Multidimensionality of Teacher Participation in School Decision Making

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Abstract: Without an understanding of the typologies of teacher participation in decision making, understanding the nature of the relationship between teachers’ sense of empowerment and school effectiveness is problematic. Therefore, in this study, two hypotheses were tested to clarify teachers’ participation in decision making: (1) teachers’ participation in school decision making is multidimensional and (2) predictive influence flows from the managerial dimension to the technical dimension. Using a national probability sample of 5,822 public high school teachers in the US, the results (1) substantiated the multidimensionality of teachers’ participation in school decision making and (2) supported the flow of influence from managerial to technical dimensions. The implications of enhancing the use of multidimensional teacher decision participation to understand and improve school management and leadership practices are considered.

Key words: Decision making dimensions, decision participation, multidimensional, teacher, school management, structural equation modeling

INTRODUCTION

An effective school environment requires a professional community. In schools where teachers form a professional community, they are more likely to take collective responsibility for students’ learning (Louis et al., 1996). To create professional communities within a school, teachers should be empowered in decisions regarding school functioning in areas that extend beyond a single classroom.

The research on the effects of school organizational structures for teacher and student learning indicates that highly flexible school structures that provide teachers with greater control and influence foster teachers learning better than working conditions perceived as rigid structures. Moreover, research indicates that such structural conditions exerted a definitive impact on students’ progress in several important aspects of their development (Lam, 2005; Wan, 2005). Teachers can play a greater role in the overall success of the school when they commit to being active participants in the decision-making process. Teachers need to feel that they have more to offer the school than just teaching within their classroom. Therefore, schools must understand that the entire system will benefit when teachers play an active role in controlling their work environment (Pashiardis, 1994; Somech, 2006).

The literature recommends including teachers in school decision making for more effective schools (Bogler and Somech, 2005; Ingram et al., 2004; Marks and Louis, 1997). Indeed, many significant contemporary educational reforms such as school-based management, restructuring and the professionalization of teaching are directly related to the distribution of power in school decision making (Hatcher, 2005; Somech, 2002; Wall and Rinehart, 1998).

Although many reform movements focus on the redistribution of decision-making power in the workplace, little consensus exists on a typology of domains of participation in decision making (Conley, 1991). Whereas some of the literature postulates the concept as unidimensional (Alluto and Belasco, 1972), others have identified two different dimensions of teacher decision participation: technical and managerial (Duke and Gansneder, 1990). There is a relatively consistent distinction between these two broad domains (Bacharach et al., 1990). As the name implies, the technical dimension consists of decisions related to classroom instruction techniques and materials. The managerial dimension is related to school-level decisions, such as budgeting. Taylor and Bogotch (1994) and Taylor and Tashakkori (1996) further differentiate the technical domain into technical procedural and technical material dimensions. However, Mohrman et al. (1978) and Bacharach et al. (1990) do not find that the technical
domain comprises two different dimensions. Some researchers have documented an intermediate domain overlapping the technical and managerial domains (Conley, 1991; Taylor and Bogotch, 1994).

The current research tested the existence of the managerial and technical domains, the most frequently debated issue. In addition, this study tested the dimensionality of the technical domain using an a priori hypothesized measurement model. Here, the teachers' choice of method (i.e., technical-procedural) is specified as a different decision dimension than the choice of material (i.e., technical-material). This specification is based on the consistent results of statistically controlled analyses of large surveys in Taylor and Bogotch (1994) and Taylor and Tashakkori's (1996) studies. Figure 1 shows this hypothesis.

Mohrman et al. (1978) and Thompson (1967) proposed that teachers may first need managerial power to have control in the technical domain over issues such as deciding on the type of book to be taught or the amount of homework to be given. These authors suggest that participation in the managerial domain may not increase participation in the technical domain; rather, the managerial domain may be a prerequisite to participation in the technical domain. Participation in managerial decisions increases teachers' interest and power in the outcomes of their own classroom and the organization as a whole. One might theoretically assume that managerial decision participation and influence gives teachers greater access to managerial information, so that they can more easily protect their own interests in both the technical and procedural domains (Cropanzano and Folger, 1996). Through involvement in managerial issues, teachers see their role not only as instructors within their own classes but also as members of the whole organization. Therefore, it is theoretically possible to see the managerial decision dimension as an inclusive concept that influences the degree of involvement in both the technical and procedural decision domains.

In keeping with this proposition, in this study the managerial dimension was hypothesized as a prerequisite of the technical-procedural and technical-material dimensions. Figure 2 shows this hypothesis.

This study differs from other investigations in several important ways. First, this study is the first to use structural equation modeling analysis to test for the multidimensionality of teacher decision participation, in general and the dimensionality of the technical domain, in particular. Second, this study is the first to test for the postulated direction of influence from the managerial dimension to the technical dimension. Consequently, the following hypotheses related to the purpose and the problems of the study were tested:

![Fig. 1: The technical domain has two different dimensions, Technical-Procedural and Technical-Material, which relate to each other and to the Managerial domain](image)

![Fig. 2: Flow of influence is from managerial dimension to technical dimension](image)

- Teachers' decision participation (TDP) is a three-factor structure comprising a managerial component, a technical-material component and a technical-procedural component (Taylor and Bogotch, 1994; Taylor and Tashakkori, 1996), as opposed to alternative hypotheses 2 and 3
- TDP is a two-factor structure comprising only managerial and technical dimensions, without differentiating between material and procedural components (Duke and Gansneder, 1990)
- TDP is a one-factor structure and all facets of TDP are embodied within a single construct (Alluto and Belasco, 1972)
- Predictive influence flows from the managerial dimension to the technical dimension (Mohrman et al., 1978)
METHOD

Sample: The data analyzed in this study were derived from the nationally representative study of public and private schools, administrators and teachers from the National Center for Education Statistics (1994) Schools and Staffing Survey (SASS). SASS includes four linked questionnaires: School, Teacher Demand and Shortage, School Administrator and Teacher Questionnaire (TQ). The TQ provides substantial information on teachers' perceptions of their work environment. This study draws most extensively from the TQ designed for regular public school teachers.

The literature on organization theory emphasizes the effects of school size and the ethnic composition of students on teachers participation in school decision making. Larger schools are found to be more formalized and bureaucratized and these conditions are postulated to reduce teachers participation in decision-making (Goldstein, 1990). In addition, Rowan et al. (1991) found that schools with a high concentration of minority students tend to have lower teacher participation in decision making. Similarly, school level (i.e., primary, middle and high school), type of school (regular, special, vocational-technical, etc.) and class organization (departmentalized, self-contained, enrichment, pull-out, team teaching) are variables identified as having the potential to affect teachers' participation levels and characteristics. To control the effects of these variables on teachers' decision participation, the sample of teachers were chosen from schools with similar enrollment numbers and ethnic composition. Thus, the sample of this study is limited to teachers from schools with student enrollment numbers between 150 and 750 and with minority student enrollments of up to 19%. This excluded from the sample teachers in schools that were too small or too large or had high concentrations of minority students. In addition, the researchers restricted the study to regular high school teachers in departmentalized classes to prevent differing effects of these variables.

Of some 47,000 public school teachers surveyed by the SASS, 5,085 public school teachers met the above criteria for this study and were included in the analysis.

Instrument: To measure teacher decision participation, nine items that correspond to a reliable set of measures used for the same purpose in previous studies (Lee et al., 1993; Taylor and Tashakkori, 1996) were drawn from the TQ (National Center for Education Statistics, 1994). Teacher decision participation dimensions and their associative indicators are shown in Fig. 3. Each SASS item asked teachers to rate on a five-point scale their influence and control in three dimensions of decision participation.

Data analysis: Confirmatory Factor Analytic (CFA) and structural equation modeling (SEM) procedures were used to test hypotheses related to the structure of TDP. All procedures were based on the analysis of covariance structures using the LISREL 8.5 program (Jöreskog and Sörbom, 1996).

The TDP measure used for this study is not a well-established, standardized measure. Therefore, the researchers decided to first test the originally hypothesized three-factor model (Fig. 3) on 2,500 subjects chosen randomly from 5,085 public school teachers. The aim was to detect any model respecifications or modifications on this calibration data sample to prevent possible post-hoc analyses on the rest of the data. The

Fig. 3: Hypothesized three-factor measurement model of teacher decision participation with LISREL notations. Managerial decision (ManDec), technical material (TechMat) and technical procedural (TechProc) factors have three, two and four items loading on each, respectively.
result of this procedure suggested some minor areas of model misspecification on the original three-factor model. However, due to the lack of sound theoretical explanations, researchers decided not to apply these modifications to the original model (Mueller, 1996).

After data were analyzed to detect model modifications, 2,585 public school teachers remained for the analysis sample. First, the multidimensionality of TDP was re-tested on the remaining data by estimating the goodness-of-fit of the initially hypothesized three-factor model. The fit was then compared with that of two alternative hypothesized models: (a) a two-factor model (managerial TDP and technical TDP) that argued against the viability of separate technical domains and (b) a one-factor model (general TDP) that argued for the unidimensionality of TDP.

Finally, to test hypothesized causal flow from the managerial TDP to technical TDPs, a full SEM model was specified and tested for goodness-of-fit to the data. The full SEM model hypothesized a priori that managerial TDP would influence the formation of technical material (TechMat) and technical procedural (TechProc) TDPs.

RESULTS

The LISREL results of the public school teacher calibration sample yielded three error covariances ($\theta_{\text{ed}}$, $\theta_{\text{et}}$, $\theta_{\text{hs}}$) over and above the initially hypothesized model (Fig. 4 for graphical representation). However, because the researcher cannot offer theoretical explanations for these modifications, no respecification on the initially hypothesized model was performed. The multidimensionality of TDP against its two alternative hypotheses was therefore tested on the initially hypothesized model with the remaining data.

Hypothesis 1: TDP is a three-factor structure: The multidimensionality of the concept of teacher participation depicted in Figure 4 was tested with the following null hypotheses: $H_0: \Sigma = \Sigma(\theta)$. The test of $H_0$ yielded a $\chi^2$ (20) value of 37.93 ($p = 0.019$), suggesting that the hypothesized model should not be rejected.

The RMSEA value for the model is 0.0354 and the confidence interval for RMSEA is between 0.0145 and 0.0509. These results indicate a good fit and a good precision of the RMSEA value in reflecting model fit in the population. Similarly, an ECVI value of 0.145 for the hypothesized model, compared with both the independence (2.463) and saturated models (0.155), represents the best fit for the model. NFI, NNFI, CFI and IFI indices of fit values are found to be 0.97, 0.98, 0.98 and 0.98, respectively. Values >0.95 for these indices indicate a good fit to the data (Hu and Bentler, 1999). Likewise, values for the GFI and AGFI (0.98 and 0.97, respectively) represent a good fit.

Residual RMR (RRMR) and standardized RMR (SRMR) values ranges from zero to 1.00; in a well-fitting model these values are expected to be .05 or less (Byrne, 1998). The values of .044 (RRMR) and .030 (SRMR) for the three-factor model represent a small discrepancy between the observed sample and hypothesized correlation matrices.

The summary of fit indices for the three-factor model is given in Table 1.

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**Fig. 4:** LISREL suggested modifications on the initially hypothesized model of teacher decision participation
Hypothesis II: TDP is a two-factor structure: The model to be tested in Hypothesis II postulates a priori that TDP is a two-factor structure consisting of managerial TDP and technical TDP. This is, it argues against the viability of separate technical domains. The LISREL output for the hypothesized two factor CFA model indicates a \( \chi^2 \) (22) value of 159.758 (\( p = 0.0 \)). This is an indication of poor data-model fit and a decrement from the overall fit of the three-factor model (\( \Delta \chi^2(20) = 121.828 \)). All other indices of fit for this model (Table 1) indicate that TDP structure is not well represented by the hypothesized two-factor model.

Hypothesis III: TDP is a one-factor structure: Because the one-factor model represents a restricted version of the two-factor model, it cannot possibly represent a better fitting model. LISREL output for the hypothesized one-factor CFA model indicates a \( \chi^2 \) (23) value of 316.28 (\( p = 0.0 \)). The other fit indices for this model are also given in Table 1. Clearly, all the fit indices’ results for a one-factor model imply poor data-model fit.

In summary, from the analyses above it is concluded that the two-factor and one-factor models of TDP represent a misspecification of factorial structure for public high school teachers. Based on these findings, it is concluded that TDP is a multidimensional construct comprising managerial, technical-procedural and technical-material decision participation components. As Sobel and Bohrnstedt stated (Byrne, 1998), the reliance of fit indices alone might be misleading for judging the adequacy of a model. Assessment of model adequacy must also reflect theoretical, statistical and practical considerations. Therefore, the model adequacy results given in Table 1 need to be interpreted with these considerations.

Hypothesis IV: This hypothesis states that predictive influence flows from managerial to technical dimensions (Mohrman et al., 1978). That is, when power in managerial decisions (such as school curriculum and school discipline) is shared with teachers, teachers control and power in technical-material and technical-procedural issues like selecting textbooks, assigning homework and disciplining classrooms will be high. Therefore, managerial TDP predicts both technical and procedural TDPs. This hypothesized model structure is presented in Fig. 5. The estimates and associated test statistics in the Gamma matrix reveal that, based on the present sample, managerial TDP significantly influences the endogenous technical-material TDP (\( \gamma_{0} = 0.56, t = 6.89 \)) and technical-procedural TDP (\( \gamma_{2} = 0.27, t = 2.17 \)) constructs. In other words, analysis reveals that 28% of variance in the technical-material TDP and 13% of variance in the technical-procedural TDP can be accounted for by variability in the managerial TDP. Overall, most of the fit measures in Table 2 indicate no data-model inconsistencies. They indicate that the degree of technical-material and technical-procedural TDPs are influenced by the degree of managerial TDP.

<table>
<thead>
<tr>
<th>Model</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>RMSEA</th>
<th>CI for RMSEA</th>
<th>SRMR</th>
<th>NNI</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three</td>
<td>37.9**</td>
<td>20</td>
<td>0.035</td>
<td>(0.014, 0.050)</td>
<td>0.030</td>
<td>0.981</td>
<td>0.988</td>
</tr>
<tr>
<td>Two</td>
<td>159.7</td>
<td>22</td>
<td>0.898</td>
<td>NA</td>
<td>0.858</td>
<td>0.981</td>
<td>0.988</td>
</tr>
<tr>
<td>One</td>
<td>316.2</td>
<td>23</td>
<td>1.42</td>
<td>NA</td>
<td>0.889</td>
<td>0.694</td>
<td>0.788</td>
</tr>
</tbody>
</table>

RMSEA: Root mean square error of approximation; CI: Confidence interval; SRMR: Standardized root mean square residual; NNI: Non-normed fit index; CFI: Comparative fit index; NA: Not available as a LISREL output. **p<0.01

Fig. 5: A full Structural equation model of managerial decision participation on technical procedural and technical material decision participations.
Table 2: Summary of full structural equation model fit statistics

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>RMSEA</th>
<th>CI for RMSEA</th>
<th>CFI</th>
<th>TLI</th>
<th>SRMR</th>
<th>NNFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full structural</td>
<td>59.8*</td>
<td>24</td>
<td>0.033</td>
<td>(0.016; 0.049)</td>
<td>0.96</td>
<td>0.95</td>
<td>0.056</td>
<td>0.94</td>
</tr>
</tbody>
</table>

*p<0.05

DISCUSSION

This study reports findings from an investigation of three domains of teacher decision participation derived from related literature: (a) teacher decision participation (TDP) is multidimensional and (b) the direction of predictive influence flows from the managerial dimension to technical dimensions. Findings yielded strong evidence that teacher decision participation is multidimensional in public school organizations and the direction of causal flow is from the managerial dimension to the technical dimension. The findings of this study increase our confidence that participation is, in fact, multidimensional and it cannot be understood if its multidimensionality is ignored. In addition, the results of this study clarify the dimensionality of the technical domain. The technical decision participation domain was perceived by teachers as consisting of two different dimensions, technical-material and technical-procedural and cannot be understood as a single universal domain. More importantly, the identified direction of causal flow among decision participation domains suggests that teachers may first need influence (involvement) in managerial decision issues to gain real autonomy in both technical-procedural and technical-material decision issues. Further research should use this multidimensional approach to associate the distinctive dimensions with school effectiveness.

The results of this study highlight the need to conceptualize and to measure the concept of participation in decision making multidimensionally. Unidimensional decision participation instruments and those that do not distinguish between technical-material and technical-procedural dimensions in the technical domain will be insensitive to the organizational antecedents and outcomes of each specific domain. That is, each specific dimension may be differentially related to the different antecedents and outcomes. Investigating the relationship of each specific dimension with important school outcomes will increase our understanding of school organizations. Clearly, broad definitions of the concept have limited explanatory power across a range of outcomes and therefore are prone to misleading conclusions. Measuring participation in decision making multidimensionally will enhance its validity and exploratory power and provide researchers with a tool with the greatest overall utility.

These results have important implications for educational managers and policy makers. In their efforts to empower teachers in classroom level decisions, managers and/or administrators may first need to consider sharing power with teachers in school level decisions. In addition, if teachers absence in a specific domain of participation can be causally related to their work behaviors or affective states (such as professional commitment or work motivation), administrators and policy makers should turn their focus to this particular domain to achieve a positive impact. Therefore, for the results of this research to become more practically beneficial, future research must examine the relationship of each identified dimension to desired school outcomes like organizational and professional commitment, job satisfaction, organizational citizenship and school performance.

It is especially important to remember that in the current study, cross-sectional data were used; therefore, inferences made here about the direction of the relationship between managerial decision participation and technical-material decision participation dimensions were based on theory and previous research rather than the design of the study. Future research is required to test the findings of this study with a longitudinal research design.

REFERENCES


