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Assessing Weight Norms, Misperceptions, and Body Mass Index

Comparing the Importance of School
Context and Composition versus
Individual Perception

Jessica Perkins, S.M.
Department of Health Policy
Harvard University, Boston, MA

and

H. Wesley Perkins, Ph.D.
Department of Anthropology & Sociology

David W. Craig, Ph.D.
Department of Chemistry

Hobart and William Smith Colleges, Geneva, NY 14456

www.YouthHealthSafety.org

www.SocialNormSurveys.org

Abstract

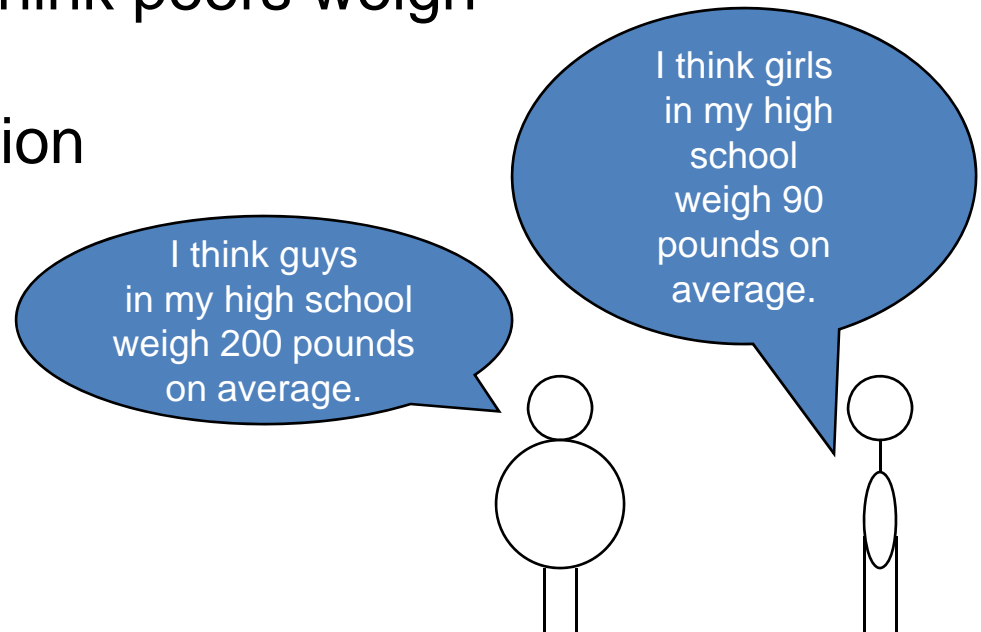
A total of 41,147 secondary students from 54 schools in nine regionally diverse states have been surveyed using an online instrument measuring actual and perceived weight norms between 2004-2008. Measures of perceived weight of both genders in one's own grade, self-assessed weight, and body mass risk are examined. There is a wide discrepancy between actual school norms and students' perceptions of weight norms among males and females in all school contexts. Students who are at risk for overweight conditions and obesity (as well as underweight and very underweight conditions) have the largest misperceptions of the actual norm. Examining variation in weight perceptions by school composition and context is also addressed. Individual perception of weight norms is more strongly associated with an individual's weight status than the actual weight norm in the individual's grade cohort and all other variables considered in the model. Results suggest that reducing adolescents' misperceptions of what is normal is potentially a very important aspect of addressing weight problems among adolescents.

What matters more for adolescents' weight status?

How much peers actually weigh

How much adolescents think peers weigh

Their social milieu / location



Survey Instruments

Social Norms Surveys Online
Alcohol Education Project, Hobart and William Smith Colleges, Geneva, NY 14456
<http://www.socialnormsurveys.org>

Funding for the development of this survey was provided in full through a grant by the New Jersey Department of Education with funds from the United States Department of Education under the Safe and Drug-Free Schools and Communities Act of the No Child Left Behind Act.

Survey of Bullying at Your School

[Español](#)

Please login.

Username:

Password:

<http://www.socialnormsurveys.org/bullya/>

Enter test for username and password

Social Norms Surveys Online
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Survey of Student Norms

[Español](#)

Please login.

Username:

Password:

<http://www.socialnormsurveys.org/hsf/>

Enter test for username and password

Common Body Image Question Items

20. What is your weight and height?

Weight

pounds

Height (enter feet and then inches).

feet

3 4 5 6 7

inches

0 1 2 3 4 5 6 7 8 9 10 11

21. Which best describes what you think of your current weight?(choose one)

I am...

- Very underweight
- Somewhat underweight
- About right
- Somewhat overweight
- Very overweight

22. What would you guess is the most typical (average) weight for boys and girls in your grade?(just give your best guess for each below)

Most typical (average) weight for boys in your grade

pounds

Most typical (average) weight for girls in your grade

pounds

Table 1. Descriptive statistics of student characteristics (n=41,147)

Individual Variables	%	Mean BMI	Individual Variables	%	Mean BMI
<i>Gender</i>			<i>Race/Ethnicity</i>		
Female	48.3	20.4	White	47.5	20.5
Male	51.7	21.1	Black	4.0	22.5
<i>Age</i>			Latino/Hispanic	6.7	21.7
10 years old	0.4	17.9	Asian	7.7	19.7
11 years old	7.1	18.0	Other	7.3	20.1
12 years old	12.4	18.7	<i>Behaviors</i>		
13 years old	12.4	19.6	School Sport	52.2	20.6
14 years old	16.7	20.5	No Participation	47.8	20.8
15 years old	17.6	21.3	School clubs/gov't	30.7	20.9
16 years old	16.0	21.9	No Participation	69.4	20.6
17 years old	12.8	22.3	Engaged in Part-time Work	31.7	21.3
18 years old	4.4	22.9	No Engagement	68.3	20.4
19 years old	0.2	23.6	Walk to School	4.9	20.9
20 years old	0.03	26.2	Ride	69.6	20.6
21 years old	0.04	24.0			

Table 2. School composition characteristics at respondent's school (n=41,147)

Variable	Mean	S.D.	Min	Max
% students eligible for free school lunch within school	10.9	12.1	0	76.6
% white within school	73.4	19.7	3.3	99.4
School size	1101	456.5	49	1901
% participating in school sport	52.1	10.0	10.0	80.3
% participating in school clubs	30.6	14.4	2.7	68.2

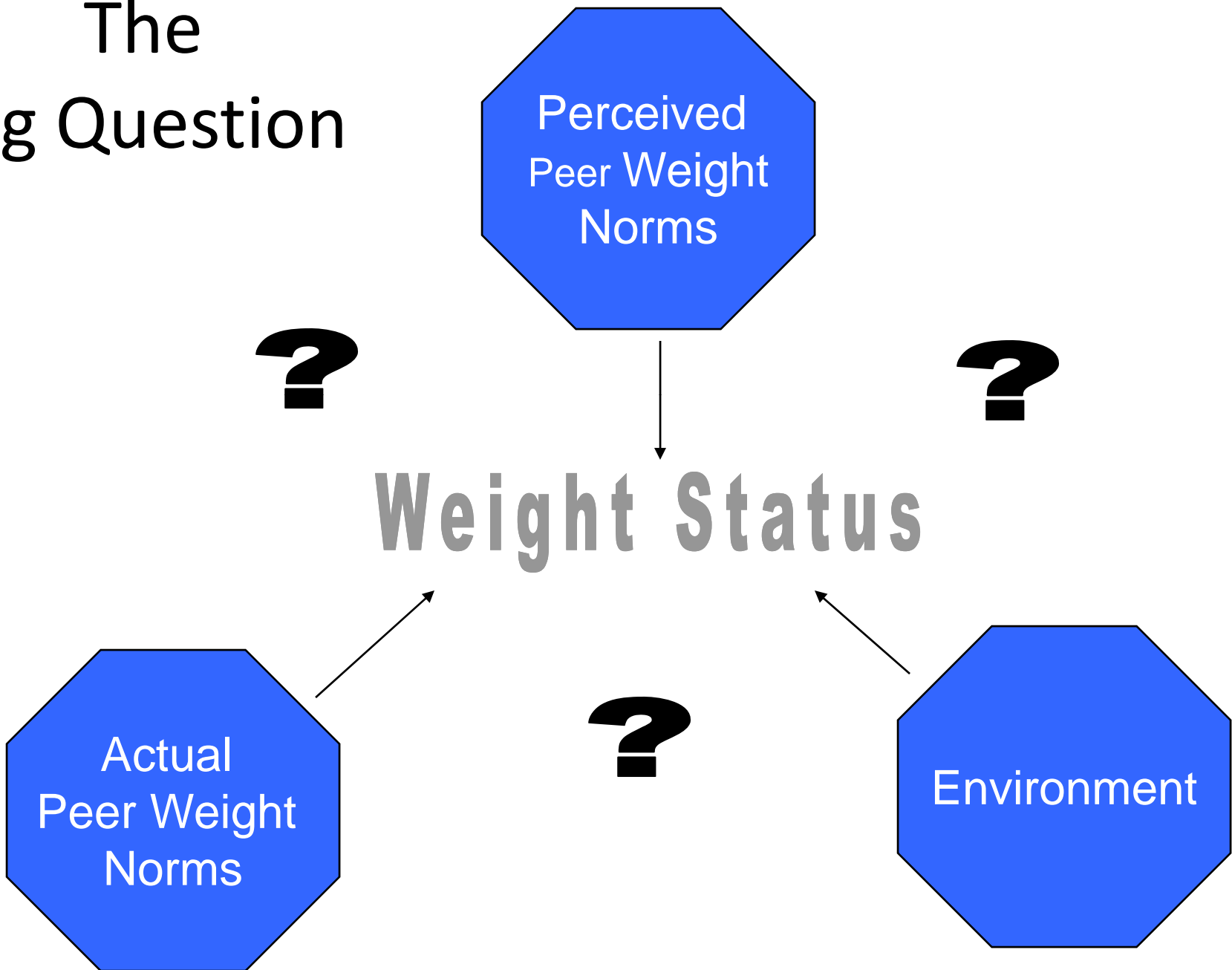
Table 3. Correlation of BMI with school composition characteristics (n=41,147)

School composition characteristics at respondent's school	Correlation with individual BMI
% students eligible for free school lunch within school	.11
% white within school	-.07
School Size	.11
% participating in school sport	.05
% participating in school clubs	.13

Table 4. Descriptive statistics for school contextual characteristics n=54 schools

Variable	%	Mean BMI
<i>School Urbanicity</i>		
City	9.4	21.6
Suburb	62.3	20.5
Town	9.4	21.6
Rural	18.9	20.7
<i>Regional Location</i>		
West	27.8	20.7
East of Colorado	72.8	21.4
<i>School Level</i>		
Upper includes high school grades	37.0	22.6
Lower only middle school and lower grades	63.0	20.0

The Big Question

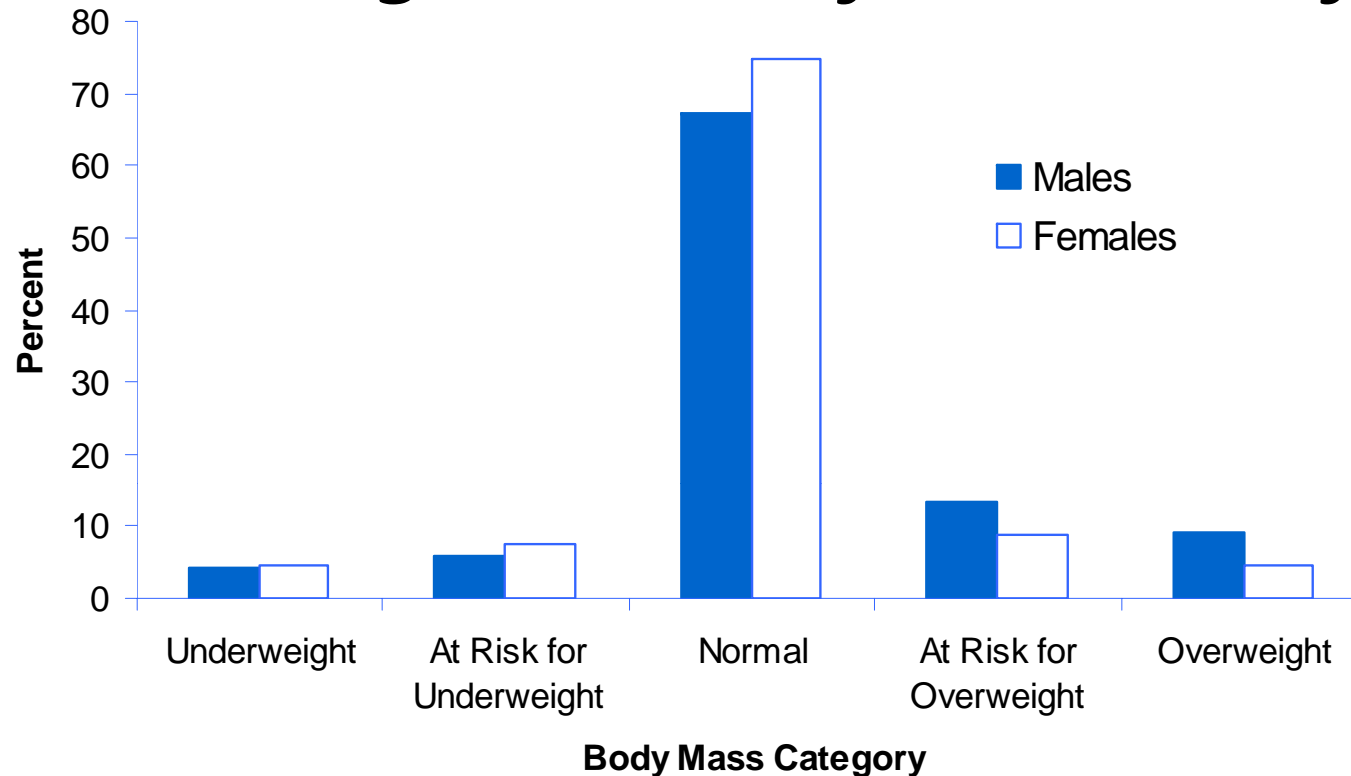


**Table 5. Conforming to perceived or actual norms:
descriptive stats of variables under scrutiny***

<i>Actual Peer Weight Norm</i> (across school cohorts)	Gender	Mean	Std. Dev.	Min	Max
Average weight in grade within school cohort	Male	138.0	24.3	94.9	169.0
	Female	119.5	21.8	60.0	245.0
<i>Perceived Peer Weight Norm - Actual Weight Norm</i> = <i>Misperception</i> by type (across respondents)					
Over-misperception of average weight in grade	Male	21.0	19.7	4.5	186.9
	Female	15.8	16.2	4.4	278.2
Under-misperception of average weight in grade	Male	-16.0	8.9	-4.6	-115.0
	Female	-13.2	6.7	-4.6	-75.2

*Data includes only schools with 50% response rates or greater

Figure 1. Weight status of males and females



Weight Status Categories*

Underweight

At risk for underweight

Healthy weight

At risk of overweight

Overweight

Percentile Range

Less than the 5th percentile

5th percentile to less than 15th percentile

15th percentile to less than the 85th percentile

85th to less than the 95th percentile

Equal to or greater than the 95th percentile

*Sources: http://www.cdc.gov/nccdphp/dnpa/bmi/childrens_BMI/about_childrens_BMI.htm ; <http://www.bcm.edu/cnrc/bodycomp/bmiz2.html> ; Brener et al. "The Association between Weight Perception and BMI among High School Students". Obesity Research, 12, 2004

Figure 2 . Accuracy of students' perceptions of same-sex peer weight norm in their grade at their school by gender

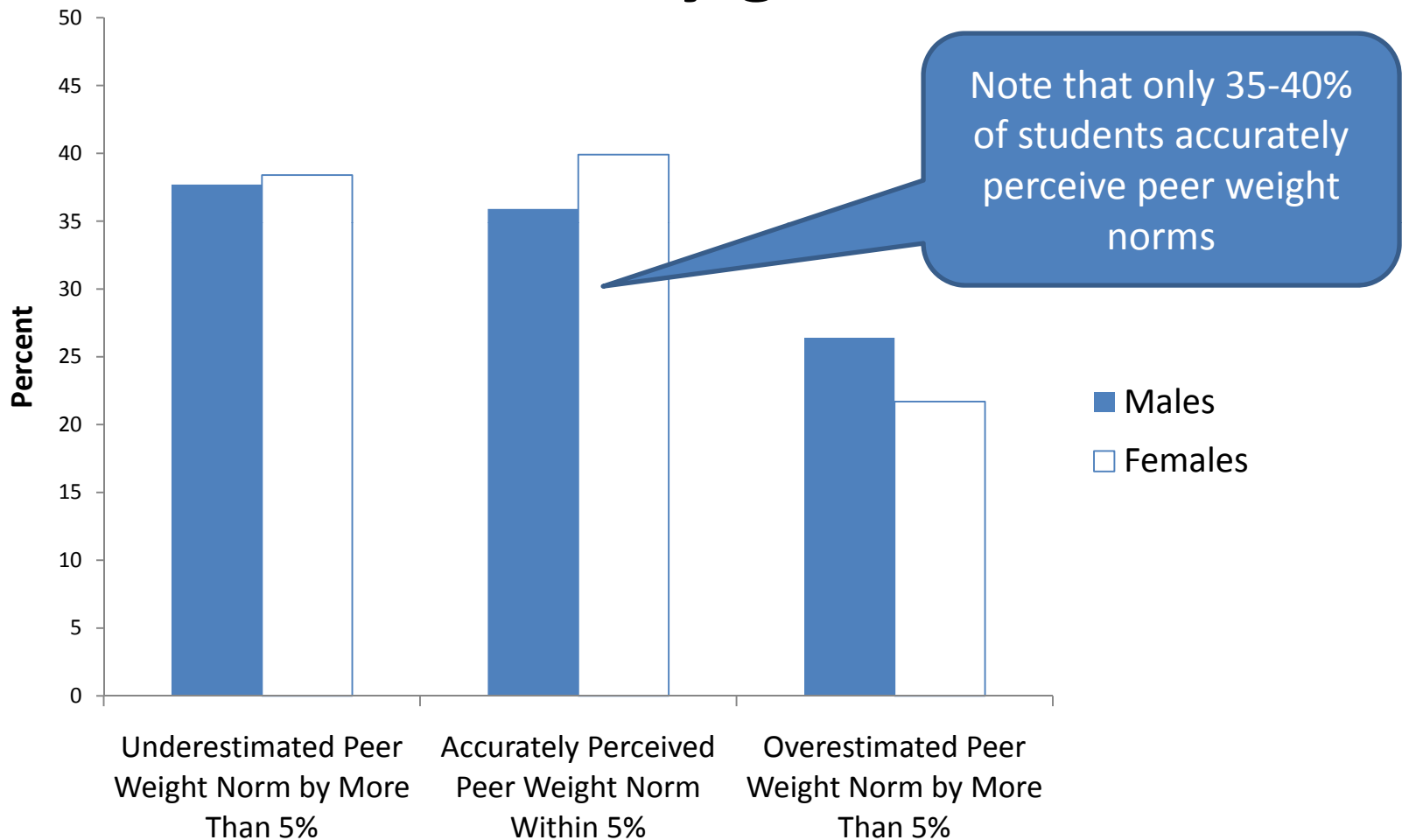
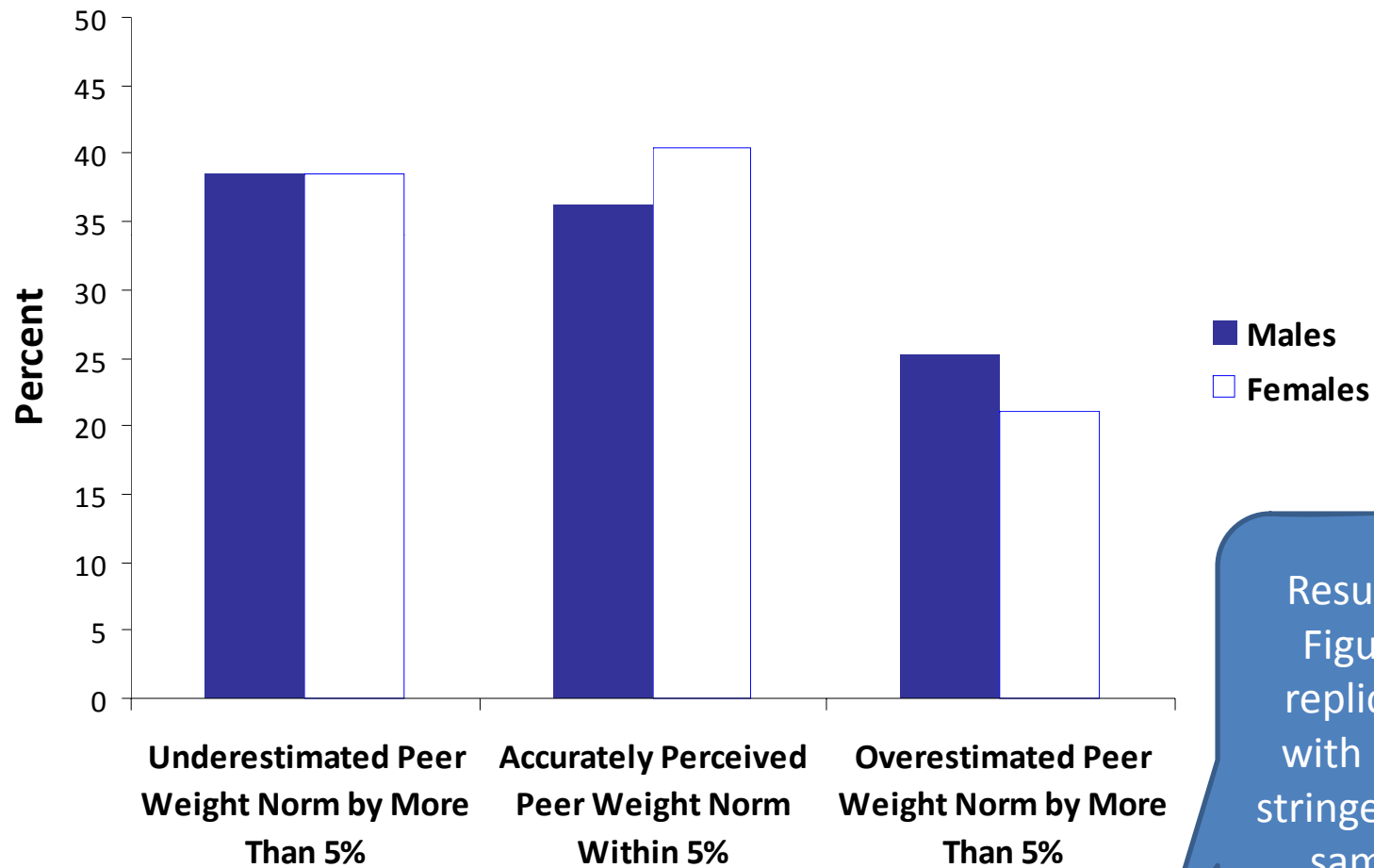


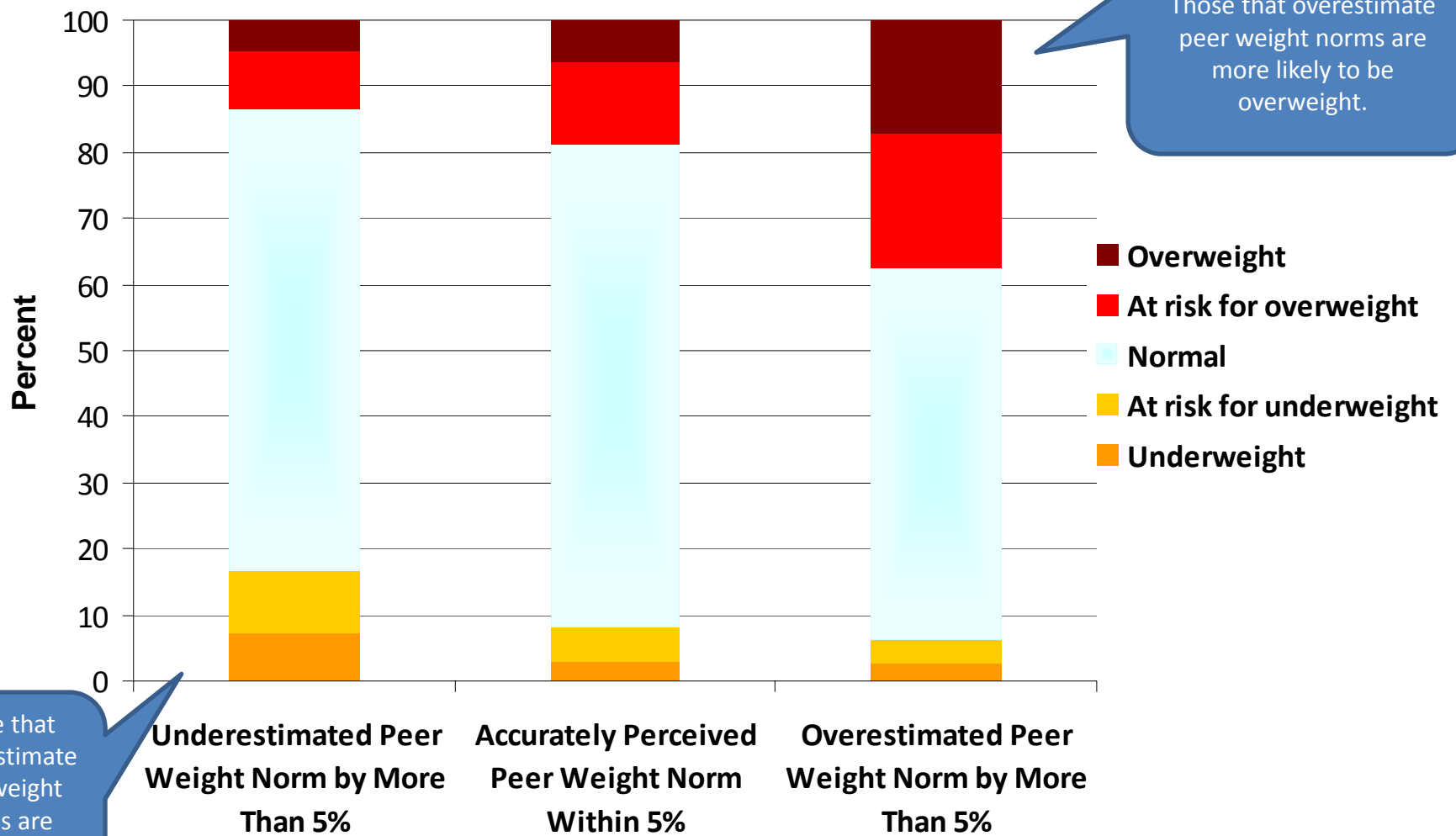
Figure 2a . Accuracy of students' perceptions of same-sex peer weight norm in their grade at their school by gender*



Results of Figure 2 replicated with more stringent sub sample

*Data includes only schools with 50% response rates or greater

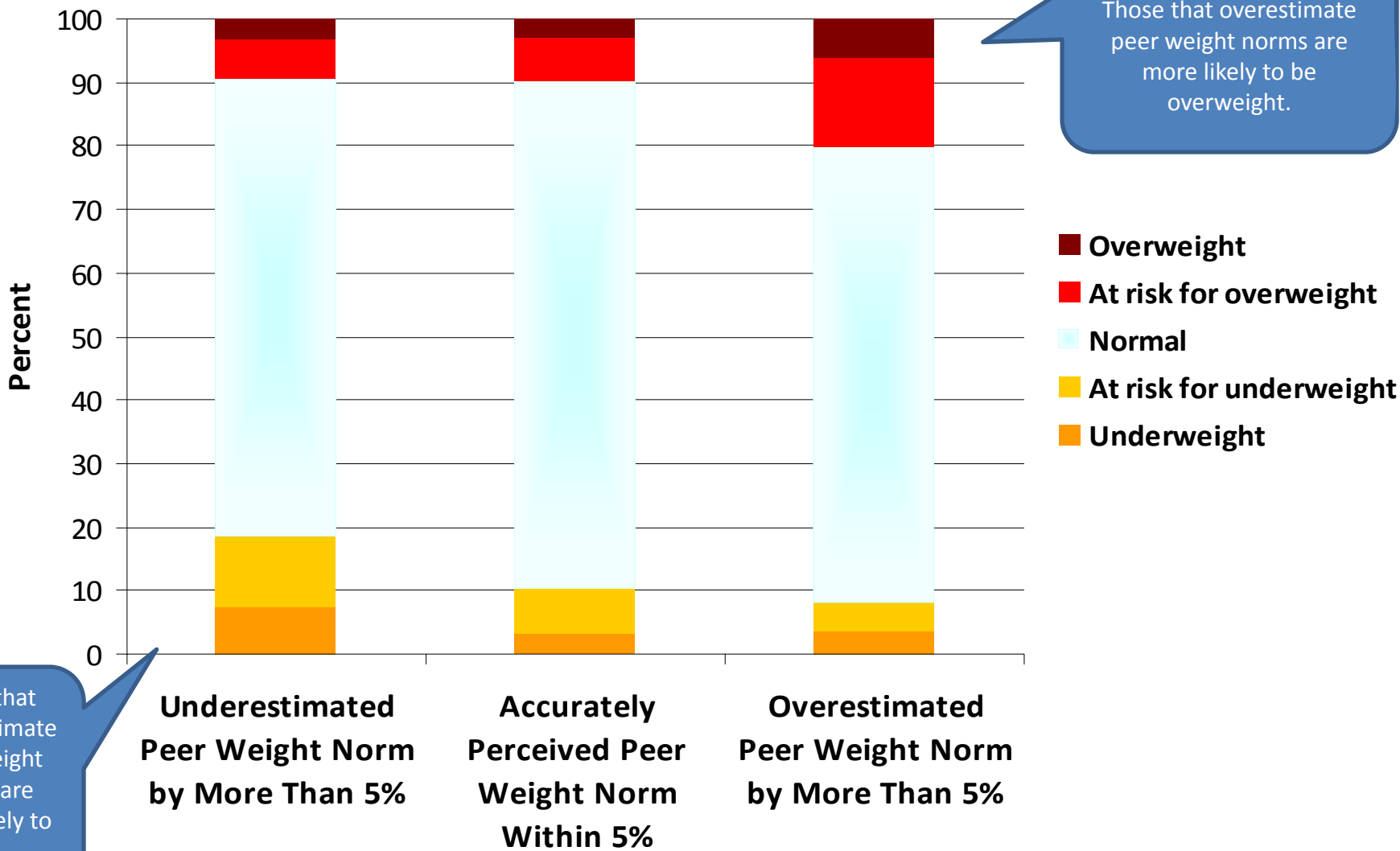
Figure 3. Overweight/underweight risk among males by accuracy of perceived peer body weight norm



Those that underestimate peer weight norms are more likely to be underweight.

Those that overestimate peer weight norms are more likely to be overweight.

Figure 4. Overweight/underweight risk among females by accuracy of perceived peer body weight norm



Those that underestimate peer weight norms are more likely to be underweight.

Those that overestimate peer weight norms are more likely to be overweight.

Table 6. Standardized regression coefficients predicting BMI percentile

Independent Variables	Males (N = 12,619)	Females (N = 12,725)
Perceived same-sex body weight norm in grade	.44 **	.32 **
Actual same-sex body weight norm in grade (mean)	.07 *	.25 **
Age (years)	-.33 **	-.26 **
Race (Asian)	.01 ns	-.03 **
Race (Black vs. White)	.03 **	.05 **
Race (Hispanic or Latino vs. White)	.07 **	.07 **
Race (Other vs. White)	.02 ns	.01 ns
Race (Missing vs. White)	-.01 ns	.01 ns
Participation in school club or student government	-.02 ns	-.02 ns
Participation in athletics	-.01 ns	-.05 **
Eligible for free school lunch	.06 **	.07 **
US Region (Western vs other regions)	-.12 **	-.09 **

Perceived weight norm is the strongest predictor of BMI percentile for both males and females

* Coefficient is significant at $p < .01$; ** $p < .001$.
 ns Coefficient is not significant ($p > .05$).

The larger the coefficient the more important the variable

Table 7. Unstandardized regression coefficients predicting BMI percentile

Independent Variables	Males (N = 12,619)	Females (N = 12,725)
Perceived same-sex body weight norm in grade	.40 **	.40 **
Actual same-sex body weight norm in grade (mean)	.09 *	.31 **
Age (years)	-4.77 **	-3.72 **
Race (Asian)	1.01 ns	-4.09 **
Race (Black vs. White)	5.32 **	8.72 **
Race (Hispanic or Latino vs. White)	8.30 **	8.47 **
Race (Other vs. White)	1.65 ns	.48 ns
Race (Missing vs. White)	-.44 ns	.72 ns
Participation in school club or student government	-1.13 ns	-.95 ns
Participation in athletics	-.38 ns	-2.96 **
Eligible for free school lunch	.15 **	.17 **
US Region (Western vs other regions)	-6.78 **	-4.94 **

* Coefficient is significant at $p < .01$; ** $p < .001$.

^{ns} Coefficient is not significant ($p > .05$).

Hypothetical Adolescents

MELISSA

- 14 year old, Black Female in the west
- No sports, but participates in school clubs
- 25% of the student body are eligible for FSL
- Average weight for her grade cohort is 1 standard deviation greater than typical (142 pounds)

Accurately perceived
average grade weight

Over perceived
average grade weight
by 15 pounds
(typical over-perception in her grade)

BMI percentile:
77th
Healthy weight



BMI percentile:
86th
At risk for overweight

Hypothetical Adolescents

VICTORIA

- 18 year old, Asian Female in the west
- Plays sports and participates in school clubs
- 1% of the student body are eligible for FSL
- Average weight for her grade cohort is 2 standard deviation lower than typical (116 pounds)

Accurately perceived
average grade weight

Under perceived
average grade weight
by 30 pounds

(2.5 std. dev. more than typical under-perception
in her grade)

BMI percentile:
26th
Healthy weight



BMI percentile:
14th
At risk for underweight

Hypothetical Adolescents

DIEGO

- 12 year old, Hispanic Male in the west
- No sports or school clubs
- 75% of the student body are eligible for FSL
- Average weight for his grade cohort of males is 2 standard deviations greater than typical (146 pounds)

Accurately perceived
average grade weight

Over perceived
average grade weight
by 16 pounds
(Typical over-perception in his grade)

BMI percentile:
85th
At risk for overweight



BMI percentile:
95th
Overweight

Hypothetical Adolescents

KRISTY

- 13 year old, White Female in the east
- No sports or clubs
- 16% of the student body are eligible for FSL
- Average weight for her grade cohort is 1 standard deviation greater than typical (125 pounds)

Accurately perceived
average grade weight

Over perceived
average grade weight
by 48 pounds

(2 std. dev. more than typical over-perception
in her grade)

BMI percentile:
67th
Healthy weight



BMI percentile:
86th
At risk for overweight

Hypothetical Adolescents

MIKE

- 17 year old, Black Male in the east
- Plays sports, but no school clubs
- 30% of the student body are eligible for FSL
- Average weight for his grade cohort is typical (164 pounds)

Accurately perceived
average grade weight

BMI percentile:
70th
Healthy weight



Over perceived
average grade weight
by 57 pounds

(2.0 std. dev. more than typical over-perception
in his grade)

BMI percentile:
96th
Overweight

Implications

- How can we reduce weight misperception?!

Over/Under perceive
peer weight norm



Accurately perceive
peer weight norm



Over/Underweight



Healthy weight!!