Transformational Leadership and Teacher Commitment to Organizational Values:

The Mediating Effects of Collective Teacher Efficacy

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Abstract

Transformational leadership researchers have given little attention to teacher expectations that mediate between goals and actions. The most important of these expectations, teacher efficacy, refers to teacher beliefs that they will be able to bring about student learning. This study examined the mediating effects of teacher efficacy by comparing two models derived from Bandura's social-cognitive theory. Model A hypothesized that transformational leadership would contribute to teacher commitment to organizational values exclusively through collective teacher efficacy. Model B hypothesized that leadership would have direct effects on teacher commitment and indirect effects through teacher efficacy. Data from 3,074 teachers in 218 elementary schools in a cross-validation sample design provided greater support for Model B than Model A. Transformational leadership had an impact on the collective teacher efficacy of the school; teacher efficacy alone predicted teacher commitment to community partnerships; and transformational leadership had direct and indirect effects on teacher commitment to school mission and commitment to professional learning community.

Keywords: school leadership, teacher efficacy, teacher commitment

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Introduction

Previous research has demonstrated that transformational leadership contributes to valued teacher outcomes. For example, teachers in schools characterized by transformational principal behaviour are more likely than teachers in other schools to express satisfaction with their principal, report that they exert extra effort, and be more committed to the organization and to improving it (Leithwood, Jantzi, & Steinbach, 1999). Few studies of the relationship between principal behaviour and teacher outcomes have examined the mechanisms through which leadership impacts occur. In this study we examined collective teacher efficacy as a potential mediator of the leadership – teacher outcome relationship.

In this article we will argue that previous research provides support for three relationships: 1) between leadership and professional commitment, 2) between leadership and teacher efficacy (i.e., teacher beliefs about their ability to bring about student learning), and 3) between teacher efficacy and professional commitment. We will construct from these relationships a parsimonious model of school capacity development in which leadership contributes to teacher beliefs about their capacity (relationship 2) and teacher capacity beliefs contribute to commitment (relationship 3). This model states that the first relationship, between leadership and commitment, is indirect: leadership effects on professional commitment are completely mediated by teacher efficacy. We will then argue that the research review also

provides support for a less parsimonious alternate model in which the effects of leadership on teacher outcomes are both direct and indirect. We then report an empirical study in which the two models are contrasted using structural equation modeling.

Theoretical Framework

Relationship 1: The Effects of Leadership on Teacher Commitment

School leadership research has found that transformational approaches have positive effects on teachers. The essence of transformational leadership is dedication to fostering the growth of organizational members and enhancing their commitment by elevating their goals. In contrast, transactional leaders accomplish organizational goals without attempting to elevate the motives of followers or the human resources of the organization (Burns,1978). The dynamics of the role, and the rationale for viewing transformational leadership as superior to other conceptions of leadership, have been elaborated for a variety of organizations by Bass and Podsakoff (Bass, 1985; Bass & Avolio, 1994; Podsakoff, MacKenzie, Moorman, & Fetter, 1990) and extended to schools by Leithwood (e.g., Leithwood et al., 1999). Transformational leadership provides a more powerful theoretical framework for interpreting principal behavior than competing frameworks such as instructional leadership because thinking about principals as transformational leaders leads researchers to investigate workplace conditions that contribute to the outcomes of reform initiatives; it accounts for teacher professionalism in school decision making; and it recognizes that the means and ends of teacher actions cannot be precisely specified (Leithwood, 1993).

Leithwood et al. (1999) identified 20 studies providing evidence linking leadership to teacher outcomes. Although the results on some measures were mixed, the reviewers found that transformational leadership consistently predicted the willingness of teachers to exert extra effort

and to change their classroom practices and/or attitudes. The most consistent findings link transformational leadership to organizational learning, organizational effectiveness, and organizational culture.

Although often measured as a global trait (the position we will take in the empirical study described below), transformational leadership is a multidimensional construct that involves three clusters: charisma (identifying and sustaining a vision of the organization), intellectual stimulation of members, and individual consideration (Bass & Avolio, 1994). Organizational theorists attribute the effects of transformational leadership to social identification, which enables followers to transcend their self-interests for the good of the group (Bass, 1985; Bass & Avolio, 1994). Walumbwa, Wang, and Lawler (2003) argued that the charismatic dimension of transformational leadership precipitates self-identification with the group. The collective identity becomes the yardstick measuring individual self-worth in relation to out-group members. Leithwood (1993) argued that the contribution of leadership to the development of a strong school culture was an essential mechanism for supporting staff collaboration that sustains collective identity. His synthesis of the research argued that 50% of the influence of transformational leadership comes from the visioning dimensions of the construct, with most of the remainder emanating from the leader's provision of intellectual stimulation and individualized support for organizational members (Leithwood et al., 1999). This motivational perspective on leadership proposes that transformational leaders raise the aspirations of followers and align their goals more closely to organizational intents. An essential mechanism in this process is the elevation of the capacity beliefs of teachers and their confidence in the support provided by the organizational culture for attaining school goals (Leithwood et al., 1999).

These findings suggest that transformational leadership should influence teachers' commitment to the organization. Organizational commitment is defined by Mowday, Porter, and Steers (1982) as having three facets: identification with the values and goals of the organization, willingness to exert effort on behalf of the organization, and commitment to stay in the organization. Others define the construct less broadly, arguing that the core tenet of teacher commitment is identification with the mission of the organization, i.e., "teacher reports that schools [have] a shared set of goals and values and that they [agree] with the central mission" (Riehl & Sipple, 1996, p. 880). Previous research has found that transformational leadership has a large effect on organizational commitment (Dee, Henkin, & Singleton, 2004; Koh et al., 1995; Nguni, Sleegers, & Denessen, 2004). Transformational leadership is also a contributor to a closely related concept, organizational citizenship (Koh et al., 1995; Leithwood, Tomlinson, & Genge, 1996; Nguni et al., 2004; Podsakoff et al., 1990) that refers to an individual's willingness to go beyond the formal requirements of the job to engage in productive functions that enhance organizational effectiveness.

In summary, research on transformational leadership provides a consistent empirical link to teacher outcomes, particularly commitment to the organization, a rich construct that has been defined narrowly and broadly in the literature. In the empirical study described below we will focus on commitment to organizational values, a key dimension of the broader construct. This specific outcome has not been examined as an outcome of leadership in previous research but there is sufficient evidence of links to related constructs to warrant its inclusion. The larger question that we will address is whether the relationship between leadership and teacher commitment is direct or indirect.

Relationship 2: The Effects of Leadership on Agency Beliefs

Bandura's social cognitive theory holds that beliefs about personal agency are the foundation of action. Personal or self-efficacy is the belief "in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 2). Personal efficacy affects behavior directly and by impacting goals, outcome expectations, affective states, and perceptions of socio-structural impediments and opportunities (Bandura, 2000). Individuals who feel that they will be successful on a given task are more likely to be so because they adopt challenging goals, try harder to achieve them, persist despite setbacks, and develop coping mechanisms for managing their emotional states. The relationship between beliefs about capacity and outcomes are reciprocal: outcomes affect efficacy beliefs and beliefs contribute to higher attainments (or lower attainments if the actor is in a downward cycle). Although personal efficacy scores tend to be stable over time, reciprocal causation can create iterative loops that amplify the effects of change (Lindsley, Brass, & Thomas, 1995): as one variable changes it impacts upon the second, which returns to affect the first.

Teacher efficacy is a set of personal efficacy beliefs that refer to the specific domain of the teacher's professional behavior. Teacher efficacy refers to a teacher's expectation that he or she will be able to bring about student learning. Teacher efficacy is of interest to school improvement researchers because teacher efficacy consistently predicts willingness to try out new teaching ideas (e.g., Ross, 1992). High expectations of success motivate classroom experimentation because teachers anticipate they will able to achieve the benefits of innovation and overcome obstacles that might arise. Teachers with high expectations about their ability produce higher student achievement in core academic subjects (e.g., Ashton & Webb, 1986; Ross, 1992; Ross & Cousins, 1993) and on affective goals like self-esteem (Borton, 1991), self-

direction (Rose & Medway, 1981), motivation (Roeser, Arbreton, & Anderman, 1993) and attitudes to school (Miskel, McDonald, & Bloom, 1983). Teacher efficacy contributes to achievement because high efficacy teachers try harder, use management strategies that stimulate student autonomy, attend more closely to low ability student needs, and modify students' ability perceptions (evidence reviewed in Ross, 1998).

Collective teacher efficacy is a specific belief in collective capacity. Collective teacher efficacy refers to "the perceptions of teachers in a school that the efforts of the faculty as a whole will have a positive effect on students" (Goddard, Hoy, & Hoy, 2000, p. 480). Collective teacher efficacy differs from individual teacher efficacy in that collective teacher efficacy refers to expectations of the effectiveness of the staff to which one belongs, whereas teacher efficacy refers to expectations about one's own teaching ability. Although collective and individual teacher efficacy are correlated (Goddard & Goddard, 2001), they are conceptually distinct. The functional relationships between teacher efficacy and student outcomes reported at the individual teacher level have been replicated at the collective level in a few studies. Schools with high collective teacher efficacy have higher student achievement than schools with lower levels of collective teacher efficacy, independent of the effects of student socio-economic status (Bandura, 1993; Goddard, 2001; 2002b; Goddard et al., 2000; Goddard & Goddard, 2001; Goddard, Hoy, & LoGerfo, 2003; Ross, Hogaboam-Gray, & Gray, 2003). There is also evidence that collective teacher efficacy is linked to school characteristics such as prior student achievement, school socio-economic status, and teacher involvement in school decision making (Goddard, 2002a; Goddard et al., 2003; Ross et al., 2003).

Several studies have investigated links between principal behavior and teacher efficacy. In all of these studies, teacher efficacy was measured at the individual, not the collective level. In

every case, principals adopting transformational practices were more likely than principals with transactional styles to have higher teacher efficacy in their schools (Hipp, 1996; Hipp & Bredeson, 1995; Mascall, 2003). Although consistent, the correlations tend to be small (r=.20s and .30s), perhaps because teacher efficacy was measured at one level of generality (the teacher) and interpreted at another (the school). In addition these studies provided little theoretical explanation of why leadership and teacher efficacy might be related.

Bandura (1986) argued that the sources of individual and collective self-efficacy information are similar. The most powerful source of efficacy information is mastery experience. Teachers who perceive themselves to have been successful on a particular task, either individually or as part of a collective, believe they have the ability to perform that task and anticipate that they will be successful in future encounters with it. Previous researchers have treated scores on mandated assessments as a proxy for mastery experience, finding consistent links between teacher efficacy and prior or subsequent school achievement. However, even if teachers accept external assessments as valid, their interpretations of the meaning of the scores is influenced by principal explanations. Even more important are principal inputs on teachers' assessments of ongoing practice.

For example, principals influence teacher interpretations by defining what constitutes success. Since principals typically have experienced a wider variety of school settings than their teachers and have legitimate authority, principals are well-placed to set feasible goals and interpret achievement data as evidence of success and failure to meet these goals. Evidence from non-educational settings supports this view. For example, Earley (1999) found that high status members of business organizations made a larger contribution to collective efficacy beliefs than lower status members. Leadership actions contributing to teacher efficacy include emphasizing

accomplishment (Lee, Buck, & Midgley, 1992), giving frequent feedback (Chester & Beaudin, 1996), and promoting an academic emphasis in the school (Hoy & Woolfolk, 1993). Principals are likely to be particularly influential when they attribute outcomes to particular teacher actions. Lindsley et al. (1995), in a theoretical analysis of collective efficacy, argued that leaders need to avoid upward and downward spirals of efficacy-achievement because such spirals lead to over- and under-confidence that limit organizational learning. They argued that leaders need to promote self-correcting cycles by redefining success in transformational terms, treating failure and success as opportunities to figure out what works. Lindsley et al. provided a menu of strategies (e.g., intervene before spirals occur by providing accurate, timely feedback that exposes cause-effect relationships) enabling principals to guide the development of teachers' collective efficacy. In addition to influencing the interpretation of past experience, principals can increase the likelihood of mastery experiences by providing opportunities for teachers to acquire new skills.

Principals can also influence teachers' capacity beliefs through persuasion, for example by offering visionary, inspirational messages to the staff as a whole and by addressing the low expectations of particular individuals. Principals can further strengthen teacher efficacy through vicarious experience, for example, by identifying exemplars of successful team performance and by making it easier, for example through timetabling, for teachers to observe each other. Equally important is the potential role of the principal in reducing teacher stress, for example, by protecting staff from district or state initiatives and excessive community expectations. In summary, the principal is uniquely placed to influence teachers' belief in their collective agency.

Relationship 3:The Effects of Agency Beliefs on Teacher Commitment

Studies measuring teacher efficacy at the individual level report that teacher efficacy predicts broadly defined measures of teacher commitment (e.g., Coladarci, 1992; Evans & Tribble, 1986; Reames & Spencer, 1998). In the empirical study reported below we treated teacher commitment as a multi-dimensional construct, focusing on three of its dimensions.

The first is the core dimension identified by Riehl and Sipple (1996) and Mowday et al. (1982): commitment to school mission, i.e., agreement with the goals and values of the organization and identification with them. However, teacher support for particular school values varies even when there is overall agreement with the school mission. A key area of controversy concerns school-community partnerships. Teacher commitment to community partnerships matters because parent involvement in their children's education is linked to higher student achievement in a pattern of reciprocal causation (Grolnick & Slowiaczek, 1994). Parent participation (e.g., in reading to their children) increases achievement and parents of successful children are more likely to participate in activities that support student learning. Parents are more likely to be involved if teachers and administrators engage in status equalizing activities that signal to parents that their contribution is valued (Valencia, 1997). Reaching a shared understanding of what constitutes appropriate parent involvement has been found to be fruitful (Waggoner & Griffith, 1998). Especially important is two-way communication that builds a shared vision of the goals of education, rather than one-way transmission of information to parents (e.g., Merz & Furman, 1997). Teachers who believe themselves to be part of a competent school staff are less threatened by parental feedback on school practices, suggesting there is a relationship between support for community partnerships and collective teacher efficacy, even though no studies have explicitly examined the connection.

Our third dimension of teacher commitment relates to willingness to exert effort for the organization, one of the dimensions identified by Mowday et al. (1982), for example, willingness to work collaboratively on school tasks. High levels of individual teacher efficacy are associated with a commitment to a collaborative school culture (e.g., Chester & Beaudoin, 1996; Looney & Wentzel, 2004). In a longitudinal study of fluctuations in teacher efficacy during a period of high stress, Ross, McKeiver, and Hogaboam-Gray (1997) found reciprocal relationships between teacher efficacy and collaboration. Teachers who were confident about their abilities felt secure enough to expose frailties to peers and build a climate that legitimated help seeking, joint problem solving, and instructional experimentation. Through joint work, teachers developed new teaching strategies, which enhanced their effectiveness, thereby increasing perceptions of their current success and expectations for the future. A commitment to collaboration is more likely to be linked to teacher efficacy when teachers have control of classroom decision making (Moore & Esselman, 1994), and participate in school- wide decisions (e.g., Lee et al., 1992; Raudenbush, Rowan, & Cheong, 1992). Collective teacher efficacy has been linked to teacher influence over school improvement decisions (Goddard, 2002a) and to teachers' willingness to assist each other beyond the formal requirements of the job (Somech & Drach-Zahavy, 2000).

Previous research has focused on the link of beliefs about agency at the individual and collective levels to teacher willingness to work collaboratively. Following Louis and Marks (1998) and others, we argue that an important purpose of teacher collaboration is the construction of the school as a professional community, particularly a professional learning community.[2] In operationalizing the willingness to work for the organization dimension of

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[2] Our definition of professional community focused on willingness of teachers to share teaching ideas with each other whereas Louis and Marks (1998) proposed five elements: shared values, focus on student learning, collaboration, deprivatized practice and reflective dialogue.

teacher commitment, we included the theme of working toward the construction of a professional learning community.

In summary, previous research suggests that there is a relationship between teacher beliefs about their individual and collective capacity and teacher commitment, particularly the three dimensions of teacher commitment that we investigated in the empirical study: commitment to school mission, to school-community partnerships, and to the school as a learning community.

Model Construction

Figure 1 displays the first model to be tested in our study. Model A proposes two sets of paths: from transformational leadership to collective teacher efficacy and from collective teacher efficacy to each of three variables representing teacher commitment. Model A is a parsimonious model comprised of relationships 2) and 3), claiming that relationship 1) is entirely mediated by teacher efficacy. In contrast, Model B shown in Figure 2 includes all three relationships. It hypothesizes that leadership has direct effects on teacher commitment and indirect effects through collective teacher efficacy. Previous research provides support for model A (collective teacher efficacy as a mediator of principal-teacher outcomes relationships) and model B (transformational leadership has direct effects on teacher commitment and indirect effects through collective teacher efficacy). However, no study prior to this one has compared the two models.

Figures 1 & 2 About Here

Method

Sample

Teachers in all elementary schools in two large school districts in Ontario (Canada) were invited to participate in the project. We received 3074 responses from 218 schools, i.e., an average of 14 per school. We included in the study only those schools that provided at least five teacher responses. The criterion of five responses was based on the demonstration (cited by Kreft & De Leeuw, 1998) that if there are 150 schools in a sample, five observations per school are sufficient to bring the power of the study to .90 (i.e., there is a 90% chance that an effect of medium size can be detected).

Instruments

The data for the study consisted of responses to a survey of Likert items with a 6-point response scale anchored by strongly disagree and strongly agree. All items were taken from previous studies (Goddard et al., 2000; Leithwood, Aitken, & Jantzi, 2001; Rosenholtz, 1989; Ross, Hannay, & Brydges, 1998). *Transformational leadership* consisted of 12 items measuring teacher perceptions that their principal leads by developing the capacity of the organization and its members to adapt to the demands of a changing environment. Other researchers defined leadership more broadly than we did. For example, Leithwood et al. (1999) identified six dimensions of transformational leadership that are relevant to schools. We used a global measure that tapped four of them: symbolizing good professional practice, providing individualized support, providing intellectual stimulation, and holding high performance expectations. We excluded fostering a vision and collaborative decision making because we thought they were too close to the outcome variables, teacher commitment to school mission and commitment to professional community.

Collective teacher efficacy consisted of 14 items reflecting two dimensions of collective teacher efficacy: the 7 items with the highest loading on the perceptions of the task factor and the 7 with the highest loading on the perceptions of teaching competence factor, reported by

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Goddard et al. (2000). We developed a shorter instrument because the original 21-item instrument was unbalanced in its weighting of the two dimensions of teacher efficacy identified by Tschannen-Moran, Hoy, & Hoy (1998), as noted by Goddard (2002b). Although the two-factor structure of the variable was maintained for face validity reasons, the two factors are highly correlated and, as in previous research, we combined the items into single scale.

Teacher commitment was measured with three scales: *Commitment to school mission* consisted of 12 items that measured teachers' acceptance of school goals, their belief that these goals were shared by the staff, and their commitment to reviewing school goals regularly. *Commitment to the school as a professional community* consisted of 5 items representing teachers' commitment to sharing teaching ideas with each other. *Commitment to school-community partnerships* consisted of 4 items measuring teacher commitment to including parents in setting school directions. The adequacy of the commitment variables was tested with confirmatory factor analysis (described in the Results section). The items used in the study are displayed in the Appendix.

Analysis

We tested the two models in Figures 1 and 2 using structural equation modelling. The raw data were input to SPSS and the variance-covariance matrix was analysed using the maximum likelihood method of AMOS 4.0 (Arbuckle & Wothke, 1999). AMOS provides modification indexes that suggest paths to add or drop to improve the fit of the model. Simulation studies (reviewed in Kline, 1998) demonstrate that empirically driven respecifications can be misleading. Even when researchers use theory to trim and build their models, there is a risk that theorizing will be driven by empirical goals. To guard against capitalizing on chance, we used a cross-validation strategy. We randomly assigned schools within districts to create two groups, each consisting of 38 schools from the smaller district and

71 schools from the larger district. We used the first group as the calibration sample to test and refine the models.

We tested Model A and Model B, examining for each the fit indices and the path coefficients to determine which provided a better fit of the data. In testing the models we were guided by our theory and informed by the AMOS modification indexes. Our criteria for model fit were chi square >.05, AGFI (Adjusted Goodness of Fit) >.90, and RMSEA (Root Mean Square of Approximation) <.08 (Browne & Cudeck, 1993). We used the AGFI because it adjusts for sample size (unlike GFI) and the RMSEA because it adjusts for number of variables in the model (unlike RMR), following guidelines of Thompson and Daniel (1999). We used the second group of schools as the replication sample, testing the fit of the models without modification.

Results

Table 1 shows the results of the confirmatory factor analysis on the three organizational values variables. The table shows that for the first, commitment to school mission, the chi-square was significant and the AGFI was slightly below criterion. However, the relative chi-square (chi-square divided by degrees of freedom was reasonable (Kline, 1998 suggested that a score of 3 or less is acceptable) and the RMSEA was at criterion. All goodness of fit criteria were met on the second (professional community) and third (commitment to community partnerships) variables.

Table 1 About Here

Table 2 describes the five variables in the study. The table indicates that all were reliable (alphas ranged from .85 to .97) and normally distributed (none of the Kolmorogov-Smirnov tests was statistically significant). The correlation matrix in Table 3 shows that collective teacher efficacy correlated with transformational leadership and with the three measures of teacher commitment, an essential requirement if teacher efficacy is a mediator between leadership and teacher commitment.

Tables 2 and 3 About Here

Figures 3 and 4 show the path analyses for the calibration sample. Model A (teacher efficacy as a mediator of the leadership-teacher outcomes relationship) provided a good fit of the data: chi-square=0.683, df=3, p=.877; AGFI=.987 and RMSEA<.001. All paths were positive and statistically significant. Transformational leadership contributed to collective teacher efficacy. Teacher efficacy contributed to all three measures of teacher commitment, especially commitment to professional community and commitment to community partnerships. However, the fit was achieved only after correlating the residual variances of three of the variables in the model: leadership and mission, efficacy and professional community, and mission and community. It is likely that these modifications of the model were of substantive importance. When two variables have shared error terms there may be a third variable influencing both. The correlated error terms might be showing the effects of paths excluded from the model. In addition, the standardized regression weight for the path between teacher efficacy and commitment to professional community was greater than 1.0.

Model B (i.e., leadership has direct effects on teacher commitment and indirect effects through teacher efficacy) also provided a good fit of the data: chi-square=0.299, df=2, p=.861; AGFI=.992 and RMSEA<.001. The paths between collective teacher efficacy and teacher commitment were all statistically significant, although much reduced in size from Model A for commitment to professional community. In Model A it was the largest path coefficient in the model; in model B it was even smaller than the path from teacher efficacy to commitment to school mission. The path coefficient from teacher efficacy to community partnerships was large and virtually unchanged in Model B. The new paths from transformational leadership to school mission and professional community were positive and significant, indicating that collective teacher efficacy is not a complete mediator of the leadership-teacher commitment relationship.

The path from leadership to community partnership was not significant. The fit of the data with Model B was achieved with only one minor modification to the model: the error terms for school mission and professional community were correlated (r=.14, representing less than 5% of the variance shared by these two variables). Even though the difference in the fit statistics was marginal, Model B provided a more credible interpretation of the data than Model A. Leadership had direct and indirect effects on teacher commitment.

Figures 3 and 4 About Here

Table 4 summarizes the effects of leadership on teacher commitment. For every increase of one standard deviation in transformational leadership, one could expect an .81 SD increase in teacher commitment to school mission, .64 SD increase in teacher commitment to the school as a professional community, and .37 SD increase in teacher commitment to community partnerships.

Table 4 About Here

We repeated the path analyses using the 109 schools of the replication sample. Table 5 shows that the results were very similar to the results from the calibration sample. Models A and B met the goodness of fit criteria; the scores in both models were negligibly lower in the replication sample. The regression weights were virtually identical in the two samples. The only exception is that the path from teacher efficacy to commitment to professional community was lower and was no longer statistically significant in the replication sample. The results from the replication sample suggest that the findings from the study are robust.

Table 5 About Here

Discussion

The main finding of the study is that collective teacher efficacy is a partial rather than a complete mediator of the effects of transformation leadership on teacher commitment to organizational values. Although Model A fit the data reasonably well, Model B (showing direct

and indirect paths from leadership to teacher outcomes) provided a better fit. Our results are similar to those reported in a study of the effects of transformational leadership on work related attitudes of bank employees in India and China (Walumbwa et al., 2003). In that study, leadership influenced worker satisfaction and organizational commitment directly and indirectly through collective efficacy. Our study also had three specific findings:

First, we found that transformational leadership had an impact on the collective teacher efficacy of the school. The standardized regression weight of the path from leadership to teacher efficacy in our study (.42) was identical to the leadership-efficacy path reported by Walumbwa et al. The leadership-efficacy relationship matters because of the well-established connection between collective teacher efficacy and student achievement (Bandura, 1993; Goddard, 2001; 2002b; Goddard et al., 2000; Goddard & Goddard, 2001; Goddard et al., 2003; Ross et al., 2003; Smith, Hoy, & Sweetland, 2002). Although this study was not designed to identify the specific mechanisms through which principals influence teacher efficacy, social cognitive theory suggests that the main contribution is through principal influence on staff interpretations of their effectiveness. We recommend that researchers probe the leadership-efficacy relationship to link particular dimensions of transformational leadership and specific principal behaviours to enhanced agency beliefs of their staff.

Second, collective teacher efficacy strongly predicted commitment to community partnerships. The influence of the principal on community partnerships was entirely mediated by collective teacher efficacy. Involving parents exposes teachers to such risk as negative feedback on school performance and identification of different goals and values than those identified by the school. A staff with high expectations that it will be able to overcome such obstacles is more likely to open itself to parental participation. The influence of leadership on teacher commitment to community partnership through collective efficacy matters because researchers have forged

strong and consistent links between parent involvement in their children's education and higher student achievement (Edward & Young, 1992; Griffith, 1996; Henderson, 1987; Leler, 1993; Stevenson & Baker, 1987). But the impact of parent involvement on achievement varies with its form. The strongest connections are for parents acting as volunteers at school under the direction of teachers and as surrogate teachers at home (such as helping students with homework and reading to preschool children). There is less evidence to suggest that parent involvement in governance contributes to achievement. For example, Leithwood, Jantzi, and Steinbach (1998) found that school councils did not empower parents, impact greatly on the work of schools or contribute to the progress of students. In this study we focused on teachers' willingness to include parents in setting school directions. We recommend that researchers examine which types of community partnership are most closely linked to teacher efficacy.

Third, we found that transformational leadership had direct effects on teacher commitment, independent of agency beliefs. Commitment to school mission was the strongest outcome, one that is especially important given evidence that it is a strong predictor of group effectiveness (a meta-analysis by O'Leary-Kelly, Martocchio, & Frink, 1994 found an effect size of .92).Commitment to professional community also matters because of the association of professional community with productive school change (e.g., Bryk, Camburn, & Louis, 1996). We recommend that future researchers re-examine the relationships between leadership and teacher commitment by elaborating the constructs, treating each as a multi-dimensional set of beliefs. Such research would enable investigators to revisit the question of the source of the principal's influence on teacher commitment. This study found partial support for agency as a mediating variable. Our data could also be interpreted as supporting a social identification theory of principal influence (as argued in the general case by Bass & Avolio, 1994). The two theories have yet to be tested against each other.

Conclusion

Previous research has found that transformational leadership contributes to teacher outcomes, including commitment to organizational values. No previous study has examined the mechanisms through which this influence occurs. In our study we found that collective teacher efficacy is a powerful mediator of commitment to school-community partnerships and a partial mediator of commitment to school mission and to the school as a professional community. The principal's role offers a variety of opportunities to improve the agency beliefs of staff. We particularly recommend three. First, principals should overtly influence teacher interpretations of school and classroom achievement data. The critical leadership task is to help teachers identify cause-effect relationships that link their actions to desired outcomes. Teachers need to recognize which of their skills contribute to student achievement, that they control the acquisition and exercise these skills, and that they need to take responsibility for the successes and failures of their students. Especially important is the creation of a self-correcting environment in which self-perceptions are credibly linked to outcomes, avoiding defeatist downward spirals and delusional upward spirals. Second, principals should help teachers set feasible, proximal goals to increase the likelihood of mastery experiences. For example, Gibson (2001) found that goal-setting training contributed to the individual and collective efficacy beliefs of nursing teams. Third, principals need to provide teachers with access to high quality professional development and provide constructive feedback on their skill acquisition. Roberts and Moreno (2003) found that science teachers' self-efficacy perceptions failed to align with their knowledge of effective science teaching methods. We are convinced that efficacy beliefs are most powerful when they are grounded in accurate self-appraisal.

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Table 1 Results of CFA on Teacher Commitment Variables (*N*=218 schools)

	Chi-square	*df*	*p*	Chi-square/df	AGFI	RMSEA
Commitment to school mission	129.677	57	.001	2.275	.861	.077
Commitment to professional learning community	6.715	4	.152	1.678	.953	.056
Commitment to community partnerships	1.597	1	.206	1.597	.963	.052

Table 2 Description of Study Variables (*N*=218 schools)

	Mean (SD)	Alpha	Kolmorogov-Smirnov Z	Kolmorogov-Smirnov *p*
Commitment to school mission	4.78 (.40)	.94	0.766	.601
Commitment to professional learning community	4.74 (.47)	.91	0.810	.528
Commitment to community partnerships	4.64 (.54)	.85	1.161	.135
Transformational leadership	4.59 (.40)	.97	0.913	.376
Collective Teacher Efficacy	4.89 (.48)	.91	0.985	.287

Table 3 Correlation Matrix of Study Variables (*N*=218 Schools)

	Commitment to school mission	Commitment to professional learning community	Commitment to community partnerships	Transformational leadership
Commitment to school mission	-			
Commitment to professional learning community	.64	-		
Commitment to community partnerships	.46	.38	-	
Transformational leadership	.82	.63	.42	-
Collective Teacher Efficacy	.52	.41	.81	.45

Table 4 Direct and Indirect Effects of Transformational Leadership on Teacher Commitment, Calibration Sample (*N*=109 schools)

	Direct Effects	Indirect Effects	Combined Effects
Commitment to school mission	.75	.42(.14)=.06	.81
Commitment to professional learning community	.53	.42(.21)=.09	.64
Commitment to community partnerships	.04	.42(.79)=.33	.37

Table 5 Comparison of Models A and B, Replication Sample (*N*=109 schools)

	Model A	Model B
Goodness of Fit		
Chi-square	$\chi 2$=3.930, df=3, p=.260	$\chi 2$=2.172, df=3, p=.338
AGFI	.930	.941
RMSEA	.054	.028
Standardized Regression Weights		
TL→CTE	.47**	.47**
CTE→school mission	.23**	.23**
CTE→professional community	1.36**	.10
CTE→community partnerships	.82**	.78**
TL→school mission		.73**
TL→professional community		.59**
TL→community partnerships		.08

**p<.001; TL=Transformational Leadership; CTE=Collective Teacher Efficacy
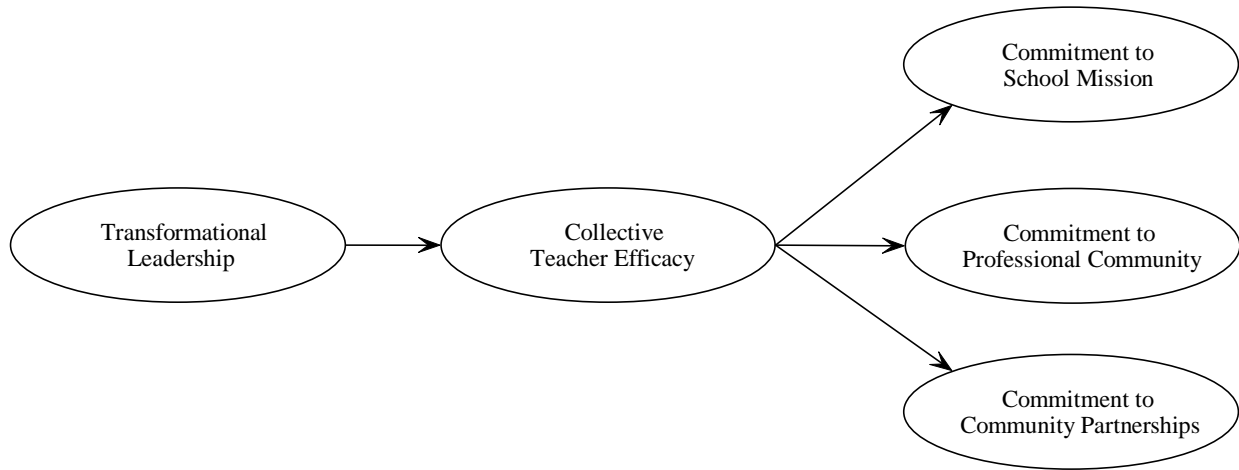
Figure 1. Hypothesized model linking leadership, collective teacher efficacy, and school process variables.
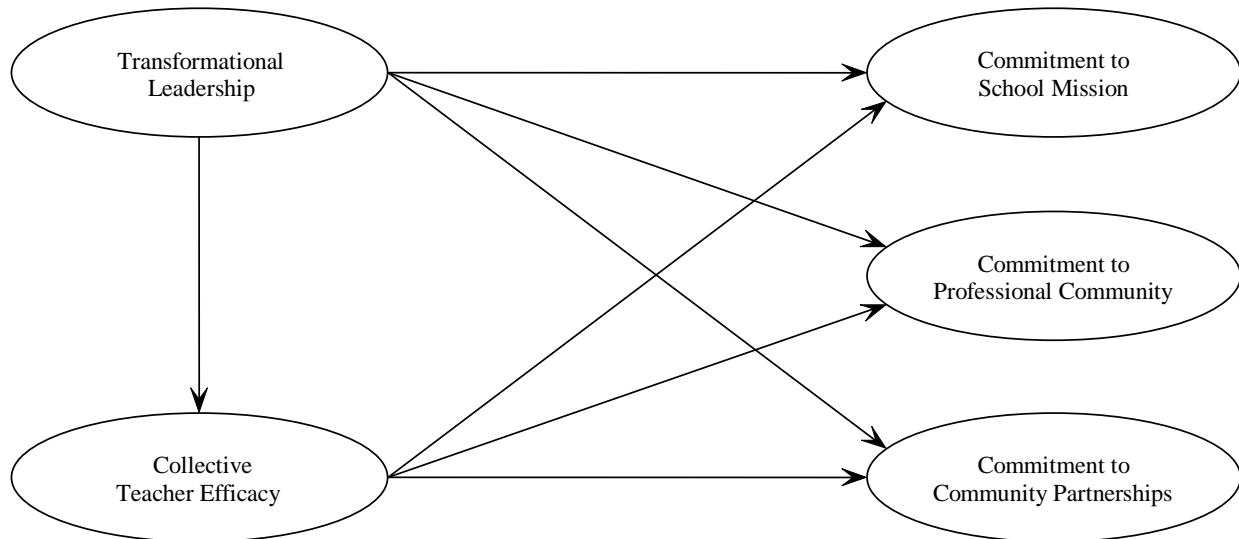

Figure 2. Hypothesized model linking leadership, collective teacher efficacy, and school process variables.
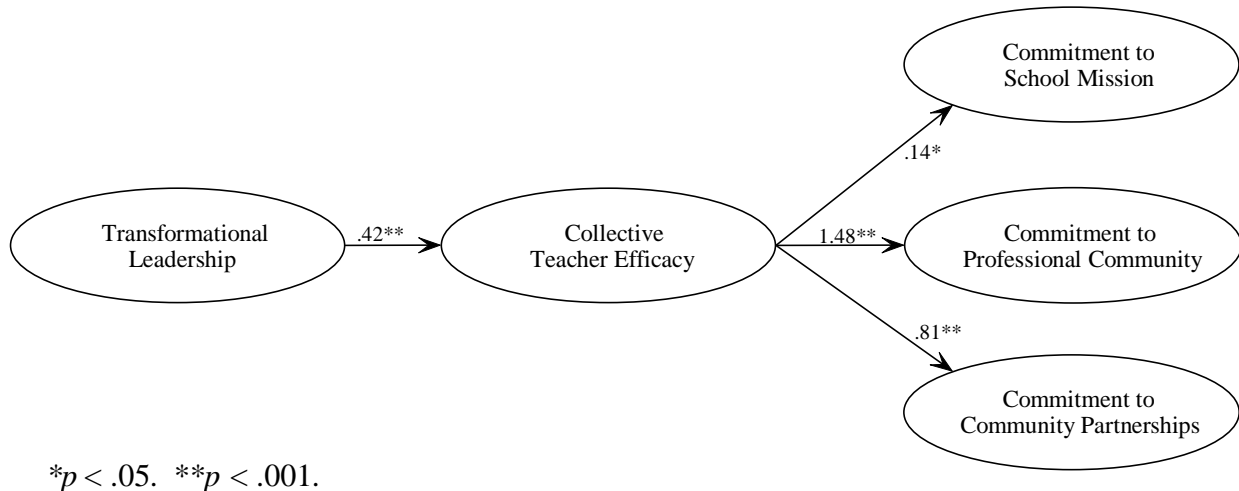
*p < .05. **p < .001.

Figure 3. Results of path analysis, standardized estimates, Model A, calibration sample (N=109 schools).

*p < .05. **p < .001

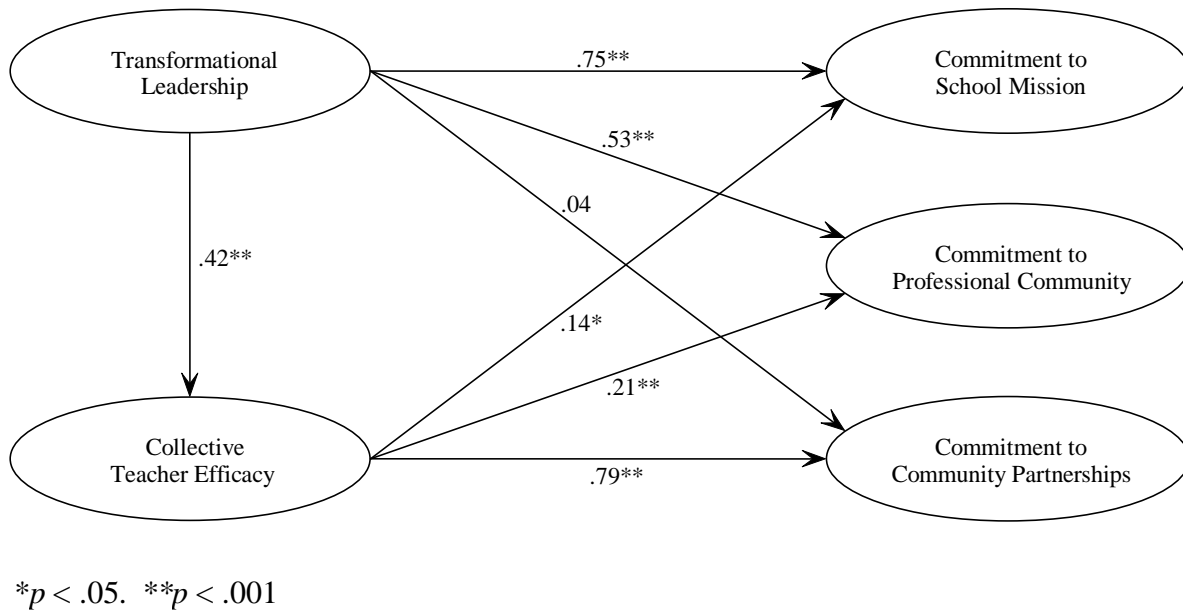*Figure 4. Results of path analysis, Model B, standardized estimates, calibration sample (N=109 schools).*

Appendix

Items in the Study:

Transformational Leadership

 *1. Leaders in this school do not set a respectful tone for interaction with students.
 *2. Leaders in this school are unwilling to change own practices in light of new understandings.
  3. Leaders in this school model problem solving techniques I can readily adapt for my work.
  4. Leaders in this school promote an atmosphere of caring and trust among staff.
 *5. Leaders in this school fail to symbolize success and accomplishment within our profession.
 *6. Leaders in this school are not aware of my unique needs and expertise.
  7. Leaders in this school provide moral support by making me feel appreciated for my
       contribution.
 *8. Leaders in this school do not stimulate me to think about what I am doing for my students.
 *9. Leaders in this school do not encourage me to pursue my own goals for professional learning.
 10. Leaders in this school encourage us to evaluate our practices and refine them as needed.
 11. Leaders in this school encourage me to try new practices consistent with my own interests.
*12. Leaders in this school do not have high expectations for us as professionals.

Collective Teacher Efficacy

 13. If a child doesn't learn something the first time, teachers will try another way.
 14. Teachers in this school really believe every child can learn.
*15. If a child doesn't want to learn, teachers here give up.
*16. Teachers here need more training to know how to deal with these students.
*17. Teachers here don't have the skills needed to produce meaningful student learning.
*18. Teachers here fail to reach some students because of poor teaching methods.
 19. These students come to school ready to learn.
 20. Home life provides so many advantages they are bound to learn.
*21. Students here just aren't motivated to learn.
 22. The opportunities in this community help ensure that these students will learn.
 23. Teachers here are well-prepared to teach the subjects they are assigned to teach.
 24. Teachers in this school are skilled in various methods of teaching.
*25. Learning is more difficult at this school because students are worried about their safety.
*26. Drug and alcohol abuse in the community make learning difficult for students here.

Teacher Commitment to School Mission

 27. Our school goal(s) and priorities encourage improvement of programs.
*28. In our school we rarely review our school goal(s) and priorities.
 29. School goals have little influence on my curriculum decisions.
*30. I am uncertain what our school's priorities are.
 31. We work toward consensus in determining which initiatives can be implemented.
*32. I am not involved in school decision-making as much as I would like.
 33. Teachers in this school have the information they need to participate in school decision-
       making.

34. In our school we regularly review and, if necessary, revise our school goals and priorities.
35. We focus our school improvement efforts on manageable changes.
36. We are encouraged to develop action plans for improving our own professional growth.
*37. Our school introduces new programs without a clear implementation plan.
*38. Our school does not have a way of monitoring achievement of our school goal(s).

Teacher Commitment to School as a Professional Learning Community

38. We all help new teachers learn what is expected of teachers in this school.
39. There is an atmosphere of caring and trust among staff at this school.
40. Teachers here are willing to share ideas and materials with their colleagues.
41. If I am learning a new teaching technique I can get help in this school.
42. Other teachers in this school encourage me to try out new ideas.

Teacher Commitment to School-community Partnerships

43. The community served by this school is very supportive of our school.
44. Parents/guardians are influential decision-makers in our school.
*45. Our school rarely works directly with parents to improve the educational climate in students' homes.
*46. Our school has difficulty maintaining clear, two-way communication between school and parents/community.