Mature school cultures and new leadership practices—An analysis of *leadership for learning* in German comprehensive schools

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Abstract In international school improvement research, a long-standing theme is that school improvement is shaped to a great extent by principals and their *leadership for learning*. In contrast to that, this role is comparatively new in German-speaking countries. Since the leadership practices associated with this new role differ from old role expectations, it is reasonable to assume that “mature” school cultures might prevent principals from adopting these practices. In this paper, we examine the difference in leadership practice between principals of “mature” and “young” culture schools in socially disadvantaged areas using a standardized teacher survey. The results suggest that while schools with a mature school culture founded during the old principal role were less likely to have such leadership practices that are more proximal to teachers’ instruction and pedagogical practice, this result could largely be explained by other characteristics of the school culture and professional community.

Keywords Leadership for learning · Principals · School culture · School improvement

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Alte Schulkulturen und Neue Führungspraktiken – Eine Analyse von *Leadership for Learning* an deutschen Gesamtschulen

Zusammenfassung In der internationalen Schulentwicklungsforschung herrscht das Bild vor, dass Schulentwicklung im besonderen Maße durch eine Schulleitung geprägt wird, die in ihrer Schule *Leadership for Learning* betreibt. Im deutschsprachigen Raum ist dieses Bild dagegen vergleichsweise neu. Da sich die mit dieser neuen Rolle verbundenen Führungspraktiken von alten Rollenerwartungen unterscheiden, könnten „ältere“ Schulkulturen Schulleiter*innen daran hindern, diese Praktiken zu übernehmen. Im Beitrag wird vor diesem Hintergrund der Unterschied in der Führungspraxis zwischen „alten“ und „jungen“ Schulkulturen an Gesamtschulen an sozialräumlich benachteiligten Standorten mithilfe einer standardisierten Befragung der Lehrkräfte überprüft. Die Ergebnisse deuten darauf hin, dass Schulen mit einer „älteren“ Schulkultur, die im alten Schulleitungsparadigma gegründet wurden, zwar solche Führungspraktiken weniger aufwiesen, die den Unterricht und die pädagogische Praxis der Lehrkräfte beeinflussen, dass dieser Zusammenhang aber größtenteils durch andere Charakteristika der Schulkultur und Professional Community erklärt werden konnte.

Schlüsselwörter Schulentwicklung · Leadership for learning · Schulleitung · Schulkultur

1 Introduction

International school improvement literature is marked by a relatively broad consensus that leadership, preferably by the school principal, is a key requirement for schools to learn and develop (see Kovačević and Hallinger 2019). Qualitative research points out that leadership is central to improvement processes (Herman 2012; Ylimäki and Jacobson 2013), whereas quantitative studies indicate that principal leadership has an impact on organizational structures and processes, as well as on teachers' practice (Leithwood and Sun 2012), which in turn affects the performance of students (e.g., Hattie 2009; Hendriks and Steen 2012). The term *Leadership for Learning* (LfL; Hallinger 2011) subsumes several leadership approaches that are mostly deduced from empirical findings and are not only used to describe 'effective' leadership, but are often also translated into normative and legal expectations for principals (Brauckmann 2014; Buchen and Rolff 2016).

In Germany, the role of principals has traditionally been that of teachers with additional administrative tasks who 'kept the school running', but were not responsible for school improvement in a faculty of largely autonomous teachers (Klein et al. in print). Nowadays, principals are expected to be 'leaders for learning' as well (Mintrop 2015). However, recent research suggests that while the normative expectations might have changed, the actual practice of principals is very often still informed by their old role (for an overview, see Klein 2018, pp. 14 ff.). With a view to school culture approaches (Helsper 2008; Schein 2010), we can assume that especially in schools in which the practice of principals was guided by their traditional

role for a long time, it is more difficult to challenge ‘old’ perceptions of ‘good’ leadership behaviors, and to legitimize new behaviors.

The goal of the paper is to theoretically model the relationship between the maturity and founding time of the school, selected characteristics of its ‘culture’, and the leadership practice of principals. We will then use empirical data to explore the extent to which there are systematic differences in the leadership practice at schools that were founded during the traditional and new leadership paradigm, and how this is related to other characteristics of school culture. In the following, the approach of LfL will be outlined. Subsequently, the institutional environment for school leadership in Germany is described, and delineate different school culture approaches to theoretically describe the association between school culture and leadership. We then present data from our research project *Leadership and School Improvement in Context*, which was funded by the German Research Foundation (DFG).

2 Conceptual framework

2.1 Three dimensions of LfL

In the international leadership literature, three leadership approaches are frequently discussed: Transformational leadership, instructional leadership, and distributed leadership (see, e.g., Kovačević and Hallinger 2019). The essence of *transformational leadership* (Bass and Avolio 1994) is that leaders develop a compelling vision, and by virtue of their exemplary, motivating, inspiring, and supportive behavior, ensure that the teachers adopt the organizational goals as their own, and thus are motivated to work towards these goals. The approach, which originated in organizational theory, was adopted by Leithwood et al. (2006), transferred to school environments, and itemized into school-related leadership practices that were subsumed in the areas of ‘Setting Directions’, ‘Developing People’, and ‘Restructuring the Organization’ (Leithwood et al. 2006).

In *instructional leadership*, the focus is not so much on transforming people, but on improving the teaching and learning of students (Bush and Glover 2014). The approach was developed in the 1980s by Hallinger and Murphy (1985) and has since been continuously refined (e.g., Hallinger and Wang 2015). It describes leadership practices that focus on providing conditions for the ‘best instruction’ through designing goals and instructional programs, evaluating and improving processes, and creating a safe and positive learning environment.

The third approach is *distributed leadership*, which, in its analytical form (Spillane et al. 2001), does not focus on leadership effectiveness as much as on an analytical understanding of how different people, structures, and tools are involved in leadership processes. Besides this analytical type, there is also a more normative version of distributed leadership that outlines how leadership *should be* distributed within schools in order to aid school improvement. This variant is not clearly defined, and approaches range from the involvement of teachers in decision-making

processes, to participatory committees, and the empowerment of teachers in teacher leadership (see Harris 2013; Wenner and Campbell 2016; Klein et al. 2019).

Leadership research suggests that all three perspectives—leadership focused on transforming people, on improving the learning of students, and on engaging people in decision-making—are important for school improvement. Quantitative (meta-)studies show that the academic achievement of students is especially affected by leadership that helps teachers improve their instructional skills (Robinson et al. 2008; Hattie 2009), whereas practices related to transformational (e.g., direction-setting) and distributed leadership have a lesser impact on student outcomes, but positively affect aspects such as school climate and teacher commitment and well-being (Sun and Leithwood 2015; Ross et al. 2016). In lieu of these findings, Hallinger (2011) advocates for an integrated approach that subsumes the three perspectives and is focused on *leadership for learning*: learning of the students, but also learning of the adults in the school, who need to further their own knowledge, skills, and professionalism to improve their practice, and in that should be supported and encouraged by the principal in a meaningful way.

Although theoretical papers on leadership have repeatedly pointed out that the relationship between leaders and those being led is reciprocal (Hallinger and Heck 1996) and that school, local or institutional context conditions have an influence on leadership practice (Hallinger 2018), leadership research primarily focuses on the effect of leadership on those being led, while there are only few empirical analyses of school factors that influence leadership practice.

2.2 LfL in Germany

A study by Kovačević and Hallinger (2019) shows that LfL or its individual dimensions have been widely discussed in English-speaking countries, especially the United States, since the 1960s, and the research from these countries has shaped our understanding of ‘effective’ school leadership. Historical studies from the United States moreover show that even long before the 1960s, the role of principals was characterized by their responsibility for the quality of their school and its instruction (Goodwin et al. 2005).

2.2.1 The role of principals in the “old leadership paradigm”

In contrast, the tasks of German principals until the 1990s were characterized as those of ‘teachers with additional administrative tasks’ who mainly ensured the functionality and rule compliance of the school, but had no responsibility with regard to improving the school quality (Wiesner et al. 2015; Klein et al. *in print*). This image was congruent with a bureaucratic rather than managerial view of the school system (for a disambiguation, see Klein and Schwanenberg 2020), in which school improvement was defined as school *system* development. Individual schools were little more than structures enabling instruction. Reform was supposed to be initiated by regional school authorities (*Schulaufsicht*), whereas principals ensured that reforms were implemented in schools (e.g. Schratz 1998). Principals were considered to be the ‘best teacher’ of their school, whose task certainly was to provide

other teachers with guidance (Brauckmann et al. 2016). However, this did not entail any accountability for the quality of educational processes, neither did the principals have the responsibility to initiate organizational innovation and improvement, nor did they have the legal right to intervene in the pedagogical and instructional work of the teachers—that right was reserved for the regional school authorities, and teachers generally did not consider interference with their teaching from within the school as legitimate (Messner and Altrichter 1998).

Of course, even at that time, there were “learning schools” in Germany (e.g., Ahlring 2010). However, the perspective that principals should be “leaders for learning” cannot be found in the leadership literature in Germany before the reception of anglophone research in the early 1990s. As one example, the *Schulleiter-Handbuch*, a journal for principals, published several issues in the 1970s and 1980s addressing the role of principals, but did not mention school improvement or leadership for learning (e.g., Döring 1978, 1980; Flößner 1980), indicating that these tasks were not designated for principals in the view of the professional community either.

2.2.2 The “new leadership paradigm” and leadership for learning

Since the 1990s, this perspective has changed substantially. Reforms in public administration as well as the adoption of ideas from anglophone school effectiveness research effected that the individual school was acknowledged as the ‘engine of school improvement’ (Dalín et al. 1998). Schools were supposed to learn and improve on an organizational level; they were asked to evaluate themselves, set development goals, and develop strategies to achieve these goals. In order for schools to meet this responsibility, they needed a person within the school who could lead the organizational learning. As a result, principals were supposed to assume the responsibility for organizational improvement, staff development, and instructional leadership (Brauckmann 2014). Their role was changed to manager and supervisor, and the claim that the principal was essential for school improvement quickly became a widely accepted narrative (e.g., Buchen and Rolff 2016).

In the context of this change to “learning schools” and “leaders for learning”, the delineation of tasks for principals in the education laws of the different German states was adapted (Meyer et al. 2019), the autonomy for schools to make decisions affecting the whole organization was increased (Rürup 2007), principals were given more power to direct, and low-stakes instruments to review the performance of schools were implemented (Dedering and Müller 2011). These changes, however, did only to a small degree coincide with systematic structures that would urge principals to adopt their new role, and that would support them in doing so. For instance, several German states have only recently implemented mandatory training for principals (Tulowitzki et al. 2019), leading to a situation in which many of the principals currently are not necessarily trained for their job (Schwanenberg et al. 2018). Moreover, most states do not have systematic evaluation, feedback, and support structures for principals (Klein and Bremm 2020). When it comes to school improvement, it seems that principals are largely left to their own devices.

So far there are only a few studies that confirm on an empirical rather than anecdotal basis that schools can ‘learn to learn’, and that leadership is, in fact, as essential

for school improvement in Germany. Some studies indicate that LfL is associated with teacher practice and student learning (Bonsen et al. 2002; Pietsch et al. 2016; Pietsch and Tulowitzki 2017); however, the studies leave open how widespread LfL really is in Germany, and how realistic it is that principals in Germany actually adopt LfL practices. Quantitative studies indicate that German principals hardly use leadership practices focused on developing goals for their school or on instructional improvement (Klein 2017). They often do not see themselves as leaders of their schools (Warwas 2012), are often worried that their leadership will not be accepted by teachers (Appius et al. 2012), and feel less confident when it comes to encouraging teachers to be more reflective about their work (Schwanenberg et al. 2018).

2.3 The role of school culture

This discrepancy between the normative expectations from the school's institutional environment and the actual practice of the school members is addressed in several theories. Meyer and Rowan (1978), for instance, assumed that the 'technical activities' of schools were decoupled from their formal structure so that schools could gain legitimacy from the outside while maintaining those practices that are functional to them. Wenger (1998) points out that 'designed structures', such as roles for principals, are abstract and are only given meaning through social practice and reification within the organization.

2.3.1 Development of school culture

Comparably, Helsper (2008) argues that education systems have institutionalized structures and processes, but these are given meaning through school practice. In his approach, school culture has a *deep structure* that follows a systemic "educational code" (Kramer 2015, p. 24f.). While schools cannot circumvent this code, they negotiate the meaning of the code in their specific situation (Kramer 2015). As a result, the deep structure is part of each school's culture, but it is interpreted and translated into their own standards and practices. Helsper (2008) explains the possibility—and necessity—of negotiation, on the one hand, with the uncertainty of school practice, which results from the antinomies of pedagogical practice, the structural problems of the educational system and the specific requirements of each individual school, and on the other hand with the school-specific interpretations of the real conditions and the ideal view of the school. The resulting 'symbolic order' determines which roles, beliefs, and practices are desired in school, and which are marginalized or sanctioned. Helsper (2008) conceptualizes these symbolic orders as products of social practice and negotiation, but he also links this negotiation with questions of power. In his concept, symbolic orders are dependent on "which groups of actors with their specific (professional) habitus and their inherent structures of sense-making were able to assert themselves in the institutional struggle for merit" (Helsper 2008, p. 67; translated by the authors).

2.3.2 School culture and its relevance for leadership

Applied to the practice of principals, this could mean that during these negotiations, the behavior that is expected from ‘leaders of organizational learning’ in the new paradigm is not interpreted as a desired practice for principals in schools that were founded in the context of the old paradigm. Research from Germany leads to assume that this is rather plausible. In an ethnographic study in German schools, Jahn (2015) observed that “the symbolic relevance of principals stands in contrast to their structurally weak position” (p. 223; translated by the authors). Principals are attributed a lot of authority over school improvement in the narratives of the environment and of the schools; the observed practices, however, showed that the principals did not have “sufficient personal, organizational and legal measures” (Jahn 2015, p. 224; translated by the authors; see also Kuper 2020) to actually influence processes, and practices that created hierarchies between the members of the teaching faculty in terms of instructional and pedagogical work were marginalized. However, whereas leadership research is often based on the premise that leaders consciously choose strategies to influence those being led (see Lang 2014), Ladkin (2010) points out that the scope of practices leaders use is influenced by *unconscious* assumptions of leaders and those being led about what the task and appropriate behavior of the leader should be.

In another qualitative study, Rahm and Schröck (2008) analyzed school improvement committees, which are usually staffed with teachers as well as school leaders and are supposed to develop strategies for school improvement. The authors describe diverging emergent practices of these leadership committees that were influenced by more general forms of the schools’ cultures, for instance, a “culture of rivalry”, a “project culture”, and a “veto culture” (p. 166ff.). The results are compatible to other studies in organizational research, in which leadership practices are closely related to other dimensions of organizational culture. Quinn and Rohrbaugh (1983) conceptualize organizational culture along the two continua of stability vs. flexibility and external vs. internal orientation. Within this framework, leadership practices are closely related to the practices in other organizational categories along these continua (Cameron and Quinn 2006). Studies from school research indicate that stability-oriented cultures are particularly pronounced in German schools, while forms that are oriented towards change and flexibility are less frequent (Berkemeyer et al. 2015; Demski et al. 2016). Various studies from anglophone school research also point out that leadership practice is influenced by organizational characteristics such as a school’s “improvement trajectory” (Hallinger 2018).

Rahm and Schröck (2008) moreover showed that negotiations of meaning in school improvement committees were often focused on whether their claim to leadership was legitimate, especially when the school culture was based on the ‘old’ bureaucratic view of school governance (see Sect. 2.2). Rahm and Schröck (2008) emphasize that each school’s culture has ‘historical’ roots that affect how reforms are reified in the school.

2.3.3 School culture and organizational maturity

The historicity of school culture is further differentiated by Schein (2010). In his approach, the core of culture are *basic assumptions* (p. 18) within an organization, or the collective beliefs and values of its members. These are the expression of a—largely unconscious—consensus on legitimate and illegitimate behaviors that has “evolved” from repeated “shared experiences” (p. 73). The organizational culture has a stabilizing and sense-making function in the school, which at different stages of an organization’s development affects the possibilities of culture change in different ways. Schein (2010) distinguishes three different stages (p. 273). During *founding and early growth*, the culture is explicitly verbalized, it creates identity and reduces uncertainty. Small-scale changes in the culture are possible at this time, if they come from powerful players within the organization. On the other end of the continuum, *mature cultures* are more conservative and thus extremely resistant to change (Schein 2010, p. 289). At this stage changing the school culture requires “scandal and explosion of myths” (Schein 2010, p. 291). In other words, mature cultures can only be changed if their basic assumptions are unsettled in a way that cannot be ignored by the school members.

3 Study design

The goal of this paper is to use quantitative data to analyze whether there are systematic differences in LfL between schools that were founded during the bureaucratic paradigm and the new improvement-oriented paradigm. Our assumption is that schools founded during the old paradigm will have a school culture in which assumptions about ‘good’ leadership practices are based in the old view of schools as administrative structures and principals as *primus inter pares*. We pointed out the historicity of school culture (Rahm and Schröck 2008), and have described that schools in Germany often have a school culture focused on stability (Berkemeyer et al. 2015; Demski et al. 2016), which makes it difficult for principals to assume new roles. We also outlined that according to Schein (2010), mature cultures need “scandal and explosion of myths” (S. 291) to change, and that there are very few mechanisms in the system that could create such a situation with regard to the principal role.

(1) How does the extent of LfL practice in MCS and FCS differ?

To analyze this question, we compare the extent to which LfL practices occur in mature culture schools (MCS) founded in the ‘old’ paradigm, with founding and early growth culture schools (FCS) founded in the ‘new’ paradigm. Should our assumption be correct, LfL should be significantly lower in the MCS than the FCS even two decades after the paradigm shifted.

We also pointed out that even in the ‘old’ paradigm, there were schools that had a strong orientation towards organizational learning, and delineated that leadership practice is usually consistent with other aspects of the school culture and the *professional community*. We therefore assume that despite being founded during

the ‘old’ paradigm, some MCS might have a school culture more open to professional learning.

- (2) How does the extent of LfL in MCS and FCS differ when aspects of the professional community in the school are accounted for?

Finally, we showed that the only systematic mechanism that was implemented to support principals in adopting the new role was mandatory training, which, however, was only made mandatory recently, which is why each principal will have varying degrees of experience and training. Both are likely related to the extent to which LfL practices occur in the schools:

- (3) How does the extent of LfL in MCS and FCS differ when characteristics of the principal are accounted for?

The study is intended as an exploratory analysis of a systematic connection between the founding time and maturity of a school and characteristics of its school culture on the one hand, and the LfL practice on the other hand. To do so, we used data from the research project *Leadership and School Improvement in Context*, which was carried out through the University of Duisburg-Essen in the school year 2018/19 and funded by the German Research Foundation (DFG).

4 Data source

4.1 Schools

We conducted a questionnaire survey in sixteen secondary schools in North Rhine-Westphalia. To reduce the variability of external and structural influences on leadership, all schools in our sample were comprehensive schools or schools with several educational tracks, and all were located in comparable contextual conditions (socially disadvantaged areas; e.g., a high number of welfare recipients and of families with an immigration history; see Isaac 2011). All schools that met these two criteria were invited to participate in the study. Since participation in the study was voluntary, the sample is a convenience sample.

Our school sample consisted of two groups. The ten schools in the first group were established between 1976 and 1996. While Schein (2010) does not determine what age exactly defines a mature culture, we assume that schools that are older than 20 years count as mature cultures. We therefore classified the schools of the first group as mature culture schools (MCS). The second group consisted of six schools that had been established *after* 2010, and thus were in operation no longer than eight years at the time of our study. Only one of them had already completed all lower secondary grades. These schools were founding and early growth culture schools (FCS).

Because the FCS had not yet completed all grades, the MCS were generally larger ($M=1069$ students) than the FCS ($M=697$ students). As a result, the faculties of the FCS were smaller ($M=58$ teachers) than those of the MCS ($M=103$ teachers). Moreover, while 66.7% of the FCS principals reported that their work was compli-

Table 1 Composition of the two samples

	MCS	FCS
Participants (return rate)	699 (67.2%)	246 (70.3%)
Female teachers	61.6%	64.2%
Age	$M = 43.79$ ($SD = 11.95$)	$M = 39.83$ ($SD = 11.25$)
Years working at this school	$M = 9.92$ ($SD = 8.53$)	$M = 2.81$ ($SD = 2.71$)
Years working as teacher in total	$M = 14.07$ ($SD = 10.30$)	$M = 10.32$ ($SD = 9.02$)

cated because there was a lack of teachers at their school, this was only the case in 40.0% of the MCS schools.

4.2 Teachers

To ensure a high return rate that would allow an accurate estimation of school culture, the teachers of all but one school were asked to complete a questionnaire during a staff meeting. In one MCS, teachers participated during their own time due to scheduling difficulties. The sample consisted of $n = 699$ MCS teachers and $n = 246$ FCS teachers, and the return rate was, on average, 67.2% in MCS, and 70.3% in FCS (see Table 1). The FCS teachers had worked a considerably lesser time in their schools, were younger, and had less teaching experience in total than the teachers from the MCS.

4.3 Principals

Principals in the FCS had worked as principals for an average of 6.33 years ($SD = 2.42$), while principals in the MCS had worked in this job for an average of 6.70 years ($SD = 2.87$). Only three principals had worked as principals in another school before. Nine principals reported that they had received mandatory training in instructional leadership, staff development, and organizational improvement (seven MCS principals, two FCS principals). Three principals reported they had received mandatory training in one or two of the three areas; four principals reported that they had not received any training in either of the three areas (2 MCS and 2 FCS principals). 30.0% of the MCS and 16.7% of the FCS principals were female.

5 Methods

5.1 Instrument

To assess how teachers perceived the leadership practice of their principals, we translated the *Nature of School Leadership Survey* (NSL) by Leithwood et al. (2006)

into German.¹ The NSL is supposed to measure transformational leadership and describes practices in the dimensions *Setting directions* (“Identifying and articulating a vision”, “Fostering the acceptance of group goals”, “High performance expectations”; Leithwood et al. 2006, p. 130f.), *Helping people* (“Providing an appropriate model”, “Providing intellectual stimulation”, “Providing individualized support/consideration”; Leithwood et al. 2006, p. 131), and *Redesigning the organization* (“Creating collaborative cultures”, “Restructuring to foster collaboration”, “Building productive relationships with families and communities”; Leithwood et al. 2006, p. 132). The scale “Restructuring to foster collaboration” describes several practices of consulting teachers and devolving power to them, so it can be taken as an approximation of practices relevant for *Distributed Leadership*. In addition, the NSL contains scales for *Managing the instructional program* (“Planning and supervising instruction”, “Providing instructional support”, “Monitoring the school’s progress”, “Buffers staff”; Leithwood et al. 2006, p. 133), which illustrate relevant practices of Instructional leadership. The survey is an established tool widely used in the English-speaking context (for an overview, see e.g., Leithwood and Sun 2012).

Because the survey had to be completed in a limited amount of time, we could not administer the full NSL to teachers. Based on a scrutiny of the items of each scales, we chose to exclude the scales “Providing individualized support/consideration”, “Monitoring the school’s progress”, and “Building productive relationships with families and communities”.

The other scales were transferred into German by back-and-forth translation. Each item started with “Leadership at this school ...”, so the items referred to the leadership team rather than the principal alone. The teachers were asked to indicate their agreement with each statement on a 5-point scale (1 = strongly disagree; 5 = strongly agree; interim values were not labelled). In addition, we used self-developed items to assess other aspects of leadership not directly related to LfL.

Because preliminary analyses had shown that the original data structure could not be replicated, we ran exploratory factor analyses with the NSL as well as our additional items. Since it was very unlikely that the factors would not be correlated, we used a principal component analysis (PCA) with a Promax rotation (Field 2009). We extracted altogether eight factors, five of which could be subsumed under the concept of LfL. The following item examples are displayed in the original English version by Leithwood et al. (2006):

- Goal-oriented Leadership (LEADGOAL, 10 items, e.g., “Leadership in this school frequently refers to school goals when we are making decisions related to changes in program or practice”; Leithwood et al. 2006, p. 130; $M=3.69$; $SD=0.75$; $\alpha=0.91$; $ICC=0.18$) as a relevant category of Transformational Leadership.
- Intellectual stimulation (LEADSTIM, 8 items; e.g., “... encourages me to reexamine some basic assumptions I have about my work”; Leithwood et al. 2006, p. 131; $M=3.38$, $SD=0.86$; $\alpha=0.91$; $ICC=0.15$) as a relevant category of Transformational Leadership.

¹ Permission to translate the instrument into German was obtained from the first author.

- Consensus-oriented Leadership (LEADCONS, 8 items; e.g., “... frequently takes our opinion into account when making decisions”; Leithwood et al. 2006, p. 132, $M=3.56$; $SD=0.83$; $\alpha=0.91$, $ICC=0.14$) as a relevant category of Transformational Leadership as well as an approximation of Distributed Leadership (all items relating to devolving power and including teachers in decision making were part of this factor).
- Direct Instructional Support (LEADINST, 3 items; e.g., “... regularly observes classroom activities”; Leithwood et al. 2006, p. 133; $M=3.16$; $SD=0.94$; $\alpha=0.78$; $ICC=0.19$) as a relevant category of Instructional Leadership.
- Leadership for a positive learning environment (LEADENVR, 7 items; e.g., “... ensures the school runs smoothly so teachers can teach”; Leithwood et al. 2006, p. 133; $M=3.39$; $SD=0.76$; $\alpha=0.84$; $ICC=0.11$) as a relevant category of Instructional Leadership.

The three remaining scales described holding high expectations for the teachers, caring leadership, and leadership modeling respectful behavior toward students, and contained all of our own items and some of the NSL items.

The principal of each school was asked to complete a questionnaire about their leadership experience, their training, and characteristics of their school.

5.2 Analysis

We first analyzed the extent to which leadership practices differed between MCS and FCS. Because the teachers were nested in schools, the data was hierarchical, and our analysis showed that the intra-class correlation (ICC) for the school clusters was above 0.10 for all five leadership dimensions (see above). Ignoring this hierarchy will result in underestimated standard errors (Muthén and Muthén 2017). However, our level-2 sample was too small for multilevel modeling with cross-level analyses. We therefore calculated level-1 regression analyses in which we included the affiliation with an FCS or MCS using a dummy variable, with MCS as reference, as well as other school level factors at level 1 (see McNeish and Stapleton 2016). To control the nestedness of the data, we adjusted standard errors using the COMPLEX analysis in *MPlus* (Muthén and Muthén 2017).

In the regression analyses, we first calculated the regression of each of our five leadership scales over the FCS dummy. In a second model, we additionally controlled for individual teacher demographics. These comprised their gender and their total teaching experience (years), because teachers with less experience might receive more guidance from leadership, and teachers in the FCS were less experienced than teachers in the MCS. We also included a dummy variable specifying whether the teacher had a formal leadership role in the (extended) school leadership team²

² In comprehensive schools, the leadership team usually consists of the principal, assistant principal, a didactic lead teacher, and grade department heads. The didactic lead teacher is responsible for managing the instructional improvement and the professional development of teachers; grade department heads take care of the day-to-day management in their department.

because teacher leaders might assess leadership differently than teachers who are not formally involved in leadership.

Above we have pointed out that leadership practices in organizations are coupled with other characteristics of the organizational culture. It can be assumed that LfL is more pronounced in a school culture that is focused on professional learning than in a school culture that is less open to learning, regardless of when the school was founded. In the school improvement literature, such (professional) learning communities are characterized by collaborative learning and a common sense of vision and purpose (Louis et al. 1996). To assess how pronounced such a culture was in the schools of our study, we used two scales. In the first scale, teachers were asked to assess their collaborative activity (Leithwood et al. 2006, p. 139; 5 items, e.g., “I make a conscious effort to coordinate the content of my classes with other teachers”, $M = 3.74$; $SD = 0.78$; $\alpha = 0.83$). Teachers reported a significantly higher collaborative activity in the FCS ($M = 3.99$) than in the MCS ($M = 3.66$); $t(919) = 5.36^{***}$; $d = -0.40$. In the second scale, teachers were asked to assess the shared sense of purpose in their school (Leithwood 2006; 3 items, e.g., “Most of my colleagues share my beliefs and values about what the central mission of the school should be”, $M = 3.56$; $SD = 0.84$; $\alpha = 0.70$). Here, too, the mean of the FCS teachers ($M = 3.77$) was significantly higher than that of the MCS teachers ($M = 3.48$); $t(916) = 5.03^{***}$; $d = -0.38$.

How the principals perceived their own role and practice was enquired with qualitative methods during school visits in all 16 schools. While this data indicated that only few of the principals had a systematic approach to LfL, the data cannot be transformed into quantitative data for this analysis. To still be able to take into account the variance in the experience and knowledge of principals, we calculated a fourth model in which we added the total working experience of the principals (years) as well as a dummy indicating whether the principals had received training in school improvement (either or all of the following: organizational improvement, staff development, and instructional leadership). Because of the small sample size at level 2, these variables were also treated as level-1 variables using the COMPLEX analysis (McNeish and Stapleton 2016; Muthén and Muthén 2017).

All models were checked for heteroskedasticity, normal distribution of residuals, and multicollinearity.

6 Results

Descriptive analyses showed that the scores for all five leadership dimensions were at or above the theoretical mean of 3.0 in both the FCS and the MCS (see Table 2), which indicates that teachers generally rather agreed to the items analyzed. The results moreover showed that the scores for LEADENVR were very close in both groups. In contrast to that, there was a substantial difference between the two groups in the four other scales, and that difference was highest for LEADINST.

Table 2 shows that the two groups moreover had comparable patterns in the order of the means for the different leadership scales except for LEADENVR. LEAD-GOAL had the highest scores in both groups and LEADINST the lowest (MCS) and

Table 2 Differences between FCS and MCS in the five leadership scales

	Mean (Standard Deviation)		Results of regression model 1				
	<i>FCS</i>	<i>MCS</i>	<i>B</i> (<i>SD</i>)	β	Model Fit	AIC	BIC
LEADGOAL	3.95 (0.78)	3.59 (0.73)	0.36 (0.16)	0.21	$\chi^2(1) = \mathbf{7.14}$	2078.71	2093.21
LEADSTIM	3.72 (0.87)	3.27 (0.83)	0.45 (0.16)	0.23	$\chi^2(1) = \mathbf{13.42}$	2278.38	2292.83
LEADCONS	3.86 (0.83)	3.46 (0.80)	0.40 (0.15)	0.21	$\chi^2(1) = \mathbf{13.37}$	2184.28	2198.70
LEADINST	3.57 (0.97)	3.02 (0.89)	0.54 (0.19)	0.25	$\chi^2(1) = \mathbf{12.75}$	2240.12	2254.35
LEADENVR	3.43 (0.82)	3.37 (0.74)	0.06 (0.14)	0.04	$\chi^2(1) = 0.19$	2130.52	2145.01

Note: Bold standardized regression coefficients and χ^2 test: $p < 0.05$

LEADGOAL Goal-oriented Leadership, *LEADSTIM* Intellectual Stimulation, *LEADCONS* Consensus-oriented Leadership, *LEADINST* Direct Instructional Support, *LEADENVR* Leadership for a positive learning environment, *FCS* Founding and early growth culture schools, *MCS* Mature culture schools, *B* unstandardized regression coefficient, *SE* standard error, β standardized regression coefficient, *AIC* Akaike Information Criterion, *BIC* Bayesian Information Criterion

second to lowest (FCS). Regarding LEADENVR, on the other hand, the two groups deviated: while this scale ranked in the midfield in the MCS, it had, on average, the lowest scores in the FCS. What should also be noted is that while the score for LEADINST had a lower score than most other scales in the FCS, the score was still well above the theoretical mean of 3.0. In contrast to that, the scale did not only have the lowest value in the MCS, it was also almost exactly on the theoretical mean rather than above.

Table 2 also displays the results of the first regression model (M1), which only contained the FCS/MCS dummy and confirmed that there was a substantial and statistically significant difference between FCS and MCS in all dimensions except LEADENVR. With that exception, the FCS/MCS dummy had a medium association (see Gignac and Szodorai 2016) with how the teachers assessed leadership ($\beta = 0.21$ – 0.25).

The results of the other regression models are displayed in Table 3. The results in the second model (M2) showed that including individual demographics of the teachers did not affect the association between the FCS/MCS dummy and the leadership, with the exception of LEADINST: Here, including the teacher demographics increased the size of the beta coefficient. In addition, the second model showed that teachers who had a formal role in the leadership team of the school had a significantly more positive view of leadership in all five dimensions. The experience of teachers was negatively associated only to LEADSTIM; teachers with less experience were significantly more likely to report higher intellectual stimulation than teachers with more teaching experience.

The third model (M3) comprised additional scales measuring the culture of professional learning in the schools as assessed by the teachers. Table 3 illustrates small to medium associations between leadership and the collaborative activity of teachers ($\beta = 0.10$ – 0.21), and large associations between leadership and shared sense of pur-

Table 3 Regression of leadership scales

	LEADGOAL				LEADSTIM				LEADCONS				LEADINST				LEADENVR				
	M2	M3	M4	M2	M3	M4	M2	M3	M4	M2	M3	M4	M2	M3	M4	M2	M3	M4	M2	M3	M4
—	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>
—	β	β	β	β	β	β	β	β	β	β	β	β	β	β	β	β	β	β	β	β	β
School Culture Variables																					
FCS	0.34 (0.16) 0.20	0.18 (0.10) 0.11	0.34 (0.19) 0.20	0.42 (0.17) 0.22	0.23 (0.13) 0.12	0.39 (0.20) 0.20	0.38 (0.15) 0.21	0.21 (0.14) 0.12	0.21 (0.03) 0.20	0.36 (0.19) 0.19	0.60 (0.20) 0.29	0.42 (0.17) 0.20	0.63 (0.23) 0.30	0.06 (0.14) 0.03	-0.10 (0.11) -0.06	0.06 (0.03) -	-0.10 (0.11) -0.06	0.15 (0.19) 0.09	0.15 (0.19) 0.09	0.15 (0.19) 0.09	0.15 (0.19) 0.09
Collabo- ration	- - 0.17	0.15 (0.03) 0.17	- - 0.15	- - 0.22	0.22 (0.03) 0.21	- - 0.20	- - 0.21	0.19 (0.03) 0.20	0.20 (0.04) 0.41	- - 0.43	- - 0.43	- - 0.39	- - 0.32	- - 0.49	- - 0.49	- - 0.49	- - 0.49	- - 0.49	- - 0.49	- - 0.49	- - 0.49
Sense pur- pose	- - 0.48	0.48 (0.03) 0.48	- - 0.48	- - 0.42	0.42 (0.04) 0.37	- - 0.42	- - 0.42	0.43 (0.04) 0.41	0.43 (0.04) 0.41	- - 0.43	- - 0.43	- - 0.39	- - 0.32	- - 0.49	- - 0.49	- - 0.49	- - 0.49	- - 0.49	- - 0.49	- - 0.49	- - 0.49
Teacher Variables																					
Female	0.11 (0.04) 0.07	0.01 (0.04) 0.00	0.11 (0.04) 0.07	0.10 (0.05) 0.06	-0.01 (0.04) -0.01	0.10 (0.05) 0.06	0.02 (0.06) 0.01	-0.08 (0.05) -0.05	0.02 (0.05) -0.05	0.02 (0.05) 0.01	-0.01 (0.04) -0.01	-0.10 (0.05) -0.05	-0.01 (0.04) -0.01	0.05 (0.04) 0.03	-0.02 (0.04) -0.02	0.05 (0.04) 0.03	-0.02 (0.04) -0.02	0.06 (0.04) 0.04	0.06 (0.04) 0.04	0.06 (0.04) 0.04	0.06 (0.04) 0.04
Formal Leader	0.28 (0.11) 0.12	0.13 (0.09) 0.05	0.28 (0.12) 0.12	0.56 (0.09) 0.20	0.43 (0.07) 0.16	0.57 (0.09) 0.20	0.47 (0.06) 0.18	0.33 (0.05) 0.13	0.33 (0.05) 0.13	0.48 (0.06) 0.18	0.54 (0.11) 0.18	0.40 (0.11) 0.14	0.55 (0.12) 0.19	0.50 (0.06) 0.20	0.35 (0.06) 0.14	0.50 (0.06) 0.20	0.35 (0.06) 0.14	0.51 (0.06) 0.21	0.51 (0.06) 0.21	0.51 (0.06) 0.21	0.51 (0.06) 0.21
Experi- ence T	0.00 (0.00) -0.02	0.00 (0.00) 0.02	0.00 (0.00) -0.02	-0.01 (0.01) -0.13	-0.01 (0.00) -0.11	-0.01 (0.01) -0.14	0.00 (0.00) -0.05	0.00 (0.00) -0.02	0.00 (0.00) -0.02	0.00 (0.00) -0.05	-0.01 (0.01) -0.05	0.00 (0.00) -0.05	0.00 (0.01) -0.05	0.00 (0.00) -0.05	0.00 (0.00) -0.05	0.00 (0.00) -0.05	0.00 (0.00) -0.05	0.00 (0.00) -0.05	0.00 (0.00) -0.05	0.00 (0.00) -0.05	0.00 (0.00) -0.05

Table 3 (Continued)

LEADGOAL		LEADSTIM		LEADCONS		LEADINST		LEADENV					
Principal Variables													
Experience	-	0.01 (0.05) 0.02	-	0.00 (0.04) 0.00	-	0.00 (0.04) -0.01	-	0.05 (0.03) 0.14	-	0.08 (0.04) 0.26			
Training	-	-0.02 (0.26) -0.01	-	-0.13 (0.22) -0.07	-	-0.11 (0.23) -0.06	-	0.05 (0.23) 0.02	-	0.34 (0.24) 0.20			
R ²	0.06	0.38	-	0.11	0.34	0.08	0.34	0.12	0.32	0.13	0.04	0.32	0.07
Model Fit	χ^2 (4)= 20.53	χ^2 (6)= 369.94	χ^2 (4)= 41.91	χ^2 (6)= 334.51	χ^2 (6)= 32.62	χ^2 (4)= 35.88	χ^2 (6)= 181.04	χ^2 (4)= 45.93	χ^2 (6)= 156.08	χ^2 (6)= 38.04	χ^2 (4)= 15.19	χ^2 (6)= 200.41	χ^2 (6)= 15.04
AIC/BIC	1762.00	1420.07	1764.99	1928.23	1666.52	1835.84	1569.54	1837.42	1698.00	1888.19	1801.82	1505.82	1783.88
	1790.09	1257.42	1802.44	1956.24	1703.77	1863.82	1606.78	1874.72	1734.74	1924.98	1829.92	1543.20	1821.35

Bold standardized regression coefficients and χ^2 test: $p < 0.05$

LEADGOAL Goal-oriented Leadership, LEADSTIM Intellectual Stimulation, LEADCONS Consensus-oriented Leadership, LEADINST Direct Instructional Support, LEADENVIR Leadership for a positive learning environment, B unstandardized regression coefficient, SE standard error, β standardized regression coefficient, AIC Akaike Information Criterion, BIC Bayesian Information Criterion, FCS School culture dummy, I FCS, 0 MCS, Experience T teachers' teaching experience in years, Experience P Principals' leadership experience as principals in years

pose ($\beta = 0.32\text{--}0.49$). At the same time, the only dimension in which the association between the FCS/MCS dummy and leadership was still significant was LEADINST. For LEADGOAL and LEADCONS, the association was only marginally significant ($p = 0.06$ and $p = 0.08$); for LEADSTIM, there was no significant association between the FCS/MCS dummy and leadership. It should be pointed out that FCS and MCS also differed significantly in both collaborative activity and shared sense of purpose (see Sect. 5.2).

In Model 4, we also analyzed whether the leadership experience of the principals and their training was associated with how the teachers assessed their leadership. The results indicated no association between leadership practice, and the principals' experience and training, except for LEADENVR. In the latter, the results indicated that the teachers perceived the LEADENVR to be higher in schools with a more experienced principal. In this model, the association between the leadership practice and the FCS/MCS dummy was only significant for LEADINST, and marginally significant for LEADGOAL ($p = 0.08$), LEADSTIM ($p = 0.05$), and LEADINST ($p = 0.06$).

7 Discussion

In this paper, we assumed that LfL is dependent on the specific organizational culture of a school, and that the culture of 'older' schools in Germany was shaped in a time when principals did not have the task to improve their schools, and before schools were assumed to be 'learning organizations'. Based on this, we assumed that LfL would, on average, be less pronounced in these schools than in 'younger' schools because in the latter, (a) the negotiation of basic assumptions and legitimate practices is more open to the guidance of the principals (Schein 2010), (b) these schools were established in an institutional context in which the principals were already expected to 'lead the organizational learning', and (c) there are very few mechanisms in the system that would "unsettle the culture" of the MCS in a way necessary to change it. We also assumed that the extent of LfL would be confounded with the general professional learning culture in the schools. Before we discuss the results of our empirical study, a few limitations must be addressed.

First, to obtain an accurate estimation of leadership that is not distorted by a positive selection of teachers, we conducted the survey during a staff meeting to approximate a complete survey of all teachers in each school. To be able to implement this more time-consuming procedure, we had to keep the number of schools small. A higher representativeness of the data *within the schools* was thus achieved at the expense of the *representativeness of the schools*, and at the expense of possible analysis methods. As a result, we could not perform multi-level analyses, and some associations possibly were not significant because of a limited statistical power.

Second, we only collected qualitative data on how the principals perceived their own leadership role and practice. As a result, we cannot say whether the principals consciously tried to implement the leadership practices surveyed in the scales, and whether there was active resistance against this in their schools. Both Helsper's (2008) and Schein's (2010) concept conceive the 'guidance' from school culture as both conscious and unconscious. The extent to which leadership in the schools in

our study was consciously or unconsciously guided by the expectations of principals and teachers cannot be deduced from our data. To gain a better understanding of the significance of conscious and unconscious negotiation processes for actual practice, the negotiation of leadership practices must be studied with qualitative methods.

Third, it should be pointed out that our school sample is special because the schools were all located in socially disadvantaged areas (and thus tend to have higher palpable improvement needs; see Potter et al. 2002), and because they are all comprehensive schools, which is a school type that is more progressive than, for instance, schools preparing their students for university (*Gymnasien*; see Demski et al. 2016).

Against this background, the results of our study must be understood as an exploration of the association between the school's culture and leadership practices. The following discussion therefore serves to highlight interesting findings, and to identify desiderata for further research.

Leadership is a process of taking influence in the context of social interaction (Lang 2014); the influence, however, can be exerted through authority to direct, pressure, or the disposal of resources, but also through strategies that do not rely on formal authority, such as idealized influence, empowerment, better arguments, and support, or subversive tactics (Yukl and Michel 2006). Our results indicate that leadership practices in MCS were lower than in the FCS both in areas where they depended on formal authority or teacher consent, and in areas where this was not the case. Especially the LEADGOAL scale contained several items describing inspiring and motivating leadership practices. Still, the scores were significantly lower than in the FCS in this scale as well. School culture does not only imply interpretations of hierarchies and power; it also contains unconscious assumptions about how something is 'done right' (Schein 2010). One possible explanation for the fact that MCS principals engaged less frequently in practices not associated with formal authority as well could be an expression of these (conscious or unconscious) assumptions about how principals 'do it right' (see also Ladkin 2010). This is a question, however, that cannot be answered with quantitative data; future research should try to unravel both the principals' and the teachers' assumptions about 'doing leadership right' with qualitative-reconstructive analyses.

Our analyses also showed that in *both* groups, the scores were lower in leadership practices that are more *proximal* to classroom practice, and accordingly affect the teachers' pedagogical freedom (intellectual stimulation, instructional leadership). All 16 principals—regardless of MCS or FCS—were less likely to influence teachers' pedagogical practice than to influence more distal aspects such as structures, visions, and goals. This could be an expression of the broader systemic culture that promises the teachers autonomy and parity (Eder et al. 2011), but does not specify exactly what this entails (as would the symbolic order of the individual school culture; Helsper 2008). However, the results also showed that the difference between these proximal and distal leadership practices was smaller in the FCS than in the MCS, and that the difference between the FCS and the MCS was bigger in the proximal leadership practices.

While our results indicated differences in the leadership practice between the FCS and MCS, the data also showed that these differences were probably not at-

tributable to the *maturity* of the school culture, but rather to its *content*. The analyses showed that how teachers assessed leadership was confounded with the way teachers perceived the general learning culture or professional community in their school. Teachers who thought the shared sense of purpose and collaborative activity at their school was higher also reported a higher leadership in all five dimensions. These two aspects, in turn, were significantly more pronounced in the FCS than the MCS (see Sect. 5.2). The result confirms an association between the professional community and the leadership practice, although the cross-sectional nature of our data does not allow a conclusion as to whether a general sense of professional community enabled more leadership for learning, or whether leadership for learning created a professional community.

Yet, the data indicate that the differences between the MCS and the FCS were to a large extent confounded by differences in the broader organizational culture between the two groups, which points to the fact that it is not the organizational maturity itself, or the time in which the school was founded, but rather the individual school's organizational culture and the meaning of organizational learning within a school. Further analyses not reported here showed that among the MCS, too, there were two schools with rather high scores in both the LfL and Professional Community scales. Further case studies must show why LfL was more pronounced in these two than in the other MCS.

In contrast to that, the results showed that the principals' experience was associated with leadership only in the one scale in which FCS and MCS did not differ significantly. The question whether principals had received training in areas related to school improvement was not related to their leadership at all.

Based on the data available to us, we cannot rule out the possibility that the variance between the MCS and FCS, which was evident both in the school culture variables and in the assessment of leadership, was due to the special developmental needs facing the FCS. None of the schools were so young that structures and routines had not yet developed; however, the schools were still faced with the task of developing new approaches for each new grade and integrating a larger number of teachers into the system every school year. In this respect, the FCS might have been particularly affected by the shortage of teachers that is currently challenging the school system in Germany. This could have resulted in the FCS hiring a particularly large number of 'career jumpers' who have no teaching credentials, who in turn needed more guidance from the principals. Additional analyses with the data available to us (not reported here) did not point to a systematic connection between the perceived challenges caused by a shortage of teachers at the schools, and the leadership of principals. Future research should measure the concrete development needs of each school more precisely to rule out that higher leadership scores of the FCS are confounded by higher development needs.

Overall, our results indicate that leadership research should focus more on the conditions under which the (often normative) concepts of 'good' leadership can be enacted by school leaders. So far, research of leadership conditions is almost exclusively limited to characteristics of the leader, whereas it should focus to a greater extent not only on each school's individual history and a learning-oriented school

culture (Rahm and Schröck 2008), but also on other factors related to the local and institutional context (Hallinger 2018).

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