student-related challenges with both outcomes, although magnitudes are smaller in both cases than for school leaders leading objectively unchallenged schools. In addition, these associations are quite similar to those obtained from the general assessments of student-related challenges (Table 1).

However, associations reported in Table 3 force the estimated relation between challenges and dissatisfaction (or workload) to the same intercept. Indeed, separate regressions yield not only different slopes, but also different levels of dissatisfaction and of working time spent on leadership tasks within the two groups (objectively challenged or not). In Figure 3 the general relation reflects the association of challenges at school and dissatisfaction (workload) without considering the objectified poverty risk at school. Principals leading

schools which are not objectively challenged by student poverty show a remarkably lower overall level of leadership activity (in terms of weekly workload) than principals leading objectively challenged schools, but slopes (estimating the group-specific association between student-related challenges and workload) do not differ significantly. With respect to work dissatisfaction, we estimate comparable intercepts for both groups of school leaders. But in contrast to school leaders of unchallenged schools the level of dissatisfaction of principals facing comparably high poverty risk is only marginally influenced by student-related problems.

For the time being we can only speculate on channels promoting these correlations. One may be additional human resources allocated to schools with a high proportion of students at economic and social risk. These resources may enable school leaders to focus on leadership and they may in general promote a positive working climate and work satisfaction. Trusting in our objectified measure of poverty risk we may also argue that leaders of objectively challenged schools are more sensitive to requirements resulting from student-related problems like lack of motivation, lack of stimulation at home etc., which coincide with a heterogeneous composition of the student body. Longer experience as teacher and school leader may strengthen their responsiveness and may enable them to adopt organizational measures and strategies that lead to positive attitudes and satisfaction. Although our analysis can serve as an illustration only, our results emphasize the relevance of objectively measured environments of leadership activity. Further research is needed to shed more light on the situation of principals leading objectively (un)challenged schools.

Figure 3: Group-specific link between student-related challenges and workload of leadership activity (left) and work dissatisfaction (right)



Note: Estimates obtained from separate regressions; additional control variables: type of school (primary/secondary), system level (federal states)

5 Summary and discussion

The present paper contributes to leadership research by proposing the area close to school (ACTS) as an intermediate context level of school leadership. We discuss to what extent characteristics of the ACTS (e.g. characteristics of the social, resources and market environment) influence leadership activity, given that the ACTS is not directly manageable but has a strong influence on the situation and climate at school. Hence it deserves close consideration by school principals (Dancy & Horsford, 2010) and should be reflected by their perceptions about school. We illustrate our approach by analyzing the link between student-related challenges at school, poverty risk in the ACTS, and the school leader's workload of leadership activities and work satisfaction. Based on a sample of 79 school leaders drawn from the German SHaRP study we find that school principals' perceptions of student-related challenges at school (e.g. lack of motivation, lack of stimulation at home) differ by the social school context (poverty risk in terms of students from low income families) and by the ACTS poverty risk (welfare dependency rate).

However, we observe a high variation of facts and perceptions. Principals leading schools where a disadvantaged social environment is reflected in the social composition of their student body invest more time in managing and leading their school and are less dissatisfied with their work than their colleagues acting in more advantaged settings. At the same time, student-related challenges have less influence on satisfaction and leadership activity – although they are more frequent in disadvantaged settings. From these results we speculate whether additional resources allocated to schools with a high proportion of students at economic and social risk may explain these associations. A rather strong emphasis on social learning instead of core academic student learning may also explain this relation (Herrmann, 2010). Another conclusion may be that the individual context level, in terms of personality, motivation, experience etc. of the school leader, may contribute significantly to leadership activities, work satisfaction and workload. Hence, our results provide descriptive evidence of the need for qualification and professionalization that will enable school leaders to become “masters” (Goffee & Jones, 2006) or even “creators” of (their) context (Wallace & Tomlinson, 2010; Davidovich et al., 2010).

The results suggest an adaptive leadership approach (van Ackeren, 2008) which distinguishes more accurately between malleable and non-malleable contextual factors. Further research should deepen the empirical analysis of the schools' social environment and expand the

analysis to the market and resources environment (Figure 1). For the time being, our empirical findings are limited due to lack of data and different measures of social composition at the school and district level. Hence, further analyses of the proposed approach require a large, representative dataset which should also allow for describing the ACTS on a low aggregation level.

There will always be different perceptions of the contextual aspects influencing an organization, and of the importance that should be ascribed to those influences. An important limitation of our research is that a shared understanding of the context might never be reached. We have to be aware that quantitative as well as qualitative information is limited in scope, and that some aspects of context remain hidden (especially at the local level) and/or unpredictable (especially at the national policy level). So far we have to assume a multidimensional process involving societal, jurisdictional and individual contextual conditions, as well as contextual (organizational) factors of the individual school. Contextual features may be drivers of challenges, workload, and satisfaction, but certain priorities of school leaders may enforce or weaken some of the problems and challenges mentioned.

The extent to which the quality of management activities – and thus also school quality – actually depends on socio-spatial conditions remains an important issue for further research. This question is especially relevant in countries with established needs-based resource control, where allocation of personnel and financial resources to schools (at least in part) depends on the social and/or ethnic composition of the student body. As the same leadership and management actions may have completely different meanings in different contexts (MacBeath, 2012), future research should further address the role of external context factors in driving quality and change in schools.

Identifying and separating internal and external drivers of improvement requires valid measurements of the contextual conditions of school leadership activity. According to our results this can only be achieved by linking perceptions of situational and organizational conditions to objective, non-reactive measurements of schooling conditions. As long as assurance of school quality depends almost solely on school leaders' reports, a valid picture of relations between resources and the improvement of school quality and of student performance cannot be drawn.

However, our findings point to the need for conceptual leadership models which do not focus on a leader as an isolated entity within a vague and abstract context, but as one who is dependent on it. Our proposed approach illustrates the meaning of contextual variables as an

integral aspect of empirical leadership research. For example, it enables the analysis of context-driven task profiles of school principals, through which the contextual nature of leadership and management practices may evolve into greater clarity.

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