

# Middle Grade School Structure and Young Adolescent Girls' Body Image

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## I. Process

In 1997, The New York Times quoted a Bronx High School of Science administrator regarding the then- surprising increase in behavioral science honorees in the prestigious Westinghouse (now Intel) Science Talent Search competition: "It [behavioral science] does provide another outlet for some students whose strength may not be in empirical science and math," said the chairwoman of the school's biology department ("A Fine Hour For Squishy Sciences", NYT 2/16/97). Oh really? I thought my diverse fifteen hundred subject sample population and multiple analysis of covariance-based statistical analyses were pretty darned scientific. Silly me. I was also impressed with the way my friend at a local school developed and piloted her own instruments in two languages, using factor analysis and Cronbach's alpha. A professor in California has asked permission to use the instruments in her own future research among Latino/a adolescents. It's been fifteen years since the Times article – which otherwise offered a very positive review of all the wonderful work being done by young social scientists. Hopefully, we're all past this squishy science / hard science nonsense. At heart, I'm a physicist. Nothing I've read in the last three years has excited me more than last week's "Higgs boson" discovery, but at 16 or 17, I lacked both the expertise and the opportunity to talk my way into an internship in Geneva. Social science represented an important area where I could both apply and develop my skills to an important project – one that could actually make a tangible difference to girls not much younger than myself. I'm also a feminist in the broadest sense of the word. Moreover, I believe that properly functioning institutions – like schools – can positively impact the lives of our youth. I set out to empirically discover how, in order to make practical recommendations to affect change.

*Who and what sparked my interest in behavioral research, and in this topic in particular?*

Well, my older sister had worked on body image in high school, so I was exposed to the idea from a young age. More importantly, I always saw body image problems from a feminist perspective - well before I enrolled in Intro to Women's Studies at Miami (OH) during Summer '11. I realize that I have defined myself as a feminist for several years, even without using the term. As a young woman in modern Western society I have seen and personally experienced the effects of poor body image. When a child is so concerned about looking good that it debilitates her ability to play and be a kid, how can that not be a problem? Ultimately, I fear that kids are growing up too fast. My research seeks to demonstrate the powerful impact school restructuring can have on preteens' well-being. We must think carefully about consequences before rearranging children's lives so dramatically as we do by reshaping junior high schools (K-6 / 7-9 / 10-12) into middle schools (K-5 / 6-8 / 9-12). There seem to be unforeseen consequences. Even worse, my Dad, a veteran social studies teacher, spent nearly a year fretting about the "approaching apocalypse" due to his Board of Education's decision to move all of the 5th graders to the middle school. I agreed that 5th graders learning with 8th graders seemed foolish, but "apocalyptic"? I decided to conduct a study of as many middle/junior high schools as possible. How many housed 5th graders with older girls? What had changed for 6th graders since my sister's 2006 research? Over 1000 surveys later, the results are complex and fascinating. In the end though, it wasn't my amazing and dedicated high school mentors, Mr. Friedman and Mr. Zausin who led me to social science or to this project. They kept me going when I wanted to quit. And it wasn't the university mentor who I've never actually met in person who inspired me in the first place. Again, I could never have finished without the encouragement and expertise of Macalester College's Jaine Strauss. "Amazing" is too small a word. Nope, my inspiration, my muse is my older brother Michael. Sure he taught me statistics. More important, he taught me that it doesn't matter what you study. What matters is that you study and how you study. Passion is the key to greatness in any enterprise. My

brother inspires me to shoot for the stars. Sometimes, I'll catch the moon. Consider this: Einstein & Edison were both dyslexic, both legendary scientists. What greater inspirations could I want? I'll take Michael Sullivan. My brother lives in my house, not in some dusty book. His gifts and his triumphs, disabilities and failings are those of my own flesh-and-blood. His STS success was based on as "unscientific" a topic as one could imagine - racism, officiating & home field advantage in English soccer. Yet Michael brought passion, imagination, doggedness, statistical acumen and the scientific method. My big brother encourages & inspires me. I'm never 'wrong'. I'm 'almost there'.

*Where did you perform your research?*

My laboratory required no white coat, just pens, informed consent slips and surveys – and at least one parent or older sibling willing to drive me all over Long Island in search of small groups of “tween” girls willing to sit through my 20 minute survey packet. Public school classrooms, soccer or basketball practices, Girl Scout meetings, religious education classes – any reasonably representative venue which might contain parents and 10-14 year old girls from one of the seven target school districts. Perhaps two thirds of the surveys were distributed during gym or health classes at public schools throughout Nassau County. All subjects took surveys individually, suiting at a desk or on some sort of bench, chair or bleachers. Informed consent was obtained for each and every completed survey, no matter where the “lab” was located. For over two years, the process was often hectic, never chaotic, and almost always fun.

*Did you have to learn additional mathematics to tackle your project? Did your project make science and math more alive for you?*

To be fair, I already loved science, especially the mathematical sciences. Learning statistics on a “need to know” basis from my brother and my university mentor was pretty cool. I’ll need a formal class in college, but I really enjoyed the no-frills specificity of the process. As for science in general, I’m not a big biology fan – too much memorizing, not enough analysis. I am especially fond of the laboratory component in chemistry and physics. I learn best by applying what I’ve read to concrete situations. Besides, I grew up in a house with parents & siblings who valued inquiry-based learning, so it should be no surprise that I trained to “do an Intel STS project” by undertaking and completing several preliminary/penultimate behavioral science projects. In 9th grade I examined the impact of exemplars on implicit racism. The research was solid, but my public speaking was not. I nearly cried. The next two years my partner and I demonstrated that offspring resemblance more strongly influences the kinship investment of fathers than mothers. We were even invited to present at the APA Convention in Washington. I’ve just finished a geography project for Association of American Geographers. And I don’t even like maps. I presented my body image research at the APS (Association for Psychological Science) Convention last May. Mr. Friedman was right: “You learn best by doing.” It’s also important to try something new, to step out of your comfort zone. I’m still a pretty weak public speaker, but I didn’t cry once at AAG or APS. I knew the material. I cared about what I was doing. So what if I mispronounced a couple of words or lost my place here and there? I was invited because my research was sound, because I was smart, not because I was smooth or slick.

## **II. Research**

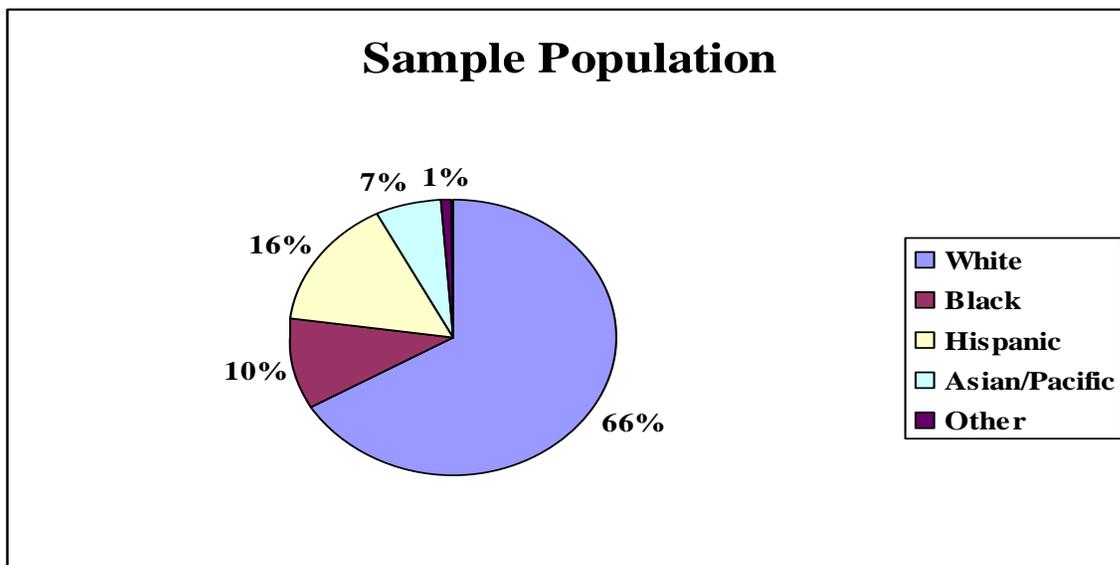
### *Background*

Has the movement to reform middle grade education had unexpected social consequences for preteen girls struggling with self-esteem, body and weight issues? This study examined body-

consciousness and sociocultural appearance attitudes among 1537 girls in seven different towns with three different grade groupings: Middle School (K-5/6-8), Modified Middle School (K-4/5-8); and Junior High (K-6/7-8). Do grade groupings within school districts affect the age at which girls become body-conscious? Do girls in Middle School districts report worse body image than those in Junior High districts?

### Method

After informed consent was obtained, a racially and ethnically diverse sample of 1537 girls, aged 10-14, completed three well-validated surveys: the *Eating Disorder Inventory* (EDI), the *Sociocultural Attitudes Toward Appearance Questionnaire* (SATAQ) and the *Objectified Body Consciousness* (OBC) Scale. EDI subscales included Drive for Thinness (DFT) and Body Dissatisfaction (BD). SATAQ subscales included Awareness (A) and Internalization (I). OBC subscales included Surveillance (Surv) and Shame (Sham). Multivariate analyses of covariance (MANCOVAs) contrasted girls in Middle School (MS), Modified Middle School (MMS), and Junior High School (JHS) districts; Body Mass Index (BMI) served as a covariate.



### ***Ethnic Distribution x District***

Ethnicity**	Nassau County*	A JHS	B JHS	H JHS	C MS	D MS-2005 MMS-2010	F MMS	J MMS	United States*	Sample A/B/H (J.H.S.)	Sample C/D/F/J (M.S - M.M.S.)
White	68.1%	92.3%	97.3%	16.8%	89.9%	36.1%	87.2%	89.0%	69.1%	63.3	69.1
Black	11.3%	0.8%	0.8%	52.2%	0.6%	22.4%	0.4%	0.0%	12.3%	13.0	8.3
Hispanic	12.8%	5.6%	1.3%	17.4%	5.7%	33.9%	8.6%	1.9%	12.5%	15.1	15.8
Asian/Pacific	7.1%	1.4%	1.1%	11.7%	3.8%	7.1%	3.5%	9.1%	3.6%	8.5	5.5
Other	0.5%	0.0%	0.0%	2.0%	0.0%	0.5%	0.3%	0.0%	0.9%	0.1	1.3
% Free Lunch	5.9%	4.8%	3.1%	27.9%	2.5%	19.7%	4.3%	1.0%	--	--	--
% ESL	3.9%	5.5%	0.4%	5.6%	1.3%	5.9%	1.8%	0.4%	--	--	--

\*The total does not equal 100% because of those respondents who reported themselves as "multiracial."

\*\*New York State Education Department categories

#### Sources

N.Y.S. Education Dept., "Public School Report Cards, 2009-10 ([www.emsc.nysed.gov/reprcrdfall2010/](http://www.emsc.nysed.gov/reprcrdfall2010/)) United States Census Bureau, *Current Population Reports*, 2010.

Middle School Model (C & D-2005): 385 subjects

- 86 fifth graders, 145 sixth graders, 128 seventh graders, 26 eighth graders.

Modified Middle School Model (C & D): 574 subjects

- 88 fifth graders, 107 sixth graders, 137 seventh graders, 242 eighth graders.

Junior High School Model (F & J): 577 subjects

- 177 fifth graders, 209 sixth graders, 163 seventh graders, 28 eighth graders.

#### *Results*

Fifth and sixth grade girls enrolled in middle schools reported higher levels of body image dysfunction than peers enrolled in junior high school districts across virtually all variables. Fifth graders in MMS looked worse than girls from both other district types and 6<sup>th</sup> graders in MS and MMS looked worse than those enrolled in JHS. Specifically, fifth graders in a Modified Middle School district that segregated older and younger girls reported significantly lower body image dissatisfaction scores than those from a MMS district that allowed free association throughout the day. Significantly, seventh graders enrolled in

MS & MMS districts continued to report significantly elevated body consciousness compared to peers in JHS districts, while eighth graders reported marginally higher levels.

In MS districts, sixth graders differed significantly from the fifth-graders, but not the seventh-graders, on EDI-DFT, SATAQ-I, OBC-Surv and OBC-Sham and marginally on EDI-BOD and SATAQ-A. In the JHS districts, sixth-graders differed from seventh-graders, but not fifth-graders, on the same variables.

We divided the MMS participants into those whose schools segregated the fifth graders and those whose schools allowed free mingling among all four grades. The latter group reported higher levels of body image dysfunction than the former group

*Estimated Marginal Means (standard errors) for the Eating Disorder Inventory, Sociocultural Attitudes toward Appearance Questionnaire, and Objectified Body Consciousness Scale*

**Grade x School Type Effects**

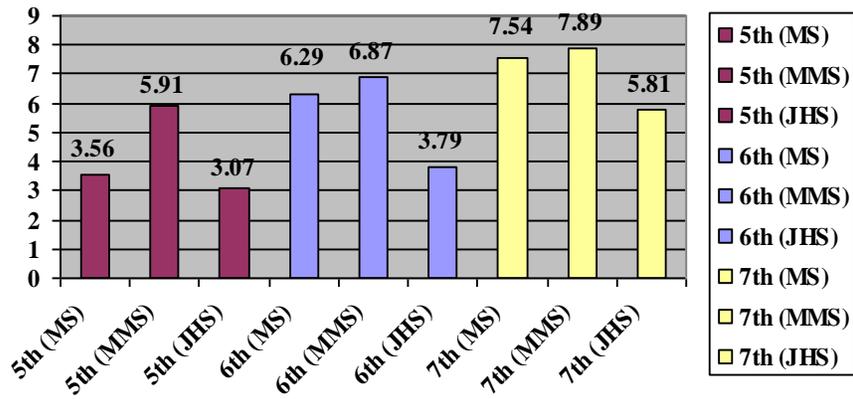
	<b>5<sup>TH</sup> JHS</b>	<b>6<sup>TH</sup> JHS</b>	<b>7<sup>TH</sup> JHS</b>	<b>8<sup>TH</sup> JHS</b>
<b>EDI</b>				
<b>Drive for Thinness</b>	2.42 <sub>A</sub> (.357) <sup>a</sup>	3.13 <sub>A</sub> (.328) <sup>a</sup>	4.02 <sub>B</sub> (.371) <sup>a</sup>	3.43 <sub>AB</sub> (.894) <sup>a</sup>
<b>Body</b>	3.07 <sub>A</sub> (.432) <sup>a</sup>	3.79 <sub>A</sub> (.397) <sup>a</sup>	5.81 <sub>B</sub> (.449) <sup>a</sup>	6.14 <sub>B</sub> (1.083) <sup>a</sup>
<b>SATAQ</b>				
<b>Awareness</b>	16.22 <sub>A</sub>	16.76 <sub>A</sub>	18.93 <sub>B</sub> (.419) <sup>a</sup>	18.11 <sub>AB</sub>
<b>Internalization</b>	17.07 <sub>A</sub>	17.39 <sub>A</sub>	20.44 <sub>B</sub> (.481) <sup>a</sup>	17.87 <sub>A</sub> (1.159) <sup>a</sup>
<b>OBC</b>				
<b>Surveillance</b>	21.84 <sub>A</sub>	25.21 <sub>B</sub>	30.85 <sub>C</sub> (.678) <sup>a</sup>	30.06 <sub>C</sub> (1.633) <sup>a</sup>
<b>Body Shame</b>	19.24 <sub>A</sub>	19.71 <sub>A</sub>	25.41 <sub>B</sub> (.694)	27.79 <sub>B</sub> (1.671) <sup>a</sup>

	<b>5<sup>TH</sup> MS</b>	<b>6<sup>TH</sup> MS</b>	<b>7<sup>TH</sup> MS</b>	<b>8<sup>TH</sup> MS</b>
<b>EDI</b>				
<b>Drive for Thinness</b>	2.49 <sub>A</sub> (.511) <sup>a</sup>	4.71 <sub>B</sub> (.392) <sup>b</sup>	4.81 <sub>B</sub> (.420) <sup>ab</sup>	8.48 <sub>C</sub> (.927) <sup>b</sup>
<b>Body</b>	3.56 <sub>A</sub> (.619) <sup>a</sup>	6.29 <sub>B</sub> (.475) <sup>b</sup>	7.54 <sub>B</sub> (.508) <sup>ab</sup>	10.22 <sub>C</sub>
<b>SATAQ</b>				
<b>Awareness</b>	16.10 <sub>A</sub>	19.19 <sub>B</sub>	19.81 <sub>B</sub>	18.91 <sub>B</sub>
<b>Internalization</b>	17.36 <sub>A</sub>	20.47 <sub>B</sub>	22.11 <sub>C</sub> (.544) <sup>b</sup>	25.73 <sub>D</sub>
<b>OBC</b>				
<b>Surveillance</b>	21.88 <sub>A</sub> (.934) <sup>a</sup>	32.34 <sub>B</sub>	35.04 <sub>C</sub> (.767) <sup>b</sup>	30.38 <sub>B</sub>
<b>Body Shame</b>	19.28 <sub>A</sub> (.956) <sup>a</sup>	25.74 <sub>B</sub>	28.31 <sub>C</sub> (.784) <sup>b</sup>	30.18 <sub>C</sub>

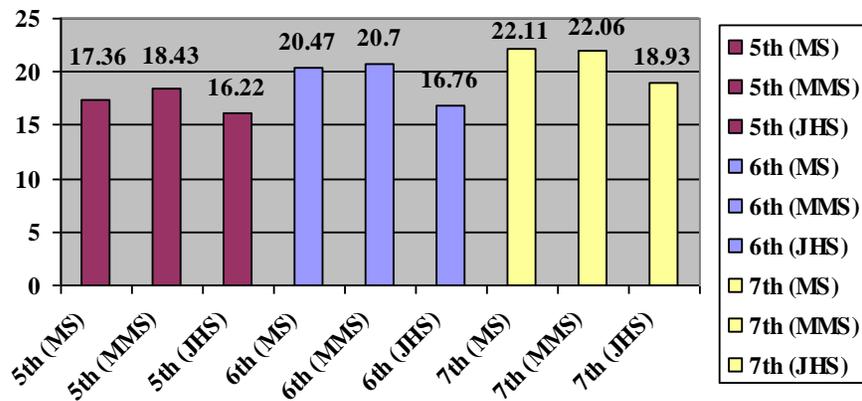
	<b>5<sup>TH</sup> MMS</b>	<b>6<sup>TH</sup> MMS</b>	<b>7<sup>TH</sup> MMS</b>	<b>8<sup>TH</sup> MMS</b>
<b>EDI</b>				
<b>Drive for Thinness</b>	3.94 <sub>A</sub> (.514) <sup>b</sup>	5.31 <sub>AB</sub> (.463) <sup>b</sup>	5.65 <sub>B</sub> (.417) <sup>b</sup>	5.99 <sub>B</sub> (.327) <sup>c</sup>
<b>Body</b>	5.91 <sub>A</sub> (.622) <sup>b</sup>	6.87 <sub>AB</sub> (.560) <sup>b</sup>	7.89 <sub>B</sub> (.505) <sup>b</sup>	7.89 <sub>B</sub> (.396) <sup>ab</sup>
<b>SATAQ</b>				
<b>Awareness</b>	18.03 <sub>A</sub>	18.85 <sub>A</sub> (.522) <sup>b</sup>	19.93 <sub>B</sub>	18.29 <sub>A</sub> (.369) <sup>a</sup>
<b>Internalization</b>	18.43 <sub>A</sub>	20.70 <sub>B</sub> (.600) <sup>b</sup>	22.06 <sub>B</sub>	21.61 <sub>B</sub> (.424) <sup>c</sup>
<b>OBC</b>				
<b>Surveillance</b>	25.13 <sub>A</sub>	30.90 <sub>B</sub> (.845) <sup>b</sup>	33.23 <sub>C</sub>	31.28 <sub>BC</sub>
<b>Body Shame</b>	26.82 <sub>A</sub>	28.78 <sub>AB</sub>	30.14 <sub>B</sub>	30.17 <sub>B</sub> (.611) <sup>a</sup>

- Means with different superscripts differ at least at  $p < .05$  level.
- Read upper case letters horizontally across grades and lower case letters vertically across school types.
- For instance, on the EDIDFT, JHS fifth graders differ significantly from JHS 7<sup>th</sup> and 8<sup>th</sup> graders (horizontal, upper case letters) and from MMS fifth graders (vertical, lower case letters)

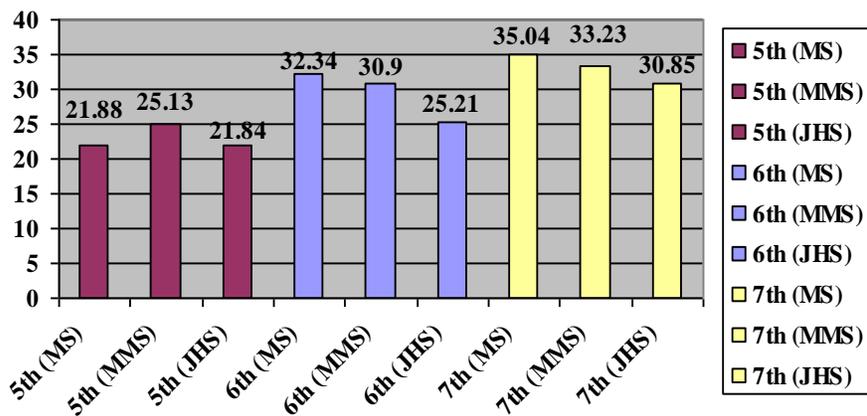
## EDI-BD



## SATAQ-I



## OBC-Surv



## *Discussion*

Both fifth and sixth graders enrolled in middle school districts report significantly higher levels of body dissatisfaction, a finding that is both troubling and important to psychologists, parents, and educators. Clearly, school structure and daily exposure to older girls matter in predicting self-reported body image concern among preteens as young as ten. Our data further suggest that these effects persist throughout the middle school and junior high years.