

Exploring the concept of professional capital: Insights from the 2015-16 National Teacher and Principal Survey (NTPS)

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## Choice of conference section

Organization of Schools and Systems (Primary)  
Effects of Education Policies

## Background

Recent U.S. policy discourse has been heavily geared towards teacher reforms—e.g., teacher evaluation, merit pay—to raise their individual excellence. However, there is a growing concern that this approach does not necessarily foster the systemic growth of the overall U.S. teaching workforce, as it only attributes accountability to individual teachers (Hiebert & Stigler, 2017). The concept of professional capital, by Hargreaves and Fullan (2012), can provide an alternative perspective that aims to improve the overall U.S. teaching workforce by focusing on school-level capacity building through collaborative and strategic sharing of professional knowledge and skills. The professional capital approach *invests in* existing resources to reap sustainable and desirable educational outcomes in the long run, which lies in the school-level synergy among three capitals—human capital, social capital, and decisional capital. Hargreaves and Fullan’s idea is relatively new and highly conceptual; it is important to explore these constructs using a nationally representative sample of teachers in the U.S. public schools.

## Objectives

The objective of this study is to operationalize professional capital by Hargreaves and Fullan (2012), using the latest nationally representative data of U.S. public school teachers from the 2015-16 National Teacher and Principal Survey (NTPS). Its rich contextual information allows us to obtain an overall picture on how the three components of professional capital interplay in U.S. public schools.

Our research questions are:

- What does empirical evidence suggest regarding the concept of professional capital?
- To what extent does teachers’ perception of social capital and decisional capital mediate the relationship between human capital and their job satisfaction?

### Three components of professional capital (PC)

*Human capital* (HC), as put by Becker (1962) and Schultz (1961), refers to the stock of knowledge and skills that the labor force utilizes to produce economic value. In teaching, human capital is the requisite knowledge and skills teachers need to perform effective teaching and produce desirable educational outcomes. *Social capital* (SC), developed mainly by Bourdieu (1986) and Coleman (1988), refers to how much and how often teachers gain greater access to knowledge and information through collaborative interactions with their colleagues. Such interactions among teachers are an important feature of professional learning communities (PLC) for teachers to develop their knowledge and skills for teaching and thus stay in the teaching profession (e.g., Baker-Doyle, 2011). Finally, *decisional capital* (DC) refers to the extent to which teachers can make judgements and well-informed decisions in circumstances where limited guidance is available.

### Data & Methods

The 2015-2016 NTPS was used. It includes about 8,300 traditional and charter public schools and principals, and 50,000 public school teachers.

Stata 13 and Mplus 8 were employed for this study. First, we conducted confirmatory factor analyses (CFA) to construct the three components (HC, SC, and DC) that are conceptualized as PC. Next, we employed Structural Equation Modeling (SEM) to examine how teachers' perception of SC and DC mediate the relationship between their HC and job satisfaction after controlling for teacher and school characteristics (cf. figure 1).

### Results

Due to space limits, we only discuss results from CFA and SEM below. Detailed description and descriptive statistics of the variables are shown in tables 1 and 2, respectively.

Table 3 shows the CFA results—the overall model fit indices, factor loadings and factor correlations of the three capitals. Results confirmed the three components of professional capital (i.e., HC, SC, and DC). Standardized factor loadings ranged from 0.73 to 0.93 for HC, 0.62-0.84 for SC, and 0.52-0.73 for decisional capital. The inter-factor correlation between SC and DC is 0.51 while the correlation between HC and SC, and that between HC and DC are relatively low (0.10 and 0.14, respectively). This may be related to the limitation of the latent factor HC, as discussed in more details in the next section. Overall, the results indicated adequate fit (CFI=0.95; TLI=0.94; RMSEA=0.06).

Table 4 and figure 2 represent the results from the final SEM model<sup>1</sup>. Results show that teachers' perception of SC and DC mediates the relationship between HC and their job

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<sup>1</sup> Due to space limit, only the final model (Model 3) is reported in the proposal. Model 1 included only teachers' job satisfaction as the outcome variable; Model 2 added several teacher-level control variables including gender, race/ethnicity (with white as the reference group), teaching experience, and teachers' educational background;

satisfaction. While the direct effect of HC on teachers' job satisfaction is negative, the indirect effects of HC through SC and DC, as perceived by teachers, is positive. Also, results indicated significant relationships between selected teacher-level and school-level control variables<sup>2</sup> and teachers' job satisfaction.

## Conclusions

This study is among the first studies using data collected from a nationally representative sample of teachers in the U.S. public schools to examine PC. The results not only provide empirical evidence supporting the PC conceptualization by Hargreaves and Fullan (2012) in the U.S. public school context, but also suggest important directions for future studies.

While the CFA results corroborated Hargreaves and Fullan's conceptualization of PC, it has to be noted that the measures of HC in this study do not fully capture the authors' conceptualization since the NTPS dataset does not contain a comprehensive set of measures capturing all aspects of HC. With this limitation, our SEM results nonetheless show significant indirect effects of HC through SC and DC.

Additionally, this study sheds lights on teacher perceptions of the three professional capital components while Hargreaves and Fullan emphasized the capitals at the school level. As documented in existing literature, different stakeholders may have distinctive views about the same phenomenon (Duff, 2013). Future studies could further investigate whether discrepancies exist between teachers' and principal perception on professional capital and how the discrepancies, if any, influence outcomes at multiple levels.

## References

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Model 3 further added several school-level control variables, including grade levels provided at school, percentage of students enrolled in the National School Lunch Program, and percentage of minority students.

<sup>2</sup> e.g., race/ethnicity, teaching experience, grade levels offered by school, percentage of students enrolled in the National School Lunch Program, and percentage of minority students (table 4).

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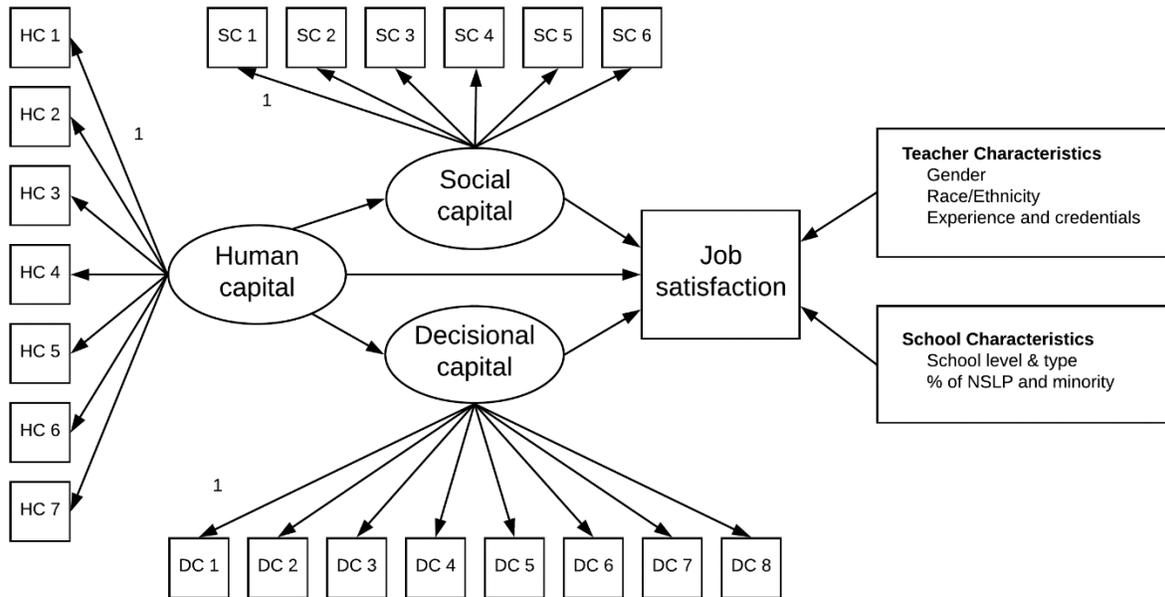
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**Figure 1. The model of latent path analysis**



NOTE: Variable description can be found in table 1. Reference groups for teacher control variables are: female for gender; White for race/ethnicity; none for any degree awarded by college of education; no match for main assignment match with subject major; and no match for main assignment match with certificate content area. Years of experience is a continuous variable. Reference groups for school control variables are: Primary for school level; and charter for school type. The percentage of students who are eligible for the National School Lunch Program (NSLP) and the percentage of minority enrollment are continuous variables.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), “Public School, Public School Principal, and Public School Teacher Documentation Data Files,” 2015–16.

**Table 1. The list of variables used in this study**

Variable	Definition	Coding	Original variable
<b>Outcome Variable</b>			
Job satisfaction	I am generally satisfied with being a teacher at this school.	-2 "strongly disagree" -1 "somewhat disagree" 1 "somewhat agree" 2 "strongly agree"	T1729
<b>Measured Variables for Latent Factors</b>			

Human capital: BEFORE your first year of teaching, did you take any graduate or undergraduate courses which taught you —			
HC 1	Classroom management techniques?	0 "No" 1 "Yes"	T0340
HC 2	Lesson planning?	0 "No" 1 "Yes"	T0341
HC 3	How to assess learning?	0 "No" 1 "Yes"	T0342
HC 4	How to use student performance data to inform instruction?	0 "No" 1 "Yes"	T0343
HC 5	How to serve students from diverse economic backgrounds?	0 "No" 1 "Yes"	T0344
HC 6	How to serve students with special needs?	0 "No" 1 "Yes"	T0345
HC 7	How to teach students who are limited English proficient (LEP) or English-language learners (ELLs)?	0 "No" 1 "Yes"	T0346
Social capital: To what extent do you agree or disagree with each of the following statements?			
SC 1	The school administration's behavior toward the staff is supportive and encouraging.	-2 "strongly disagree" 1 "somewhat disagree" 1 "somewhat agree" 2 "strongly agree"	T1713
SC 2	My principal enforces school rules for student conduct and backs me up when I need it.	-2 "strongly disagree" 1 "somewhat disagree" 1 "somewhat agree" 2 "strongly agree"	T1719
SC 3	Most of my colleagues share my beliefs and values about what the central mission of the school should be.	-2 "strongly disagree" 1 "somewhat disagree" 1 "somewhat agree" 2 "strongly agree"	T1721
SC 4	The principal knows what kind of school he or she wants and has	-2 "strongly disagree"	T1722

	communicated it to the staff.	1 "somewhat disagree" 1 "somewhat agree" 2 "strongly agree"	
SC 5	There is a great deal of cooperative effort among the staff members.	-2 "strongly disagree" 1 "somewhat disagree" 1 "somewhat agree" 2 "strongly agree"	T1723
SC 6	In this school, staff members are recognized for a job well done.	-2 "strongly disagree" 1 "somewhat disagree" 1 "somewhat agree" 2 "strongly agree"	T1724
Decisional capital: How much actual influence do you think teachers have over school policy AT THIS SCHOOL in each of the following areas? (DC1-7); How much actual control do you have IN YOUR CLASSROOM at this school over the following areas of your planning and teaching? (DC 8-10) <sup>1</sup>			
DC 1	Setting performance standards for students at this school	0 "No influence" 1 "Minor influence" 2 "Moderate influence" 3 "A great deal of influence"	T1700
DC 2	Establishing curriculum	0 "No influence" 1 "Minor influence" 2 "Moderate influence" 3 "A great deal of influence"	T1701
DC 3	Determining the content of in-service professional development programs	0 "No influence" 1 "Minor influence" 2 "Moderate influence" 3 "A great deal of influence"	T1702
DC 4	Evaluating teachers	0 "No influence" 1 "Minor influence"	T1703

		2 "Moderate influence" 3 "A great deal of influence"	
DC 5	Setting discipline policy	0 "No influence" 1 "Minor influence" 2 "Moderate influence" 3 "A great deal of influence"	T1705
DC 6	Deciding how the school budget will be spent	0 "No influence" 1 "Minor influence" 2 "Moderate influence" 3 "A great deal of influence"	T1706
DC 7	Selecting content, topics, and skills to be taught	0 "No control" 1 "Minor control" 2 "Moderate control" 3 "A great deal of control"	T1708
DC 8	Selecting teaching techniques	0 "No control" 1 "Minor control" 2 "Moderate control" 3 "A great deal of control"	T1709
Control Variables			
Teacher Characteristics			
Female	Are you male or female?	0 "Female" 1 "Male"	T0924
Race/ethnicity	Are you of Hispanic or Latino origin? If No - What is your race?	Dummy variables for: White (ref.); Black or African-American; Hispanic; and Other includes Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and Two or more races	T0928 T0929 T0930 T0931 T0932 T0933

Years of experience	Excluding time spent on maternity/paternity leave or sabbatical, how many school years have you worked, either full-time or part-time, as a K-12 or comparable ungraded level teacher in public, public charter, or private schools?	XX School years	T0110
Degree awarded by college of education	Which of the following best describes your [X] degree? <sup>2</sup> – It was awarded by your school’s College of Education, School of Education, or Department of Education	0 “No” 1 “Yes” for any one of the degrees	T0306 T0315 T0323 T0326 T0329 T0332 T0335
Main assignment match with subject major	[I]n what subject is your MAIN teaching assignment at THIS school, that is, the subject matter in which you teach the most classes? What was your major field of study? <sup>3</sup>	0 “No match” 1 “Match”	T0217 T0307 T0309 T0311 T0316 T0318 T0320 T0322 T0325 T0328 T0331 T0334
Main assignment match with certificate content area	[I]n what subject is your MAIN teaching assignment at THIS school, that is, the subject matter in which you teach the most classes? In what content area(s) and grade range(s) does the teaching certificate marked above certify you to teach in THIS state? <sup>4</sup>	0 “No match” 1 “Match”	T0217 T0402 T0407 T0411 T0415 T0419 T0425 T0430 T0434 T0438 T0442
School Characteristics			
School level	Four-category school level (primary/middle/high/combined)	Dummy variables for: Primary (ref.); Middle; High; and Combined	SCHLEV_4CAT
School type	Charter school identifier	0 “Not a public charter” 1 “A public charter”	CHARFLAG
% of NSLP	Percentage of enrolled students approved for the NSLP at school	XX %	NSLAPP_S
% of minority enrollment	Estimated percentage of students in school who are non-White	XX %	PCT_NONWHITE

Grouping variable			
Self-efficacy	<p>To what extent do you agree or disagree with each of the following statements?</p> <ul style="list-style-type: none"> <li>The level of student misbehavior in this school (such as noise, horseplay or fighting in the halls, cafeteria, or student lounge) interferes with my teaching (reverse coded).</li> <li>Necessary materials such as textbooks, supplies, and copy machines are available as needed by the staff.</li> <li>Routine duties and paperwork interfere with my job of teaching (reverse coded).</li> <li>The amount of student tardiness and class cutting in this school interferes with my teaching (reverse coded).</li> <li>I make a conscious effort to coordinate the content of my courses with that of other teachers.</li> <li>I don't seem to have as much enthusiasm now as I did when I began teaching (reverse coded).</li> </ul>	<p>1 "Less than population average of the sum score"  2 "Greater than or equal to population average of the sum score"</p> <p>Each item has 4 response options: 1=strongly disagree, 2= somewhat disagree, 3=somewhat agree, and 4=strongly agree.</p> <p>Selected items were reverse coded such that greater value indicates greater level of self-efficacy. All items were then combined to generate a sum score (ranging from 6 to 24) for each teacher case.</p>	T1715 T1717 T1718 T1728 T1730 T1746

<sup>1</sup> Due to the low factor loadings (< 0.40), T1704, T1708, T1710, T1711, and T1712 were excluded and the remaining items were renumbered to DC 1 through DC 8.

<sup>2</sup> Degrees include: Bachelor's, Master's, second Bachelor's and/or Master's; Educational specialist or professional diploma Certificate of Advanced Graduate Studies; and Doctorate or first professional degree (Ph.D., Ed.D., M.D., J.D., D.D.S.).

<sup>3</sup> The match was made if the area of the main assignment (e.g., Arts and Music) was matched with their subject major.

<sup>4</sup> The match was made if the area of the main assignment (e.g., Arts and Music) was matched with their certificate content area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), “Public School, Public School Principal, and Public School Teacher Documentation Data Files,” 2015–16.

**Table 2. Descriptive statistics of the variables of our interest**

	Weighted Mean	SE		Weighted Mean	SE		Weighted Mean	SE
Human capital indicators			Social capital indicators			Decisional capital indicators		
HC1	0.74	0.003	SC1	1.14	0.009	DC1	1.52	0.007
HC2	0.79	0.002	SC2	1.11	0.010	DC2	1.61	0.008
HC3	0.76	0.003	SC3	1.09	0.008	DC3	1.37	0.007
HC4	0.53	0.003	SC4	1.17	0.010	DC4	0.70	0.005
HC5	0.64	0.003	SC5	1.01	0.009	DC5	1.21	0.008
HC6	0.70	0.003	SC6	0.76	0.010	DC6	0.74	0.006
HC7	0.38	0.003				DC7	1.74	0.008
						DC8	2.47	0.006

	Weighted Mean	SE
Outcome variable		
Job satisfaction	1.26	0.008
Control variables		
Gender	0.23	0.003
Race/Ethnicity		
White	0.80	0.003
Black	0.07	0.002
Hispanic	0.09	0.002
Other	0.04	0.001
Years of experience	13.72	0.066
Degree by College of Education	0.79	0.003
Main assignment match with subject major	0.74	0.003
Main assignment match with certified content area	0.83	0.002
School level		
Primary	0.48	0.010
Middle	0.18	0.007
High	0.29	0.009
Combined	0.06	0.003
Percentage of students who are eligible for NSLP	51.35	0.499
Percentage of minority enrollment	48.37	0.454
School type	0.06	0.002

Grouping variable		
Self-efficacy	13.19	0.028

NOTE: Black includes African American; Hispanic includes Latino; and Other include Asian, American Indian or Alaska Native, Pacific Islander or Native Hawaiian. Race categories exclude persons of Hispanic ethnicity.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), “Public School, Public School Principal, and Public School Teacher Documentation Data Files,” 2015–16.

**Table 3. CFA results**

Model fit indices		Chi-square ( <i>df</i> =186)	19497.586
		RMSEA	0.057
		CFI	0.949
		TLI	0.943
Factor	Variable description	Standardized factor loading	SE
Human Capital (HC)	HC1: Classroom management techniques	0.851	0.004
	HC2: Lesson planning	0.872	0.004
	HC3: How to assess learning	0.929	0.003
	HC4: How to use student performance data to inform instruction	0.858	0.004
	HC5: How to serve students from diverse economic backgrounds	0.829	0.004
	HC6: How to serve students with special needs	0.775	0.005
	HC7: How to teach LEP/ELLs	0.734	0.006
Social Capital (SC)	SC1: The school administration’s behavior toward the staff is supportive and encouraging.	0.824	0.004
	SC2: My principal enforces school rules for student conduct and backs me up when I need it.	0.836	0.003
	SC3: Most of my colleagues share my beliefs and values about what the central mission of the school should be.	0.622	0.006
	SC4: The principal knows what kind of school he or she wants and has communicated it to the staff.	0.829	0.004
	SC5: There is a great deal of cooperative effort among the staff members.	0.743	0.005
	SC6: In this school, staff members are recognized for a job well done.	0.837	0.003

Decisional Capital (DC)	DC1: Setting performance standards for students at this school	0.734	0.004
	DC2: Establishing curriculum	0.697	0.005
	DC3: Determining the content of in-service professional development programs	0.714	0.005
	DC4: Evaluating teachers	0.701	0.006
	DC5: Setting discipline policy	0.727	0.005
	DC6: Deciding how the school budget will be spent	0.646	0.006
	DC7: Selecting textbooks and other instructional materials	0.520	0.006
	DC8: Selecting teaching techniques	0.521	0.007
Factor correlation			
	HC	SC	DC
HC	1.000		
SC	0.103	1.000	
DC	0.143	0.512	1.000

NOTE: The model fit indices were retrieved without using replicate weights.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School, Public School Principal, and Public School Teacher Documentation Data Files," 2015–16.

**Table 4. Results of overall SEM**

Model fit indices	Chi-square ( <i>df</i> =92)	63511.509
	RMSEA	0.065
	CFI	0.855
	TLI	0.843
Variable	Standardized coefficient	SE
<b>Job Satisfaction on</b>		
<b>Human Capital</b>	<b>-0.273 ***</b>	<b>0.018</b>
<b>Social Capital</b>	<b>0.734 ***</b>	<b>0.007</b>
<b>Decisional Capital</b>	<b>0.472 ***</b>	<b>0.009</b>
Gender	-0.002	0.008
Race/Ethnicity		
Black	0.035 ***	0.008
Hispanic	0.07 ***	0.009
Other	-0.001	0.007
Years of experience	0.027 ***	0.008
Degree by College of Education	0.003	0.008
Main assignment match with subject major	-0.002	0.008

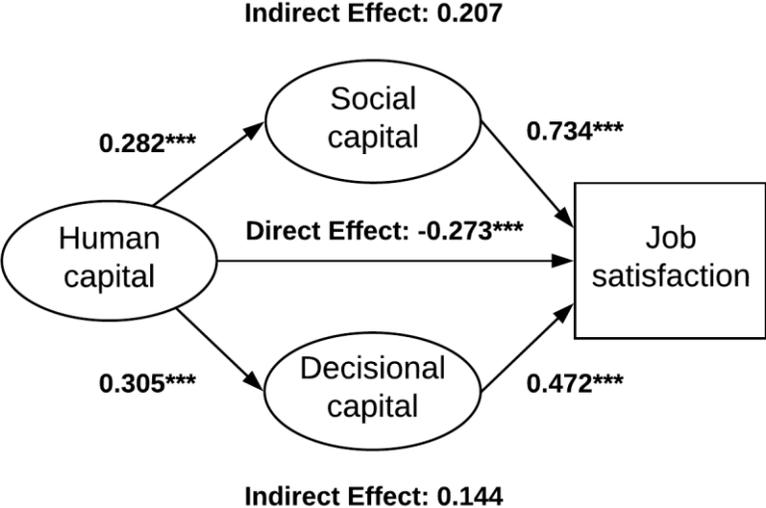
Main assignment match with certified content area	-0.009	0.008
School Level		
Middle	-0.03 **	0.009
High	-0.04 ***	0.01
Combined	-0.016 *	0.008
Percentage of students who are eligible for NSLP	-0.054 ***	0.011
Percentage of minority enrollment	-0.119 ***	0.011
School Type		
Charter	-0.001	0.007
<b>Social Capital on</b>		
<b>Human Capital</b>	<b>0.282 ***</b>	<b>0.015</b>
<b>Decisional Capital on</b>		
<b>Human Capital</b>	<b>0.305 ***</b>	<b>0.015</b>

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

NOTE: The model fit indices were retrieved without using replicate weights.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School, Public School Principal, and Public School Teacher Documentation Data Files," 2015–16.

Figure 2. A visualization of the direct and indirect effects based on the overall SEM results



\*\*\*  $p < 0.001$ .

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School, Public School Principal, and Public School Teacher Documentation Data Files," 2015–16.