

Dressed for Success?

The Effect of School Uniforms on Achievement and Behavior



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Growth of Uniform Adoption

- Increasingly, urban school districts in the US have been adopting uniform dress codes.
 - In 1996 only 3% of public schools required uniforms.
 - Long Beach, CA became first large district to require uniforms for all students in 1994.
 - In 1996 President Clinton & US Dept. of Education tried to make it easier for districts to adopt uniforms.
 - By 2005 14% of public schools had uniforms
 - Uniforms have since spread to many major US school districts. New York City, Houston, Philadelphia, Chicago, Dallas, Boston
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Evidence on Uniform Impacts

- Many politicians & school administrators believe uniforms lead to improved behavior and higher test scores.
 - Actual empirical evidence is very sparse & unclear.
 - Brunnsma & Rockquemore (1998), Brunnsma (2004), Stanley (1996), Yeung (2009)
 - Potentially suffer from substantial bias.
 - Prior research relies on cross-sectional OLS or first-difference evidence.
 - Uniforms likely to be adopted in schools with more behavior/achievement problems.
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What We Do

- Administrative data on student behavior, attendance and test scores in a large urban school district in the southwest (LUSD-SW).
 - Schools in LUSD choose whether and when to adopt uniforms.
 - Use variation in school uniform policies over time to assess impact of uniforms on student outcomes.
 - Account for endogenous uniform adoption & student switching through student fixed-effects, school fixed-effects, & school-specific linear time-trends.
 - Test for residual trending and enforcement.
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How Might Uniforms Affect Achievement, Attendance, & Behavior?

- Provide regimentation → respect for authority.
 - Improve safety via identification of trespassers → attend school more.
 - Make students feel as part of a community and reduce pressure on students to “fit in” → attend school more.
 - May encourage positive attitudes, increase self esteem.
 - On other hand, may stifle expression forcing them to rebel against authority.
 - Focus on uniforms may distract from other discipline.
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Uniforms in LUSD

- Schools in LUSD choose whether to require uniforms → both cross-sectional & time variation.
 - Uniform policies
 - Specific colored polo shirts – between 1 and 3 colors, sometimes specific to grade level
 - Specific style of pants - e.g. khaki, denim
 - Sometimes require shirt with school emblem.
 - Violating uniform policy can result in punishments as severe as in-school suspension.
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Typical LUSD Uniforms

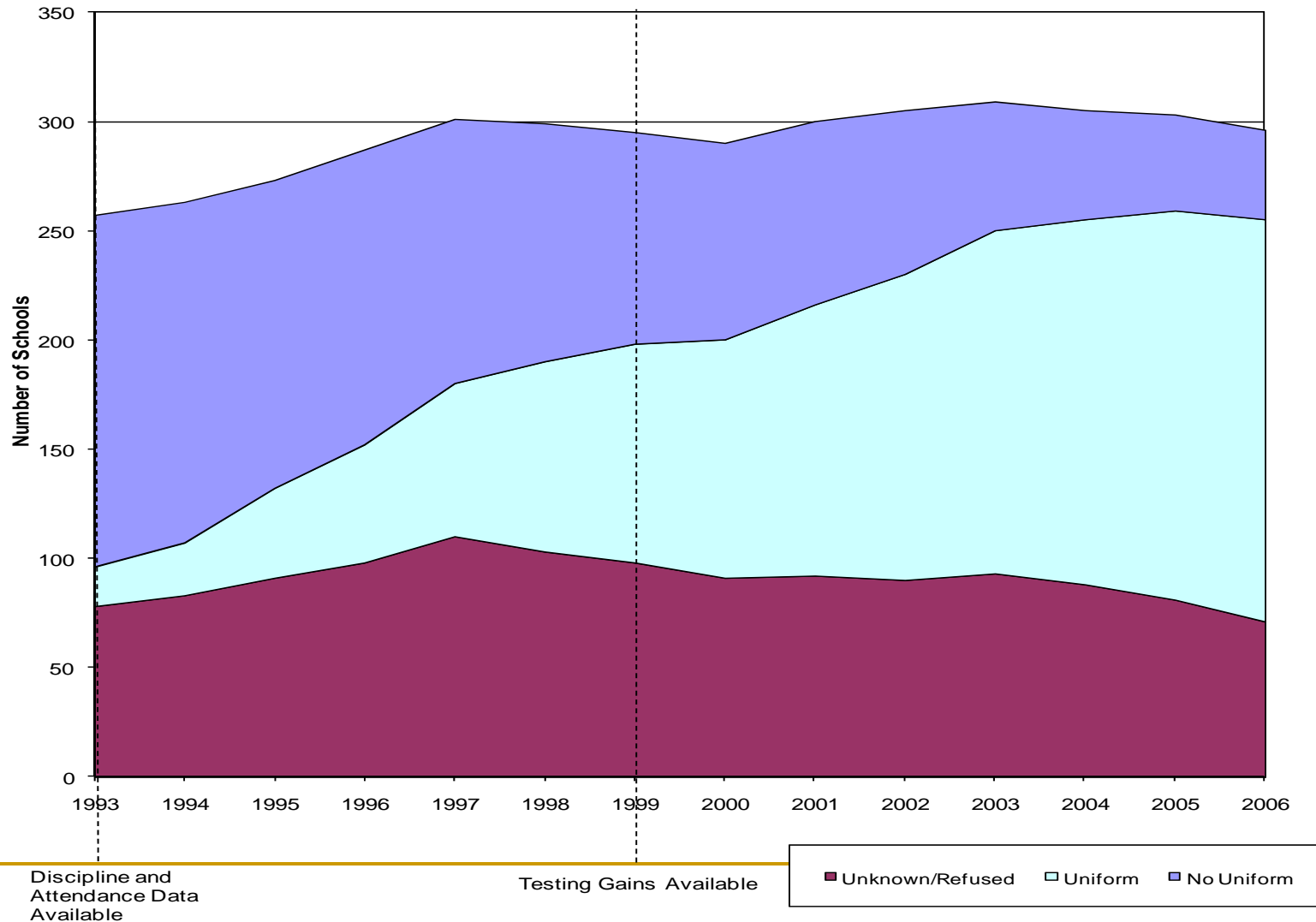


Data

- Administrative records on individual students from 1993 – 2006.
 - Disciplinary infractions and attendance rates.
 - Stanford Achievement Test scores (1998 and later).
 - Student demographics.
 - Dates of school uniform adoption determined via survey of school principals.
 - 79% of schools in operation in 2007-08 provided year of adoption, 14% date could not be determined, 7% refused.
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Uniform Adoption over Time

Figure 1: Uniform Adoption in LUSD-SW



Identification Strategy

- Use a combination of school fixed-effects, school-specific linear time trends, and student fixed effects to address endogenous uniform adoption by schools and endogenous movement of students into schools with and without uniforms.

$$Y_{ijt} = \alpha + \beta \text{Uniform}_{jt} + X_{jt} \Omega + S_j \Lambda + (S_j * t) \Gamma + \gamma_i + \varepsilon_{ijt}$$

- Will address selection of schools into uniforms based off fixed characteristics or linear trends.
- Addresses selection of students into uniform schools off of fixed characteristics.
- Look at achievement gains, discipline, attendance, and likelihood of leaving district.

Descriptive Statistics

	Elementary			Middle/High		
	Uniform Not Required	Uniform Required	Unknown	Uniform Not Required	Uniform Required	Unknown
A. Demographics						
Female	0.49 (0.50)	0.49 (0.50)	0.49 (0.50)	0.49 (0.50)	0.51 (0.50)	0.48 (0.50)
Black	0.30 (0.46)	0.27 (0.44)	0.41 (0.49)	0.36 (0.48)	0.30 (0.46)	0.33 (0.47)
Hispanic	0.52 (0.50)	0.60 (0.49)	0.53 (0.50)	0.48 (0.50)	0.58 (0.49)	0.53 (0.50)
White	0.15 (0.35)	0.10 (0.30)	0.04 (0.19)	0.12 (0.33)	0.09 (0.28)	0.11 (0.31)
Free Lunch	0.65 (0.48)	0.67 (0.47)	0.77 (0.42)	0.43 (0.50)	0.58 (0.49)	0.54 (0.50)
Reduced Price Lunch	0.07 (0.25)	0.09 (0.29)	0.08 (0.26)	0.04 (0.20)	0.09 (0.29)	0.06 (0.24)
Limited English Proficiency	0.34 (0.47)	0.37 (0.48)	0.35 (0.48)	0.15 (0.36)	0.13 (0.34)	0.16 (0.37)
At Risk Status	0.52 (0.50)	0.59 (0.49)	0.58 (0.50)	0.58 (0.49)	0.59 (0.49)	0.58 (0.49)
Special Education	0.10 (0.30)	0.09 (0.29)	0.10 (0.29)	0.12 (0.33)	0.13 (0.33)	0.13 (0.34)
Gifted and Talented	0.12 (0.32)	0.11 (0.31)	0.05 (0.22)	0.12 (0.33)	0.12 (0.32)	0.10 (0.30)
Observations	402,728	490,802	323,302	704,605	368,928	204,752

Descriptive Statistics

	Elementary			Middle/High		
	Uniform Not Required	Uniform Required	Unknown	Uniform Not Required	Uniform Required	Unknown
B. Outcomes						
Stanford Math	0.15 (1.07)	0.00 (0.98)	-0.13 (0.96)	0.01 (1.04)	0.01 (0.98)	-0.05 (0.95)
Observations	117,571	288,711	140,731	259,019	280,540	106,024
Stanford Reading	0.19 (1.09)	0.00 (0.98)	-0.16 (0.93)	0.00 (1.03)	0.01 (0.99)	-0.03 0.96
Observations	117,522	288,343	140,719	258,511	280,860	106,289
Stanford Language	0.17 (1.08)	0.00 (0.98)	-0.15 (0.94)	0.01 (1.03)	0.02 (0.99)	-0.07 (0.96)
Observations	117,604	288,718	140,792	258,077	280,291	105,879
Disciplinary Infractions	0.06 (0.40)	0.09 (0.50)	0.10 (0.55)	0.64 (1.60)	0.92 (2.00)	0.82 (1.85)
Observations	402,728	490,802	323,302	704,605	368,928	204,752
Attendance Rate	96.13 (6.41)	96.71 (4.09)	96.07 (5.03)	92.20 (11.12)	93.72 (9.49)	92.15 (11.98)
Observations	389,968	488,163	317,929	687,822	367,906	200,375

Effect of Uniforms on Attendance and Discipline

Effect of Uniforms on Behavior – Grades 1 - 5

	Females		Males	
	OLS	Main Regressions: School FE, Student FE, School Time Trends	OLS	Main Regressions: School FE, Student FE, School Time Trends
i. Attendance Rate				
Uniform Required	0.481 (0.292)	0.039 (0.040)	0.495* (0.294)	-0.087** (0.043)
Observations	429,626	429,626	448,505	448,505
ii. Disciplinary Infractions				
Uniform Required	-0.007 (0.005)	-0.001 (0.005)	-0.008 (0.015)	0.015 (0.020)
Observations	436,940	436,940	456,590	456,590

Effect of Uniforms on Behavior – Grades 6 - 12

	Females		Males	
	OLS	Main Regressions: School FE, Student FE, School Time Trends	OLS	Main Regressions: School FE, Student FE, School Time Trends
i. Attendance Rate				
Uniform Required	0.869 (0.561)	0.480*** (0.136)	0.646 (0.537)	0.271* (0.139)
Observations	525,447	525,447	530,281	530,281
ii. Disciplinary Infractions				
Uniform Required	-0.003 (0.070)	0.062 (0.040)	0.064 (0.107)	0.130** (0.064)
Observations	534,135	534,135	539,398	539,398

Why the Increase in Disciplinary Infractions?

- Change in enforcement?
- Use principal fixed-effects.
- Also little significant difference b/w established & new principals.

	Females		Males	
	Main Regressions	Main Regressions w/ Principal FE	Main Regressions	Main Regressions w/ Principal FE
A. Elementary				
i. Attendance Rate				
Uniform Required	0.039 (0.040)	0.059 (0.044)	-0.087** (0.043)	-0.122** (0.048)
Observations	429,626	421,916	448,505	440,332
ii. Disciplinary Infractions				
Uniform Required	-0.001 (0.005)	-0.002 (0.003)	0.015 (0.020)	-0.007 (0.011)
Observations	436,940	429,092	456,590	448,250
B. Middle/High				
i. Attendance Rate				
Uniform Required	0.480*** (0.136)	0.475*** (0.170)	0.271* (0.139)	0.395** (0.154)
Observations	525,447	511,404	530,281	515,904
ii. Disciplinary Infractions				
Uniform Required	0.062 (0.040)	0.068 (0.047)	0.130** (0.064)	0.084 (0.075)
Observations	534,135	519,690	539,398	524,560

Why the Increase in Disciplinary Infractions?

- Uniform violations?
- Substitute more severe with less disruptive infractions?

	A. Females		B. Males	
	In-School Suspensions	Out-of-School Suspensions	In-School Suspensions	Out-of-School Suspensions
	(1)	(2)	(3)	(4)
i. Elementary				
Uniform Required	0.000 (0.002)	0.001 (0.005)	0.002 (0.011)	0.014 (0.019)
Observations	375,500	375,500	392,516	392,516
ii. Middle/High				
Uniform Required	0.097*** (0.035)	-0.038** (0.016)	0.190*** (0.051)	-0.053* (0.028)
Observations	457,541	457,541	461,963	461,963

Why the Increase in Disciplinary Infractions?

- Increases in infractions & drop in attendance for elementary boys dissipate over time. Groups with improvements continue to gain over time.

	A. Attendance		B. Discipline	
	Females (1)	Males (2)	Females (3)	Males (4)
	i. Elementary			
Year of Adoption	0.039 (0.039)	-0.102** (0.042)	0.001 (0.005)	0.011 (0.020)
1 Year After Adoption	0.040 (0.052)	-0.062 (0.055)	0.002 (0.006)	0.022 (0.022)
2 or More Years After Adoption	0.168** (0.072)	0.000 (0.071)	0.004 (0.009)	0.010 (0.026)
Observations	429,626	448,505	436,940	456,590

Why the Increase in Disciplinary Infractions?

	A. Attendance		B. Discipline	
	Females (1)	Males (2)	Females (3)	Males (4)
	ii. Middle/High			
Year of Adoption	0.549*** (0.124)	0.387*** (0.139)	0.066 (0.044)	0.135** (0.065)
1 Year After Adoption	0.320* (0.192)	0.007 (0.172)	0.062 (0.045)	0.133 (0.086)
2 or More Years After Adoption	0.548* (0.304)	0.376 (0.258)	0.004 (0.062)	0.020 (0.105)
Observations	525,447	530,281	534,135	539,398

Why the Increase in Disciplinary Infractions?

- Does not appear to be due to enforcement.
 - Principal FE, same effect for new & established principals, infraction severity decreases.
 - To extent that new principals are more likely to adopt uniforms as part of a package, this suggests enforcement is not explaining all of results.
 - May be result of uniform violations.
 - Shift towards less severe infractions also suggests students substitute towards less severe infractions.
 - Discipline improves over time.
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Are Fixed Effects & Trends Sufficient?

	A. Attendance		B. Discipline	
	Females	Males	Females	Males
	(1)	(2)	(3)	(4)
	i. Elementary			
4 or More Years Prior to Adoption	0.126 (0.094)	0.092 (0.094)	0.004 (0.008)	-0.006 (0.026)
3 Years Prior to Adoption	0.013 (0.065)	0.012 (0.061)	0.003 (0.006)	-0.016 (0.021)
2 Years Prior to Adoption	0.043 (0.049)	0.016 (0.046)	0.004 (0.004)	0.004 (0.014)
Uniform Required	0.038 (0.041)	-0.094** (0.042)	0.003 (0.006)	0.015 (0.020)
Observations	429,626	448,505	436,940	456,590

Are Fixed Effects & Trends Sufficient?

	A. Attendance		B. Discipline	
	Females	Males	Females	Males
	(1)	(2)	(3)	(4)
	ii. Middle/High			
4 or More Years Prior to Adoption	-0.313 (0.313)	-0.333 (0.338)	-0.079 (0.056)	-0.189** (0.088)
3 Years Prior to Adoption	-0.283 (0.200)	-0.303 (0.221)	-0.014 (0.047)	-0.096 (0.087)
2 Years Prior to Adoption	-0.034 (0.145)	-0.019 (0.159)	-0.027 (0.043)	-0.074 (0.074)
Uniform Required	0.456*** (0.135)	0.250* (0.135)	0.059 (0.038)	0.110* (0.063)
Observations	525,447	530,281	534,135	539,398

Effect of Uniforms on Achievement

Effect of Uniforms on Achievement – Grades 2 - 5

	Females		Males	
	OLS	Main Regressions: School FE, Student FE, School Time Trends	OLS	Main Regressions: School FE, Student FE, School Time Trends
i. Stanford 9/10 - Math Gains				
Uniform Required	0.001 (0.011)	-0.036 (0.033)	0.012 (0.013)	0.024 (0.031)
Observations	117,244	117,244	121,261	121,261
ii. Stanford 9/10 - Reading Gains				
Uniform Required	0.004 (0.010)	-0.015 (0.030)	0.009 (0.011)	0.030 (0.032)
Observations	117,036	117,036	120,964	120,964
ii. Stanford 9/10 - Language Gains				
Uniform Required	0.016 (0.010)	0.055* (0.031)	0.013 (0.010)	0.025 (0.033)
Observations	117,311	117,311	121,266	121,266

Effect of Uniforms on Achievement – Grades 6 - 11

	OLS	Main Regressions: School FE, Student FE, School Time Trends	OLS	Main Regressions: School FE, Student FE, School Time Trends
i. Stanford 9/10 - Math Gains				
Uniform Required	-0.021 (0.014)	0.033 (0.036)	-0.012 (0.012)	0.011 (0.031)
Observations	177,220	177,220	173,582	173,582
ii. Stanford 9/10 - Reading Gains				
Uniform Required	-0.018* (0.010)	-0.006 (0.018)	-0.017* (0.010)	-0.026 (0.021)
Observations	177,252	177,252	173,323	173,323
ii. Stanford 9/10 - Language Gains				
Uniform Required	-0.002 (0.009)	0.052*** (0.019)	-0.008 (0.008)	0.038 (0.025)
Observations	176,858	176,858	172,972	172,972

Impacts on Achievement Over Time

	A. Math		B. Reading		C. Language	
	Female	Male	Female	Male	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)
i. Elementary						
Year of Adoption	-0.047 (0.036)	0.015 (0.033)	-0.015 (0.032)	0.027 (0.035)	0.054* (0.032)	0.015 (0.032)
1 Year After Adoption	0.002 (0.040)	0.016 (0.033)	-0.030 (0.043)	0.027 (0.040)	-0.000 (0.037)	0.007 (0.039)
2 or More Years After Adoption	-0.021 (0.057)	-0.021 (0.048)	-0.037 (0.055)	0.013 (0.058)	-0.027 (0.050)	-0.041 (0.047)
Observations	117,244	121,261	117,036	120,964	117,311	121,266
ii. Middle/High						
Year of Adoption	0.035 (0.034)	0.010 (0.029)	-0.010 (0.019)	-0.032 (0.021)	0.050** (0.020)	0.033 (0.024)
1 Year After Adoption	0.083 (0.060)	0.079 (0.054)	0.035 (0.024)	0.038 (0.035)	0.081*** (0.023)	0.063* (0.033)
2 or More Years After Adoption	0.113* (0.057)	0.094* (0.055)	0.026 (0.025)	0.028 (0.032)	0.086*** (0.025)	0.048 (0.036)
Observations	177,220	173,582	177,252	173,323	176,858	172,972

Specification Tests

- Principal fixed-effects provide qualitatively similar, albeit statistically insignificant results.
 - Some residual trending for middle-high reading, but little otherwise.
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Effect of Uniforms on District Leavers

Effect of Uniforms on Switching Schools & Leaving District

	A. Female		B. Male	
	Switches Schools in LUSD (1)	Leaves LUSD (2)	Switches Schools in LUSD (3)	Leaves LUSD (4)
i. Elementary				
Uniform Required	-0.0078 (0.0070)	-0.0068** (0.0032)	0.0006 (0.0074)	-0.0049 (0.0031)
Observations	342,332	342,332	358,656	358,656
ii. Middle/High				
Uniform Required	0.0061 (0.0100)	-0.0123** (0.0050)	0.0137 (0.0109)	-0.0031 (0.0065)
Observations	373,256	373,256	384,381	384,381

Conclusion

- ❑ School uniforms appear to be effective at improving various aspects of student performance.
 - ❑ The effects are stronger for girls, particularly those in middle & high school.
 - ❑ Most notable is a significant increase in attendance rates for middle/high and, a few years after adoption, improvements in both math and language scores.
 - ❑ Severity of disciplinary infractions also appears to fall for middle/high.
 - ❑ Finally, girls are more likely to remain in the district suggesting that uniforms could possibly help public schools compete against charter & private schools.
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