



**Isa Furey**

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Logistic Regression Analysis

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“Familial Correlates of Extreme  
Weight Control Behaviors among  
Adolescents”

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**Introduction**

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Extreme dieting leads to...

■ Physical problems	■ Psychological disturbances
■ Menstrual irregularities	■ Decrease in self-esteem
■ Growth retardation	■ Poor concentration
■ Delayed sexual maturation	■ Disturbed sleep patterns




**Introduction**

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GOAL

- To identify risk factors
- To seek treatment early
- To prevent eating disorders




**Introduction**

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Past Behaviors/Factors

■ Being female	■ History of physical/sexual abuse
■ Body dissatisfaction	■ Substance abuse
■ Low self-esteem	■ Suicide attempts
■ Need for social approval	



**Objective**

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- To identify possible familial factors associated with extreme weight control among adolescents.

## Methods: Data Collection

### Study Population & Design

- 1995-1996
- Survey: *Voice of Connecticut Youth*
- 225-item assessment
- 25 random geographic/ socio-economic strata
- Public school system
- Grades 7, 9, & 11
- Classroom setting
- Anonymous
- Only group results to be reported
- $n = 9,943$  (~83% of enrolled students)

## Methods: This Study

- Excluded data
  - Weights < 25 lbs
  - Body Mass Index (BMI) < 10 or BMI > 50
- Final Sample  $n = 9,042$  students
  - 4,625 girls
  - 4,417 boys

## Methods: Measurement

- Family communication
- Parental supervision & monitoring
- Family connectedness
- Perceived caring & communication w/ other adults, friends
- Parental expectations
- Sexual/ physical abuse
- Weight control behaviors
- Other factors

## Methods: Data Analysis

- Logistic regression
  - Response variable  $Y=1$  (extreme weight control behaviors) or 0 (no extreme weight control behaviors)
  - Probability of success or of extreme weight control behaviors
- Stratified by gender

## Number and percent of respondents engaged in weight control behaviors

	Girls $n$ (%)	Boys $n$ (%)	$\chi^2$	$p$ Value
Dieted	1,766 (38.2)	548 (12.4)	822.00	< .001
Exercised	2,824 (61.1)	1,889 (42.8)	304.60	< .001
Made yourself vomit	186 ( 4.0)	75 ( 1.7)	45.00	< .001
Took diet pills	175 ( 3.8)	50 ( 1.1)	69.50	< .001
Took laxatives or diuretics	62 ( 1.3)	71 ( 1.6)	1.11	.292

## Comparison of mean values for age & BMI between index & control groups

Variable	Index Group	Controls	$p$ Value
Age			
■ Girls	14.6	14.3	.001
■ Boys	14.2	14.4	.230
BMI			
■ Girls	21.8	20.7	.001
■ Boys	22.0	21.6	.269

Comparison of mean values or scaled constructs between index & control groups

Variable	Index Group	Controls	p Value
Parental supervision/monitoring			
■ Girls	2.8	3.0	.160
■ Boys	4.9	3.3	<.001
Family connectedness			
■ Girls	5.5	6.5	<.001
■ Boys	5.4	6.6	<.001

Comparison of mean values or scaled constructs between index & control groups

Variable	Index Group	Controls	p Value
Family communication			
■ Girls	3.4	4.3	<.001
■ Boys	3.7	4.3	<.001
Connectedness w/ friends, adults			
■ Girls	6.9	7.1	.022
■ Boys	5.6	6.6	<.001
Parental expectations			
■ Girls	8.7	8.8	.331
■ Boys	7.3	8.8	<.001

Multivariate logistic regression results: boys

Variable	Odds Ratio	95% C.I.	p Value
Age	.912	0.82,1.02	.105
BMI	1.920	0.94,3.93	.073
Parental supervision/monitoring	3.570	1.73,7.39	<.001
Connectedness with adults, friends	.445	0.02,1.00	.050
Mother in home	.413	0.26,0.66	<.001
Parental Expectations	.212	0.11,0.43	<.001
History of sexual abuse	2.800	2.00,3.93	<.001

Logistic Regression

- Response variable Y=1 (extreme weight control behaviors) or 0 (no extreme weight control behaviors)
- Probability of success or of exhibiting extreme weight control behaviors
  - $\ln \left[ \frac{p}{1-p} \right] = \alpha + \beta \cdot x$

Multivariate logistic regression results: boys (cont.)

Variable	$\beta$	Odds Ratio	p Value
Age	-0.092	.912	.105
BMI	0.652	1.920	.073
Parental supervision/monitoring	1.273	3.570	<.001
Connectedness with adults, friends	-0.810	.445	.050
Mother in home	-0.884	.413	<.001
Parental Expectations	-1.551	.212	<.001
History of sexual abuse	1.010	2.800	<.001

$$\ln \left[ \frac{p}{1-p} \right] = \alpha + 1.273 \cdot x_1 - .810 \cdot x_2 - .884 \cdot x_3 - 1.551 \cdot x_4 + 1.010 \cdot x_5$$

Multivariate logistic regression results: girls

Variable	Odds Ratio	95% C.I.	p Value
Age	1.070	0.10,1.15	.057
BMI	2.17	1.33,3.53	.002
Family communication	.262	0.12,0.57	<.001
Family connectedness	.247	0.13,0.49	<.001
Mother in home	.575	0.38,0.66	.010
History of sexual abuse	1.450	1.21,1.74	<.001

## Multivariate logistic regression results: girls (cont.)

Variable	$\beta$	Odds Ratio	$p$ Value
Age	0.068	1.070	.057
BMI	0.775	2.17	.002
Family communication	-1.339	.262	<.001
Family connectedness	-1.398	.247	<.001
Mother in home	-0.553	.575	.010
History of sexual abuse	0.372	1.450	<.001

$$\ln \left[ \frac{p}{1-p} \right] = \alpha + .775 \cdot x_1 - 1.339 \cdot x_2 - 1.398 \cdot x_3 - .553 \cdot x_4 + .372 \cdot x_5$$

## Conclusions

### Boys

- Risk Factors
  - Parental Supervision
  - History of sexual abuse
- Protective Factors
  - Connectedness w/ adults, friends
  - Mother in home
  - Parental expectations

### Girls

- Risk Factors
  - BMI
  - History of sexual abuse
- Protective Factors
  - Family communication
  - Family connectedness
  - Mother in home

## Conclusions

- Identified risk factors
- Identified protective factors
- Significant evidence to investigate

## Limitations

- Height & weight self reported-possible error
  - Deliberate
  - Unintentional
- School-based survey
  - Dropouts
  - Absentees
- Questions asked
  - Fasting
  - Skipping meals
  - Exercising to exhaustion
- Location of survey
- Cannot make causal inferences