

# Social Network, Social Support and Weight-related Outcomes among Adolescents

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## BACKGROUND

- People's weight-related behaviors may be influenced by their personal social network
- A possible mechanism is social support, including role modelling and motivational support by family and friends
- We examined the **cross-sectional relation between social network-based social support and weight-related outcomes** among adolescents

## METHODS

- The **QUALITY Study** is an on-going longitudinal cohort study investigating the natural history of obesity in youth from families with at least one obese parent (Quebec, Canada)
- A random sample of **45 participants (egos)** completed a social network questionnaire
- Each ego **nominated up to 10 people (alters)** with whom they discussed important matters in the past year and reported, for each alter, age, sex, body shape using the 7-point Stunkard Body Rating Scale, lifestyle behaviors (frequency being active, web surfing, eating healthfully), frequency of exercising together, frequency of encouragement to exercise, and relation type (family, friend); they also reported ties between each pair of alters.

Based on these questions **we created scores** for each alter:

### Role-modeling Social Support score (0-12)

- Body shape - using the 7-point Stunkard Body Rating Scale - for body, shape 7: (0); shape 6: (1); shape 5: (2); shapes 1 to 4: (3) (Figure 1)
- Lifestyle behaviors - frequency being active and eating healthfully [never (0), rarely(1), sometimes (2), often (3)] and web surfing (reverse scored)

### Motivational Social Support score (0-6)

- Frequency of exercising together - never (0), 1-2/month (1), 1/week (2), >1/week or everyday (3)
- Frequency of encouragement to exercise - never (0), rarely (1), sometimes (2), often (3)

### Network size

- Number of nominated alters

### Network density

- Proportion of existing ties between alters over the number of possible ties in network (range 0 to 1, 0 when no ties and 1 when ties between all alter pairs)

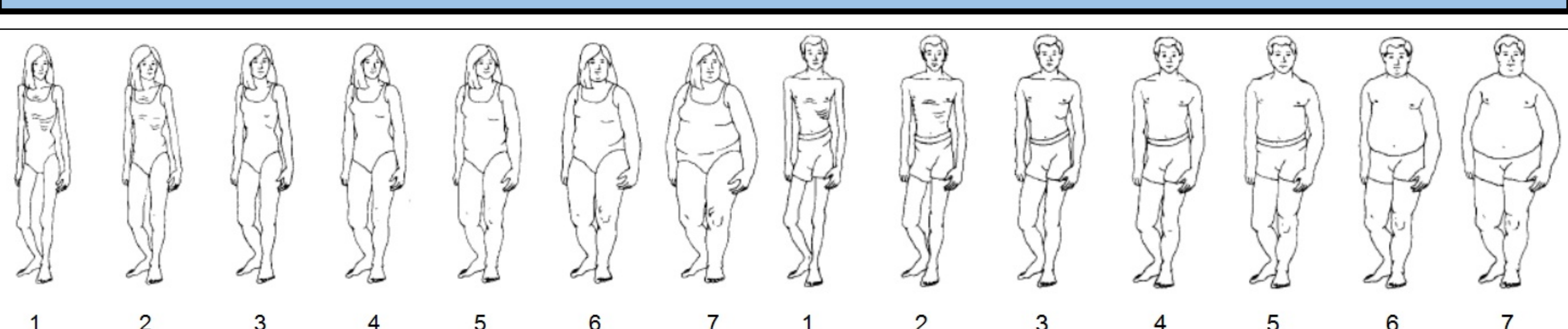
### Outcomes

- BMI z-score and minutes of moderate to vigorous physical activity (MVPA) – measured by accelerometry

### Statistical Analysis

- Outcomes regressed on support scores and stratified by sex
- We calculated for each ego a percentage of supportive alters with a cut-off score

Figure 1: 7-point Stunkard body rating scale



## RESULTS

Table 1: Descriptive statistics of the participants and networks

Mean (SD)	All participants (n=45)	Boys (n=29)	Girls (n=16)	p-value
<b>Individual characteristics</b>				
Age (years)	16.4 (1.1)	16.4 (1.1)	16.4 (1.2)	0.99
BMI z-score	0.8 (1.2)	0.8 (1.2)	0.7 (1.4)	0.80
% overweight or obese	28.9	31.0	25.0	0.85
Body shape	4.0 (1.1)	3.9 (1.1)	4.3 (1.1)	0.35
Total body fat percentage <sup>1</sup>	25.8 (12.3)	21.1 (11.3)	34.2 (9.3)	<0.01
MVPA (min/day)	22.4 (13)	26.1 (14)	15.5 (7.5)	0.01
<b>Social network characteristics</b>				
Network size	6.6 (2.7)	5.7 (2.7)	8.4 (2.7)	<0.01
Network density	0.50 (0.30)	0.50 (0.30)	0.40 (0.30)	0.40

(1) Percentage body fat measured by Dual-energy X-ray

Table 2: Linear regression model for the relationship between percentage of motivational social supporters and adolescents' BMI z-score

	Boys (n=29)		Girls (n=16)	
	Beta (SE)	p-value	Beta (SE)	p-value
<b>Intercept</b>	1.65 (0.42)	<0.01	-0.14 (0.51)	0.79
<b>Motivational social supportive alters<sup>1</sup></b>	-0.14 (0.06)	<b>0.03</b>	0.19 (0.09)	<b>0.047</b>

(1) Proportion of high motivational support score alters by increment of 10%

### Motivational Social Support (Table 2)

- Positively associated with zBMI in girls (+0.19 zBMI for a 10% increase in the proportion of supportive alters)
- Negatively associated with zBMI in boys (-0.14 zBMI for a 10% increase in the proportion of supportive alters)
- Not associated with MVPA

### Role Modelling Social Support

- Not associated with either outcome

## CONCLUSIONS

- Our study suggests that the relation between **perceived motivational social support** and **weight status differs** between **boys and girls**
  - Boys with higher motivational social support have lower zBMI
  - Girls with higher motivational support have higher zBMI
- The relation between social support and outcomes did not differ by type of relation (family/friend)
- These preliminary findings suggest that attempts to leverage social support to enhance lifestyle interventions needs to be sensitive to gender-based beliefs
- Prospective longitudinal data from cohort studies with larger samples should be conducted to better understand the role of the social network among adolescents

The authors declare no potential conflicts of interest