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Mathematics Teachers' Motivational Beliefs: The Effects of the School-Work Environment

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Purpose

- Given the shortages and high attrition of mathematics teachers, it seems critical to examine the contextual factors that influence their motivation for teaching (Ingersoll, Merrill, & Stuckey, 2014).

- Informed by self-determination theory (SDT), we investigated the extent to which teachers' perceptions of their school's work environment predicted their motivation for teaching.

Self-determination theory

- According to SDT (Deci & Ryan, 1985), individuals have three basic needs:
  - Autonomy
  - Relatedness
  - Competence

- Work environments may serve to promote or undermine these needs, which impacts motivation (Gagne & Deci, 2005).

SDT (cont.)

- School-work environment
  - Autonomy & Competence → Control
    - Principal Autonomy Support → High-stakes Testing
  - Relatedness
    - Person-organization Fit

Motivation

- Teachers' self-efficacy and intrinsic value for teaching have emerged as predictors of career choice and persistence (Watt & Richardson, 2007).

- Prior research has found that school-level factors influence teachers' self-efficacy beliefs (e.g., Tschannen-Moran & Hoy, 2007).

- Intrinsic value for teaching has been linked to several adaptive outcomes, but little research has investigated its antecedents (Kunter et al., 2008).

Research Questions

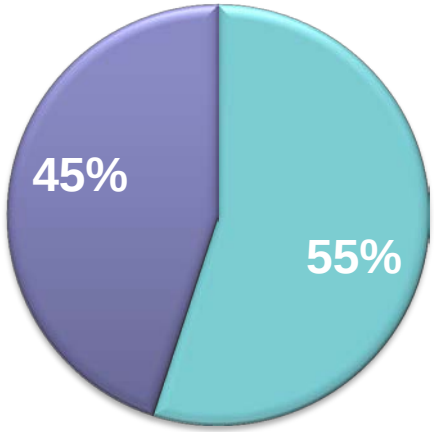
A. To what extent do teachers' perceptions of their school-work environment predict their self-efficacy for teaching, self-efficacy for mathematics teaching, and intrinsic value for mathematics teaching?

B. To what degree does the amount of autonomy support provided by principals moderate the effect of teachers' perceptions of the high-stakes testing school-work environment on their intrinsic value for mathematics teaching?

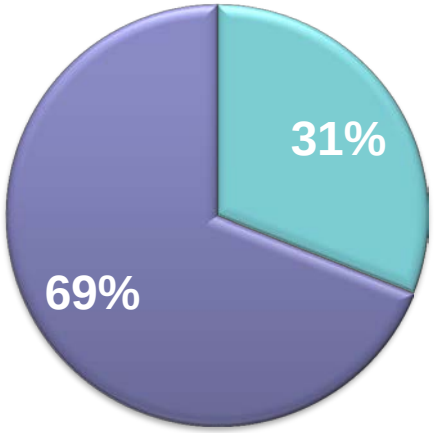
Participants

- This study included 304 K-12 in-service mathematics teachers representing several urban school districts (majority high-poverty) in Texas.

School Level Taught



Experienced vs. Novice



Instruments

- Principal autonomy support (α = .93)
  - "I feel that my principal provides me choices and options."
- Person-organization fit (α = .79)
  - "I identify with other teachers throughout my school."
- Perception of High-Stakes Testing Environment (α = .81)
  - "High-stakes assessments dictate how teachers approach classroom teaching at my school."
- Self-efficacy for mathematics teaching (α = .83)
  - "I know the steps to teach mathematics concepts effectively."
- Intrinsic Value for teaching (α = .87)
  - "I find teaching mathematics interesting."

Results

Table 1: *Summary of Hierarchical Regression Analyses Predicting Teachers' Motivational Beliefs*

Variable	Self-efficacy for instruction[a]	Self-efficacy for student engagement[b]	Self-efficacy for classroom management[c]	Self-efficacy for mathematics instruction[d]	Interest in mathematics teaching[e]
	β	β	β	β	β
Step 1					
Experienced teacher	.21***	.03	.08	.27***	.12*
Secondary teacher	.05	-.18**	-.06	.04	.07
Step 2					
Principal autonomy support	.15*	.20**	.12	.21**	.23***
Perceived person-organization fit	.07	.16*	.16*	-.02	.06

Note. β indicates standardized regression coefficient. $N = 298$. *$p < .05$. **$p < .01$. ***$p < .001$.
[a] $R^2 = .04$, $p < .01$ for Step 1; $\Delta R^2 = .04$, $p < .01$ for Step 2 [b] $R^2 = .03$, $p < .01$ for Step 1; $\Delta R^2 = .08$, $p < .001$ for Step 2. [c] $R^2 = .01$, $p > .05$ for Step 1; $\Delta R^2 = .06$, $p < .001$ for Step 2. [d] $R^2 = .07$, $p < .001$ for Step 1; $\Delta R^2 = .04$, $p < .01$ for Step 2. [e] $R^2 = .02$, $p > .05$ for Step 1; $\Delta R^2 = .07$, $p < .001$ for Step 2.

Results (cont.)

Table 2
Hierarchical Regression Predicting Intrinsic Value for Math Teaching: High-stakes Testing Dictates Work as Predictor

Predictor variables	β Step 1	β Step 2
Step 1		
High-stakes testing dictates work	-.06	-.05
Principal autonomy support	.28***	.24***
Step 2		
Principal autonomy support X High-stakes testing dictates work		.16*
R^2	.08***	.11***

Notes. $N = 218$. β indicates standardized regression coefficient.*$p < .05$. **$p < .01$. ***$p < .001$.

Results (cont.)

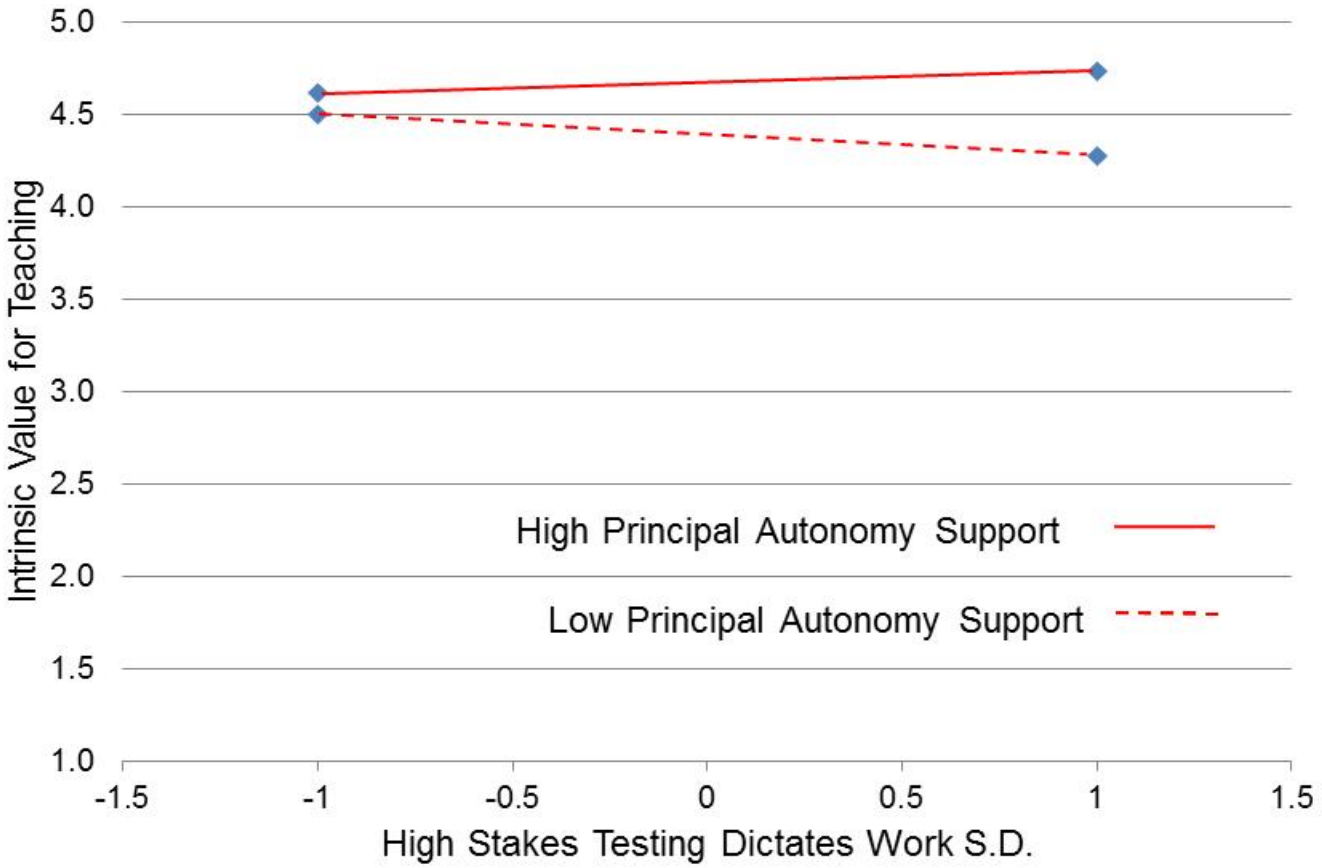


Figure 1. *The Moderating Effect of Principal Autonomy Support on the Relation between Teachers' Perceptions of High-stakes Testing Dictating Work at their Schools and their Intrinsic Value for Teaching*

Conclusion

- Teachers' perceptions of their school-work environment are significantly associated with their self-efficacy and intrinsic value for teaching

- Perceived autonomy support from principals mitigates the negative impact of the high-stakes testing culture on teachers' intrinsic value for teaching

THANK YOU !

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