



# How Do Functional Communities effect Student Achievement?

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## Introduction

According to the Council for American Private Education (CAPE), in 2010, 10% of all US students attend a private school and private schools account for 25% of all schools. Though private schools educate a minority of the population, their students tend to make the majority of college populations at elite institutions. Private school students tend to perform better than public school students and the resources available, both in the home and in school, are greater for those students also. Catholic Schools are the most prominent type of private school and it is believed that the community built within a catholic school, due to its religious philosophies, provides students with human and social capital not available to public school students. These networks are called functional communities and they are defined as “a community in which social norms and sanctions, including those that cross generations, arise out of the social structure itself, and both reinforce and perpetuate that structure,” (Coleman 1987).

Coleman also notes that value communities, are composed of individuals that share the same values about education and childrearing are present in settings where religious philosophies are lacking. Unlike functional communities, the parents who send their kids to these schools do not interact with each other often (Coleman 1987). This research aims to shed light on the private school effect and how functional communities effect student achievement. Private School students on average outperform public school students and though Socio-economic status plays a large role in student achievement, studies have consistently found characteristics in the social and academic environment of the students to play a large role in educational outcomes. What is the effect functional communities have on achievement? What are the components of functional community that allow students to achieve more?

## Data and Measures

The data used in this study was extracted from the Program for International Student Assessment of 2009, an international study designed to measure 15-year-old students' reading, mathematics, and science literacy. PISA emphasizes functional skills that students have acquired as they near the end of compulsory schooling. This study has used data collected from 11975 students in about 60 countries. This work is conducted by the National Center for Education Statistics (Institute of Educational Sciences) in the United States.

Variables controlling for functional community are philosophy, climate, and discipline. These variables were created from questions in the PISA 2009 Parent Survey regarding the importance of those items in choosing a school for their child.

The variables PV1MATH and PV1READ measure student achievement in each subject. Philosophy and climate are both categorized into groups (not important, somewhat important, important) based on the response parents gave to those questions in the survey. Discipline is a variable that shows to what extent parents agree with the disciplinary plan of the school and is categorized as strongly disagree, disagree, and agree. When the regressions were ran using these variables the very important category was omitted.

Socioeconomic status and a number of schools controls were used in this analysis such as ability grouping between classes, proportion of certified teachers, index of school selectivity, teacher-student ratio, school leadership, curriculum and assessment, resource allocation, quality of the schools educational resources, student behavior, teacher participation, teacher shortage, and teacher behavior. SES has been calculated to include home possessions, *HOMEPOS* (which comprises all items on the *WEALTH*, *CULTPOS* and *HEDRES* scales, as well as books in the home [ST22Q01] recoded into a four-level categorical variable [less than or equal to 25 books, 26-100 books, 100-500 books, more than 500 books]); the higher parental occupation (*HISEI*); and the higher parental education expressed as years of schooling (*PARED*).

## Methods

OLS regressions and multi-level models were used for data analysis and list wise deletion was used to solve issues posed by missing data.

## Results

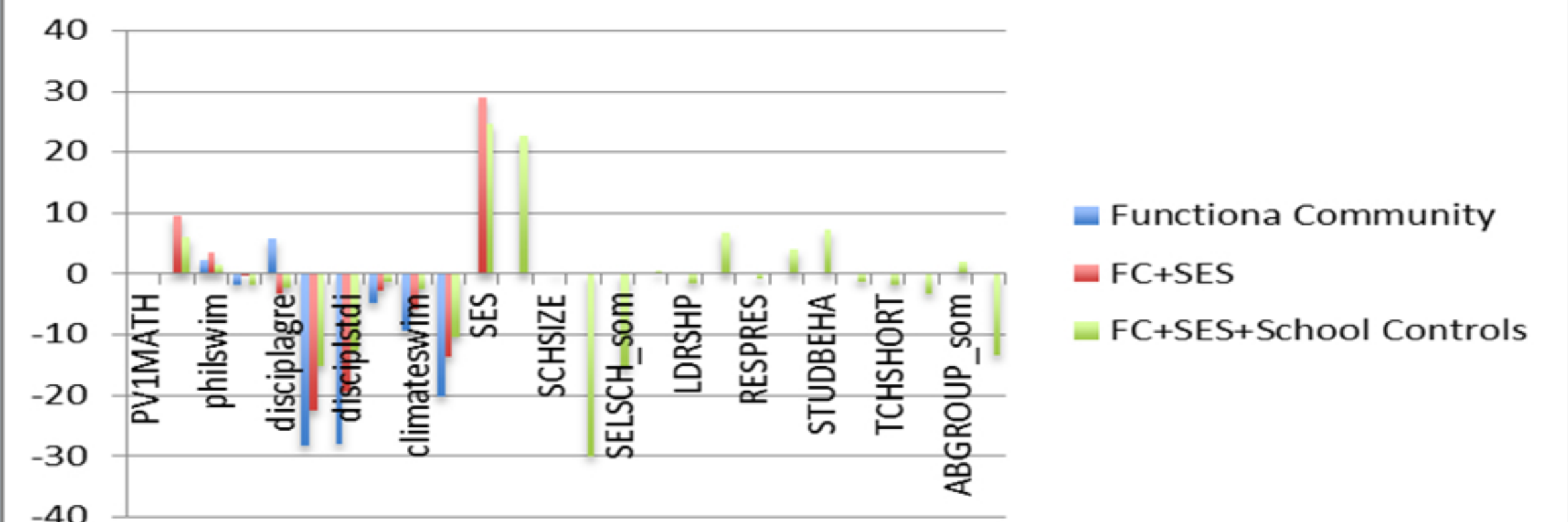
When looking at the relationship between the functional community variables and student achievement, the findings show that philosophy is not as important as expected. Working within the theory of functional communities, it was expected that these findings would fit the model, rather not finding the philosophy important has a stronger effect on student achievement than believing it is important.

Climate effects student achievement negatively and the negative effect becomes greater as climate is given less importance. Whether or not a parent agrees with the disciplinary plan of the school has a positive effect if they agree with it but a negative effect if they disagree with it. When the school controls were added to the analysis, the effect that the functional community variables had on achievement decreased by about half. This finding shows that there is something about SES that accounts for half of the school community effects.

## Figures

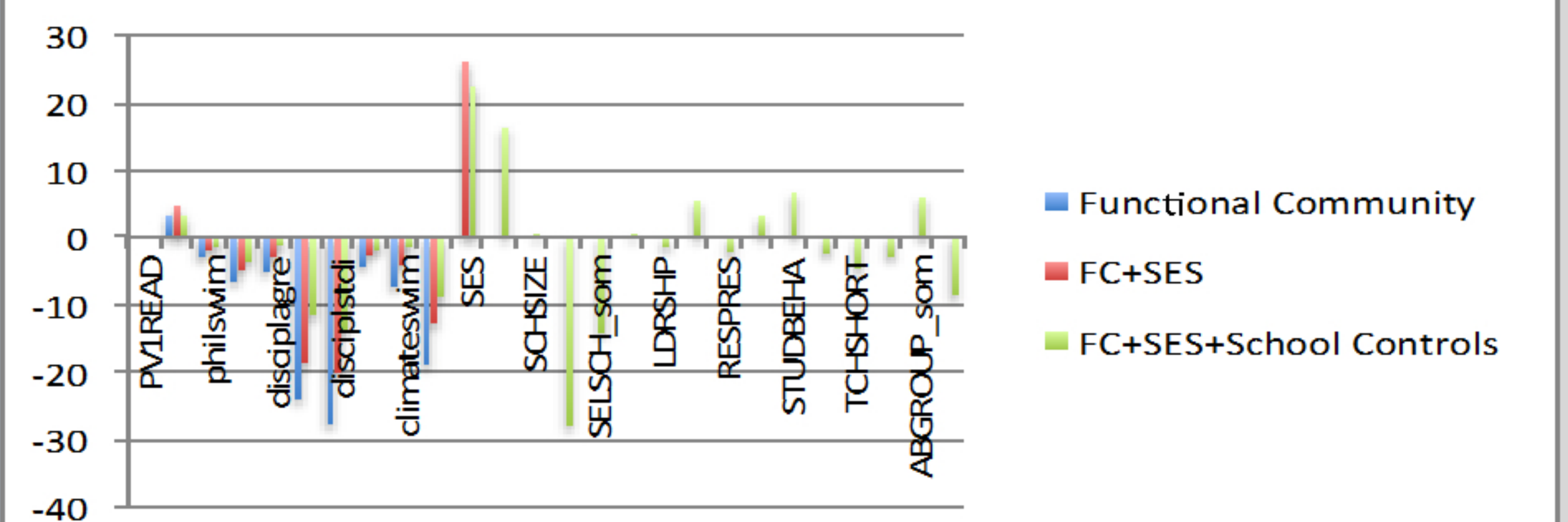
Variable Name	Functional Community (FC)	FC + SES	FC + SES+School Controls
PV1MATH			
philnimp	7.8495478*	9.5664252**	5.9907985
philswim		2.1215552	3.4064179
philimp		-1.9263626	-0.10229625
disciplagre	-5.6111883*		-3.4509156
discipldisa	-28.439291***	-22.48824***	-15.33316***
disciplstdi	-28.03414***	-19.568026***	-12.726412**
climateimp	-4.8175374**	-2.9095805	-1.4882651
climateswim	-9.4216881***	-5.8329263*	-2.6028831
climatenimp	-20.426845***	-13.653473**	-10.496681*
SES		28.988214***	24.643673***

## Effect of Functional Communities on Math Achievement



Variable	Functional Community (FC)	FC+SES	FC+SES+School Controls
PV1READ			
philnimp		3.2076349	4.751032
philswim		-3.1004185	-1.9290333
philimp		-6.6043653*	-4.9711343
disciplagre		-5.0958597*	-3.1486393
discipldisa		-24.199017***	-11.680824***
disciplstdi		-27.788924***	-20.175097***
climateimp		-4.4207137**	-2.7031203
climateswim		-7.3618533**	-4.1273566
climatenimp		-19.043988***	-12.931982**
			-8.9193526*

## Effect of Functional Community on Reading Achievement



	legend:	* p<0.05; ** p<0	.01; *** p<0.001
PV1MATH	Math Achievement	discipldisa	Disagree with plan of discipline at school
PV1READ	Reading Achievement		
philnimp	Philosophy not important	disciplstdi	Strongly disagree with plan of discipline at school
philswim	Philosophy somewhat important	climateimp	School Climate not important
philimp	Philosophy not important	climateswim	School Climate somewhat important
disciplagre	Agree with plan of discipline at school	climatenimp	School Climate not important

## Discussion

There is a statistically significant association between functional community and student achievement but unlike the theory put forth by Coleman, the unimportance of those values have a stronger effect on achievement than the prioritization of those views. This brings into question the private school effect and how strong of a role philosophy plays in setting the tone for the members of the school. If viewing the philosophy of a school as unimportant allows students to achieve more, what does that say about schools that do not have a philosophy in comparison to Catholic schools? Must the philosophy be known but ignored by school members to gain points in achievement or is the philosophy so engrained hat members believe they are ignoring it, though they are not?

Climate is significant to student achievement but has a negative effect on student achievement. As climate becomes less important, the stronger the negative affect it has on achievement. This shows that if one does not find the climate important, it will impact them negatively, showing that a negative climate is associated with an unimportant one. If students are not in an environment that is conducive to their learning, they will not perform as they would if they were in an environment that encouraged their learning. Climate determines the way one acts within the social realm of an institution.

Functional communities do not hold up in the PISA data as philosophy is unimportant and climate has a negative effect on student achievement. This then makes one wonder what is the significance of philosophy, climate, and discipline on a global level. Are the measures of climate used in the United States different from those applied abroad? For future studies it would be great to investigate how climate is measured in other nations as well as the importance of school philosophy as different cultures may internalize these things differently.

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