Body image perceptions in Western and post-communist countries: a cross-cultural pilot study of children and parents

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Abstract

The development of an unrealistic ideal body image and body size dissatisfaction among children is common in Western countries, including the USA and many European nations. However, little is known about children's body image perceptions in post-communist countries. This pilot study evaluated body image perceptions in a sample of Czech school-aged children and their parents and compared them with the perceptions of American children and parents. Ninety-seven Czech and 45 American 4th–6th graders and their parents from eight urban schools participated in this study. A previously developed silhouette body image instrument was utilized in a parent questionnaire and during child interviews to measure perceived and ideal body image perceptions of children and parents. Descriptive statistics, independent *t*-tests and paired *t*-tests were used to compare differences between children's and parents' perceived and ideal body image perceptions. Associations between body image perceptions and other variables were explored using bivariate correlations. American children had a thinner ideal body image compared with Czech children ($P < 0.05$). However, a larger proportion of Czech boys desired to be thinner compared with American boys (34.2% vs. 20%). Parent's ideal body image for their children did not differ by nationality ($P = 0.858$). While the pressure on children to look thinner was apparent among both American and Czech children, Czech children considered a larger body size as more ideal. A future study should evaluate body image perceptions and factors influencing these perceptions in a representative sample of Czech children and parents.

Keywords: children, ideal body image, body size, parents.

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Introduction

Positive body image and body satisfaction are important for the physical and psychological well-being of individuals and should be expected in healthy children and adolescents. Unhealthy dietary habits, weight concerns, unrealistic body image, low self-esteem and development of eating disorders are common consequences of dissatisfaction with body size and distorted body image (Patton *et al.* 1990; American Psychiatric Association 1994; Kelly *et al.* 1999; Stice *et al.* 2000; Coughlin *et al.* 2003). Unfortunately, an emphasis on thinness has become the social norm in many Western societies, especially for girls (Garner & Wooley 1991; Cohn & Adler 1992; Tiggeman 1992; ter Bogt *et al.* 2006). Dieting and the desire to be slim are imposed on individuals and encouraged by media, fashion and beauty industries as well as peer influences on a daily basis [Centers for Disease Control and Prevention (CDC) 2000; Eisenberg *et al.* 2005]. Despite the global increase in obesity, the unrealistic standards of beauty have resulted in high rates of body dissatisfaction and chronic dieting among girls living in Western countries (Hargreaves & Tiggemann 2004; Strahan *et al.* 2006). Several studies have shown that even children from Western cultures have a high prevalence of body size dissatisfaction and they often engage in unhealthy weight control practices, including dietary restrictions and 'yo-yo' dieting in order to conform to the social norms of beauty (Hill *et al.* 1994; Wood *et al.* 1996; Shapiro *et al.* 1997; Tiggeman & Wilson-Barret 1998; Braet & Wydhooge 2000; Thomas *et al.* 2000; Eisenberg *et al.* 2005).

Standards of beauty and acceptance of adiposity are influenced by a variety of factors and thus children's perceived body size and ideal body image vary across cultures, ethnicities, as well as genders (Crandall & Martinez 1996; Snooks & Hall 2002; Contento *et al.* 2003; Aruguete *et al.* 2006). While an emphasis on thinness is predominant in Western societies, research has shown that many non-Western countries around the world value plumpness over thinness, and in these societies there is a greater acceptance of adiposity compared with Western countries (Brown & Konner 1987; Mokhtar *et al.* 2001; Prentice & Webb 2006).

Differences in ideal body image perceptions have been also noted between racial groups. For instance, young African-American girls have been found to have greater acceptance of their body size, as well as a preference for a larger body size compared with White and Hispanic adolescents (Rucker & Cash 1992; Thompson *et al.* 1997; Perry *et al.* 2004). Differences in body image perceptions and body size satisfaction also exist between boys and girls, with boys usually preferring a larger body size compared with girls, regardless of age (McCreary & Sasse 2000; Aruguete *et al.* 2006; Lawrie *et al.* 2007). A study examining gender differences in body image satisfaction among 15 European Union nations indicated that while only 31% of female participants were content with their body size, almost half of the male participants were satisfied with their appearance (McElhone *et al.* 1999). Research also suggests that body image appears to be more important to girls than boys whose primary focus in terms of dietary choices and appearance tends to be influenced by masculinity and athletic performance rather than body image (Strahan *et al.* 2006).

Parental beliefs about current and ideal body size of their children may also have a strong impact on the development of children's body image perceptions (Austin 2000; Cuadraro *et al.* 2000; Thompson & Smolak 2001). Children in pre-adolescent and adolescent years are particularly vulnerable to parental evaluations of their weight and body size (Klesges *et al.* 1986; Smolak *et al.* 1999; Contento *et al.* 2003). Furthermore, girls tend to be negatively influenced by parental body image beliefs to a greater degree than boys (Striegel-Moore & Kearney-Cooke 1994). Because parents, along with children, are exposed to a variety of social and cultural influences on a daily basis, parental perceptions of body size also vary across different cultural groups (Contento *et al.* 2003). A cross-sectional study of Latino mothers and their young children indicated that most of the Latino girls did not perceive their overweight children as plump or unhealthy even though they were overweight (Contento *et al.* 2003). A similar study by Baughum *et al.* (2000) found that a sample of girls was able to evaluate their own weight accurately; however, 80% of them failed to correctly classify their children as overweight.

While some studies have investigated the differences in body image perceptions in migrant populations living in a host country (Bush *et al.* 2001; George *et al.* 2005), little is known about body image perceptions of children from post-communist 'transitional' countries, such as the Czech Republic. Children in former Czechoslovakia have been in a unique situation in terms of cultural standards of beauty and acceptance of body size because of the communist regime that ruled the nation from 1948 to 1989 (Ginter 1997). Because the exposure of the Czech population to the Western cultures was severely limited by the government during communism, it is likely that the standards of beauty and social norms related to body size differ between the Czech Republic and other Western countries.

While the Czech Republic has been increasingly exposed to a variety of Western trends in the last two decades (Andel 1997; Ritzer 2000; Keski-Rahkonen 2005), no previous studies have examined the nature of body image perceptions among Czech children. In addition, there is a lack of knowledge on the differences and/or similarities in body image perceptions between Czech children and children living in one of the traditional Western countries. The main purpose of the study was to explore body image perceptions of school-aged children and their parents currently living in the Czech Republic. Furthermore, differences and/or similarities in body image perceptions were examined by conducting a cross-cultural comparison of perceived and ideal body image perceptions between a sample of Czech and American children and their parents.

Methods

A cluster sampling technique was utilized to recruit school-aged children and their parents living in a large Midwestern city in the USA and one large city in the Czech Republic. Children attending fourth, fifth or sixth grades were recruited for the study in elementary and/or middle schools in both countries. The study was approved by the Institutional Review Board at Oklahoma State University and the Ethical Institute in the Czech Republic.

To obtain a sample of American and Czech children and parents, a list of all elementary and middle schools in the chosen cities was obtained from the State Department of Education web site (in the USA) or a phone book (in the Czech Republic) and schools were randomly selected in each country. The response rate of the American schools was 27%, with four out of 15 schools that were randomly selected participating in the study. Three out of eight schools that were randomly selected in one Czech city agreed to participate, with the response rate of 38%. Because one elementary school principal from another large Czech city volunteered to participate, a total of four Czech schools took part in the study. Informed written consent was obtained from the principal at each school prior to data collection.

A detailed description of the study, a parental written consent and the parent questionnaire (PQ) were sent to parents through their children or were distributed to parents during a parent meeting at each school. Parents were asked to return a signed written consent and the completed PQ to a teacher through their child within 4 days. The PQ included questions about demographics, socio-economic status, parental height and parental weight. Parental perceptions of their child's body size were measured using a silhouette body image instrument that was previously developed and validated by Collins (1991) (Fig. 1). The PQ was translated into Czech language and reviewed by four native speakers to eliminate potential translation or conceptual issues related to individual questions. The questionnaire was pilot-tested with 16 Czech children and their parents in the Czech Republic prior to the beginning of the study. The silhouette body images used in the study are presented in Fig. 1. Parents were asked to look at several images of children of different body shapes and they were asked to respond to two questions: 'which picture represents the body shape you think most looks like your child (how you would evaluate your child's body weight)?' and 'which body shape do you think looks closest to the body shape that would be ideal for your child?' Their perceptions were recorded on an interval scale ranging from 1 (thin) to 7 (large) located underneath the pictures (Fig. 1). The response rate of parents to the

Fig. 1. Silhouette body image instrument for boys and girls taken from Collins (1991). Source: Collins (1991) Copyright© 1991 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

PQ was 32% in the Czech sample and 17% in the American sample.

One visit with children was scheduled at each school and all children were asked to sign an assent form for their participation in the study prior to data collection. Children's height, weight and body image perceptions were collected during one visit at each school. Four trained research assistants helped collect data from children in both countries. Prior to any data collection, the assistants were given a detailed description of the study and were trained on how to measure children's height and weight, and how to complete the body image instrument with children. Children's height and weight were measured in the

morning hours at each school. Children's weight was measured using an electronic scale (Taylor Precision Performance, Oak Brook, IL, USA) with a stable weighing platform. Height was measured using a flexible tape while their head, shoulders, buttock and heels were touching a vertical wall behind them. Both measurements were performed according to the CDC recommendations for measuring stature in children and adolescents United States Department of Health and Human Services (USDHHS 2005).

Children answered two questions related to their body image perceptions using the same silhouette body image instrument that was included in the PQ (Fig. 1). Each child was asked to look at several

images of different body sizes and specify which body size corresponded to their current body size and which picture represented their ideal/favourite body size (Fig. 1). The two questions were as followed: 'which picture below represents the body shape you think most looks like you?' and 'which picture below represents the body shape you think looks closest to your favorite body shape for a girl/boy your age?'

Information collected from the PQ was used to measure and compare several variables between American and Czech parents. In addition to parental demographic and socio-economic characteristics, parents' self-reported height and weight were used to calculate parental body mass index (BMI) as weight/height². Household income reported by parents in both countries was classified into two categories in relation to the national averages: 'below average' and 'above average', and the educational level of parents was analysed in four different categories, including elementary, vocational, secondary and university education. Children's BMI was calculated as weight/height² from children's weight and height measurements. The percentile of BMI was calculated for each child using age and gender specific growth charts developed by the CDC in the USA (CDC 2002). The CDC growth charts were also used to classify children as normal weight (5th–84th percentile), at risk for overweight (85th–94th percentile) and overweight (≥ 95 th percentile).

Descriptive statistics were used to describe the sample of Czech and American children and parents. Perceived and ideal body image perceptions were compared using independent *t*-tests between children and parents by nationality. Differences between perceived and ideal body image perceptions within each child and parent were compared using paired *t*-tests. Bivariate correlations between children's ideal body image and demographic and socio-economic characteristics, parental BMI and parental ideal body image were used to identify significant associations between the individual variables. The Statistical Package for Social Sciences SPSS (Version 12.0 for Windows, 2003) was used to conduct statistical analyses in this study. The level of significance was set at 0.05 for all statistical tests performed in the study.

Table 1. Age and BMI of parents and children by nationality

Characteristic	Nationality		<i>P</i> -value
	American (<i>n</i> = 45)	Czech (<i>n</i> = 97)	
	Mean $\pm$ SD	Mean $\pm$ SD	
Parents			
Age (years)	39.3 $\pm$ 5.6	37.3 $\pm$ 5.2	0.013*
BMI (kg m ⁻²)	25.1 $\pm$ 5.6	22.8 $\pm$ 3.5	0.005**
Children			
Age (years)	10.8 $\pm$ 1.1	11.0 $\pm$ 1.0	0.333
BMI percentile	56.9 $\pm$ 29.5	54.1 $\pm$ 27.8	0.587

BMI, body mass index.

P* < 0.05; *P* < 0.01.

Results

Ninety-seven Czech and 45 American and parent-child pairs participated in the study. The age of children ranged from 9 to 13 years in both samples. The sample of Czech children consisted of 55 girls and 42 boys with 27 children in the fourth grade, 43 children in the fifth grade and 27 children in the sixth grade. The sample of American children included 30 girls and 15 boys with nine children in the fourth grade, seven children in the fifth grade and 29 children in the sixth grade.

Age and BMI of parents and children in both countries are summarized in Table 1. There was no difference in age or BMI-for-age between American and Czech children. In the American sample, 35 (78%) of the parents were mothers and seven were fathers. In the Czech sample, 91 (94%) of the parents were mothers and four were fathers. American parents were older and significantly heavier than Czech parents (Table 1). More than 70% of American parents had a university education while about half of Czech parents had a high-school education (*P* < 0.001) but no significant differences were found in income relative to the national average income (*P* = 0.124).

The perceived body image of Czech and American children was similar (Czech 3.32 $\pm$ 0.82 vs. American 3.39 $\pm$ 0.71). Both Czech and American children indicated that their ideal body image was smaller than their perceived body image. However, the ideal body image of American children was significantly smaller

Fig. 2. Perceived and ideal body image perceptions of boys by nationality (mean $\pm$ standard deviation).

Fig. 3. Perceived and ideal body image perceptions of girls by nationality (mean $\pm$ standard deviation).

compared with the ideal body image of Czech children (American 2.99 ± 0.67 vs. Czech 3.26 ± 0.53). The perceived and ideal body image perceptions of children are presented by gender and nationality in Figs 2 and 3.

Selected perceived and ideal body image perceptions of the American and Czech children and parents by gender are presented in Table 2. In both the American and Czech samples, more girls than boys reported that their ideal body image was smaller than their current body size. Although the mean differences between ideal and perceived body image perceptions were similar (0.4 and 0.2 units), the magnitude of the differences differed between American and Czech girls. While only 5 out of 55 (9%) Czech girls felt that their ideal body image should be smaller than their current body size by more than 1 unit, 9 out of 29 (31%) American girls felt

that way. In addition, almost 15% of the Czech girls reported that their ideal body image was larger than their current body size; however, only one American girl felt that way (Table 2). The mean difference between ideal and perceived body image perceptions was 0.1 units among both American and Czech boys. The proportion of boys who desired to be smaller/thinner was larger among the Czech boys compared with the American boys (34.2% vs. 20%, Table 2). The magnitude of the differences between ideal and perceived body image perceptions among the Czech boys was 0.5 units or higher.

The parental perceived body image of children was slightly larger among the Czech parents compared with the American parents (Fig. 4). Further analysis by gender revealed that the perceived body image of the Czech parents was larger than the perceived body image of their own children in 31.5% of cases among

Table 2. Comparison of ideal and perceived body images by gender and nationality

Body image perceptions	Nationality			
	American (<i>n</i> = 45)		Czech (<i>n</i> = 97)	
	Boys <i>n</i> = 15*	Girls <i>n</i> = 29 [†]	Boys <i>n</i> = 41 [‡]	Girls <i>n</i> = 55 [§]
Child's ideal vs. child's perceived [¶]				
Ideal < perceived	3 (20%)	14 (48.3)	14 (34.2%)	24 (43.6%)
Ideal > perceived	3 (20%)	1 (7.1)	12 (29.3%)	8 (14.5%)
Ideal = perceived	9 (60%)	14 (48.3)	15 (36.6%)	23 (41.8%)
Child's ideal vs. parent's ideal**				
Child < parent	5 (37.7%)	11 (39.3)	12 (30%)	19 (35.2%)
Child > parent	4 (28.6%)	4 (14.3)	18 (45%)	11 (20.4%)
Child = parent	5 (35.7%)	13 (46.4)	10 (25%)	24 (44.4%)
Child's perceived vs. parent's perceived ^{††}				
Child > parent	8 (57.1)	7 (25)	20 (50%)	20 (37%)
Child < parent	1 (7.1)	1 (3.6)	10 (25%)	17 (31.5%)
Child = parent	5 (35.7%)	20 (71.4)	10 (25%)	17 (31.5%)

*The number of responses ranged from 14 to 15. [†]The number of responses ranged from 28 to 29. [‡]The number of responses ranged from 40 to 41. [§]The number of responses ranged from 54 to 55. [¶]Mean differences = 0.1 units for American boys; 0.1 units for Czech boys; 0.4 units for American girls; 0.2 units for Czech girls. **Mean differences = 0.05 units for American boys; 0.2 units for Czech boys; -0.3 units for American girls; -0.1 for Czech girls. ^{††}Mean differences = 0.5 units for American boys; 0.1 units for Czech boys; 0.2 units for American girls; -0.02 units for Czech girls.

Fig. 4. Perceived and ideal body image perceptions of parents by nationality (mean ± standard deviation).

girls and 25% of cases among boys (Table 2). The magnitude of the differences was ≥ 0.5 units in nearly all of these cases. In contrast, the perceived body image of the American parents tended to be identical or smaller than the perceived body image of their children (Table 2). Furthermore, most of the American parents and daughters (71%) had similar views on the daughters' body size (Table 2).

While there was no significant difference between the parental perceived and ideal body image percep-

tions of their children among the American parents (Fig. 4), the Czech parents reported that the ideal body size for their child was smaller than their child's current body size (Fig. 4). This trend was apparent among the Czech parents of boys; 45% of parents reported an ideal body image for their child that was smaller than the ideal body image of their own sons (Table 2). In addition, the magnitude of the difference was ≥ 0.5 units for most of these parents.

In both samples, children's ideal body image was positively associated with their own perceived body image (American $r = 0.584$, $P < 0.001$; Czech $r = 0.655$, $P < 0.001$), and their parent's ideal (American $r = 0.371$, $P < 0.05$; Czech $r = 0.351$, $P < 0.001$) and perceived body images (American $r = 0.366$, $P < 0.05$; Czech $r = 0.379$, $P < 0.001$). In the American sample, the children's ideal body image was also negatively correlated with parental education ($r = -0.317$, $P < 0.05$). Similarly, the American children's ideal body image tended to be negatively associated with household income ($r = -0.295$, $P = 0.065$). No significant association was found between the ideal body image and household income or parental education in the Czech sample of children and parents.

Discussion

This study was the first attempt to explore body image perceptions among children and parents living in a post-communist transitional country and compare them with the perceptions of children and parents from a Western country. The main objective of our study was to examine body image perceptions of Czech children and parents and compare them with the perceptions of American school-aged children and their parents. Although children in our two samples did not differ in the way they perceived their current body size, we found interesting differences in children's ideal and parental perceived body image perceptions between the two countries.

Several recent studies suggest that children and adolescents from transitional countries are more likely to develop an unhealthy body image compared with children from other countries because of a strong influx of Western trends into the post-communism region in recent years (Nasser *et al.* 2001; Sarlio-Lahteenkorva *et al.* 2003; Pecova & von Wietersheim 2005). However, our findings indicated that although both Czech and American children believed their ideal body size should be smaller than their current size, the ideal body image of children in the Czech sample was larger than the ideal body image of American children. Further analysis by gender revealed that the proportion of girls whose ideal body image was larger than their perceived body image was

higher among the Czech girls while such trend was almost nonexistent among the American girls. Thus, our findings suggest that, despite being increasingly exposed to the Western standards of beauty in recent years, the Czech girls may be less influenced by the emphasis on thinness than American girls. Interestingly, a relatively large number of Czech boys felt that their ideal body size should be smaller than their actual body size. The desire of the Czech boys to look thinner may be indirectly associated with the results of a recent study by Vignerova *et al.* (2007), indicating that the prevalence of underweight among Czech boys has increased substantially since 1951. Further investigation of body image perceptions is warranted in order to identify factors that may be responsible for Czech boys desiring to have a smaller body size.

In terms of the family environment, parents have a tremendous impact on their children's body image perceptions and body size satisfaction (Gralen *et al.* 1990; Austin 2000; Cuadraro *et al.* 2000; Thompson & Smolak 2001). Previous research has indicated that children's perceptions of ideal body size and the desire to lose weight are strongly influenced by their parents' attitudes, behaviours and direct comments regarding their own or their children's weight (Klesges *et al.* 1986; Smolak *et al.* 1999; Contento *et al.* 2003). Our study showed that Czech parents in our sample preferred their children to be thinner (parents thought their child's body size was larger than the body size that would be ideal for them). Interestingly, this trend was apparent among the parents of Czech boys where almost half of the parents wanted their sons to look thinner. The parental pressure to look thinner may have thus encouraged the desire of the Czech boys to have a smaller body size (Smolak *et al.* 1999). In contrast, the American parents appeared to be satisfied with their child's body size.

According to previous research, higher educational level and socio-economic status are associated with a smaller ideal body image and a greater risk for eating disorders in many countries, regardless of the cultural background (Rogers *et al.* 1997; Striegel-Moore *et al.* 2003; Soh *et al.* 2006). While the results of our study in the American sample were consistent with the previous research, the ideal body image of children in the Czech sample was not related to parental education

or household income. Given these findings, it is possible that the historical or cultural differences between the American and Czech societies rather than socio-economic status are responsible for Czech children having a larger ideal body image than American children. Future studies examining potential factors that may be influencing the development of body image perceptions among Czech children are warranted.

Realistic body image and body size satisfaction are essential for the development of healthy dietary habits and the prevention of eating disorders as well as obesity among children. The results of our study indicated that even though American children in our sample considered a thinner body size as ideal, both Czech girls and boys also felt pressure to look thinner. Unfortunately, their desire to look thinner also appeared to be fuelled by the nature of the parental body image perceptions that seemed to encourage a smaller body size. Even though the parental pressure to look thinner may be responsible for Czech children having some of the lowest rates of obesity in Europe (Vignerova *et al.* 2006), it is well established that the risk of developing unrealistic body image, unhealthy dietary habits, and poor weight control practices is often heightened among children whose parents put pressure on them to look thinner. Thus, the findings of our study are of concern and should be investigated further within the Czech population (Patton *et al.* 1990; Kelly *et al.* 1999; Stice *et al.* 2000; Coughlin *et al.* 2003).

This was the first study to explore the body image perceptions of school-aged children in the post-communist Czech Republic. The presentation of silhouette drawings of same-sex body size allowed us to extend the existing knowledge on body image by comparing the body image perceptions in a sample of Czech children with the perceptions of children from the USA, children living in a Western society where thinness and dieting have become a predominant social norm. However, our study had several limitations that should be addressed in future research. First, our study was limited by a relatively small sample of children and parents that limited the analysis and generalizability of the findings. Second, the results of the study may have been influenced by the

higher response rate of Czech parents to the PQ. Detailed information about the reasons for parents not completing the PQ were not obtained because of the limited time and minimal contact with parents available in most schools participating in the study. However, the higher response rate among Czech parents may have been caused by their greater interest in the study or greater availability of free time. Third, the differences in the parental education level and the number of boys and girls in each sample may have influenced the results of this exploratory study. Given the study's limitations described above, body image perceptions of Czech and American children and parents should thus be explored in a large and nationally representative sample in order to examine their body image perceptions by income, educational level and other variables. In addition, the large sample size would allow for making statistical comparisons between perceived and ideal body image perceptions by gender which was not possible in our pilot study.

In conclusion, our study indicated that important differences in children's and parents' body image perceptions exist between the Czech Republic and the USA. Even though the ideal body image was smaller than the perceived body image among children in both the countries, more girls desired to look bigger and more boys wanted to look thinner in the Czech Republic than in the USA. In addition, Czech parents had a tendency to view their children as heavier compared with their own children's perceived body image perceptions. In order to examine body image perceptions of Czech children and parents in a greater depth and to identify factors that influence the development of such body image perceptions, a future study utilizing a large and representative sample of Czech children and parents with diverse backgrounds is warranted.

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References

- American Psychiatric Association (1994) *Diagnostic and Statistical Manual of Mental Disorders*, 4th edn, APA: Washington, DC.
- Andel M. (1997) Nutritional epidemiology in the Czech Republic after the fall of communism: problems with interpretation. *Nutrition* **13**, 1008–1009.
- Aruguete M.S., Yates A. & Edman J. (2006) Gender differences in attitudes about fat. *North American Journal of Psychology* **8**, 183–192.
- Austin B.S. (2000) Prevention research in eating disorders: theory and new directions. *Psychological Medicine* **30**, 1249–1262.
- Baughum A.E., Chamberline L.A., Deeks C.M., Powers S.W. & Whitaker R.C. (2000) Maternal perceptions of overweight children. *Pediatrics* **106**, 1380–1386.
- ter Bogt T., van Dorsselaer S., Monshouwer K., Verdurmen J., Engels R. & Vollebbergh W. (2006) Body mass index and body weight perception as risk factors for internalizing and externalizing problem behavior among adolescents. *Journal of Adolescent Health* **39**, 27–34.
- Braet C. & Wydhooge K. (2000) Dietary restraint in normal weight and overweight children. A cross-sectional study. *International Journal of Eating Disorders* **24**, 314–318.
- Brown P.J. & Konner M. (1987) An anthropological perspective on obesity. *Annals of the New York Academy of Sciences* **499**, 29–46.
- Bush H.M., Williams R.G.A., Lean M.E.J. & Anderson A.S. (2001) Body image and weight consciousness among South Asian, Italian and general population women in Britain. *Appetite* **37**, 207–215.
- Centers for Disease Control and Prevention (CDC) (2000) CDC surveillance summaries. *Morbidity and Mortality Weekly Report* **49**, 1–5. Available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss4905a1.htm>.
- Centers for Disease Control and Prevention (CDC) (2002) *2000 CDC Growth Charts for the United States: Methods and Development, Series 11, Report No. 246*. Department of Health and Human Services, Vital and Health Statistics: Washington DC.
- Collins M. (1991) Body figure perceptions and preferences among preadolescent children. *International Journal of Eating Disorders* **10**, 199–208.
- Cohn LD. & Adler NE. (1992) Female and male perceptions of ideal body shapes. *Psychology of Women Quarterly* **16**, 69–79.
- Contento I.R., Basch C. & Zybert P. (2003) Body image, weight, and food choices of Latina women and their young children. *Journal of Nutrition Education and Behavior* **35**, 236–248.
- Coughlin J.W., Heinberg L.J., Marinilli A. & Guarda A.S. (2003) Body image dissatisfaction in children: prevalence and parental influences. *Healthy Weight Journal* **56–58**.
- Crandall C.S. & Martinez R. (1996) Culture, ideology, and antifat attitudes. *Personality and Social Psychology Bulletin* **22**, 1165–1176.
- Cuadraro C., Carbjal A. & Moreiras O. (2000) Body perceptions and slimming attitudes reported by Spanish adolescents. *European Journal of Clinical Nutrition* **54**, 65S–68S.
- Eisenberg M.E., Neumark-Sztainer D., Story M. & Perry C. (2005) The role of social norms and friends' influences on unhealthy weight-control behaviors among adolescent girls. *Social Science and Medicine* **60**, 1165–1173.
- Garner D.M. & Wooley S.C. (1991) Confronting failure of behavioral and dietary treatments for obesity. *Clinical Psychology Review* **11**, 729–780.
- George V.A., Erb A.F., Harris C.L. & Casazza K. (2005) Psychosocial risk factors for eating disorders in Hispanic females of diverse ethnic background and non-Hispanic females. *Eating Behaviors* **8**, 1–9.
- Ginter E. (1997) Cardiovascular disease prevention in Eastern Europe. *Nutrition* **14**, 452–457.
- Gralen S.J., Levine M.P., Smolak L. & Murnen S.K. (1990) Dieting and disordered eating during early and middle adolescence: do the influences remain the same? *International Journal of Eating Disorders* **9**, 501–512.
- Hargreaves D.A. & Tiggemann M. (2004) Idealized media images and adolescent body image: 'Comparing' boys and girls. *Body Image* **1**, 351–361.
- Hill A.J., Draper E. & Stack J.A. (1994) A weight on children's mind: body shape dissatisfaction at 9-years old. *International Journal of Eating Disorders* **18**, 383–389.
- Kelly C., Ricciardelli L.A. & Clarke J.D. (1999) Problem eating attitudes and behaviors in young children. *International Journal of Eating Disorders* **25**, 281–286.
- Keski-Rahkonen A. (2005) Acculturation, obesity and eating disorders. *European Eating Disorders Reviews* **13**, 297–300.
- Klesges R.C., Marlott J.M., Boschee P.F. & Weber J.M. (1986) The effect of parental influences on children's food intake, physical activity, and relative weight. *International Journal of Eating Disorders* **5**, 335–346.
- Lawrie Z., Sullivan E.A., Davies P.S. & Hill R.J. (2007) Body change strategies in children: relationship to age and gender. *Eating Behaviors* **8**, 357–363.

- McCreary D.R. & Sasse D.K. (2000) An exploration of the drive for muscularity in adolescents boys and girls. *Journal of American College Health* **48**, 297–304.
- McElhone S., Kearney J.M., Giachetti I., Zunft H.F. & Martinez J.A. (1999) Body image perception in relation to recent weight changes and strategies for weight loss in a nationally representative sample in the European Union. *Public Health Nutrition* **2**, 143–151.
- Mokhtar N., Elati J. & Chabir R. (2001) Diet culture and obesity in Northern Africa. *Journal of Nutrition* **131**, 887S–892S.
- Nasser M., Katzman M.A. & Gordon R.A. (2001) *Eating Disorders and Cultures in Transition*. Brunner-Routledge: London.
- Patton G.C., Johnson-Sabine E., Wood K., Mann A.H. & Wakeling A. (1990) Abnormal eating attitudes in London schoolgirls – a prospective epidemiologic study: outcome at twelve-month follow-up. *Psychological Medicine* **20**, 383–394.
- Pecova V. & von Wietersheim J. (2005) Eating behavior differences and the perception of gender roles in Czech and German nonclinical samples. *Eating and Weight Disorders* **10**, 83–90.
- Perry A.C., Rosenblatt E.B. & Wang X. (2004) Physical, behavioral, and body image characteristics in a tri-racial group of adolescent girls. *Obesity Research* **12**, 1670–1679.
- Prentice A. & Webb F. (2006) Obesity amidst poverty. *International Journal of Epidemiology* **35**, 24–30.
- Ritzer G. (2000) *The McDonaldization of Society*. Pine Forge Press: Thousand Oaks, CA.
- Rogers L., Resnick M.D., Mitchell J.E. & Blum R.W. (1997) The relationship between socioeconomic status and eating-disordered behaviors in a community sample of adolescent girls. *International Journal of Eating Disorders* **22**, 15–23.
- Rucker C.E. & Cash T.B. (1992) Body images, body-size perceptions, and eating behaviors among African-American and white college women. *International Journal of Eating Disorders* **12**, 291–299.
- Sarlio-Lahteenkorva S., Parna K., Palosuo H., Zhuravleva I. & Mussalo-Rauhamaa H. (2003) Weight satisfaction and self-esteem among teenagers in Helsinki, Moscow, and Tallinn. *Eating and Weight Disorders* **8**, 289–295.
- Shapiro S., Newcomb M. & Loeb T.B. (1997) Fear of fat, deregulated-restrained eating, and body-esteem: Prevalence and gender differences among eight- to ten-year old children. *Journal of Clinical Child Psychology* **26**, 358–365.
- Smolak L., Levine M.P. & Schermer F. (1999) Parental input and weight concerns among elementary school children. *International Journal of Eating Disorders* **25**, 263–271.
- Snooks M.K. & Hall S.K. (2002) Relationship of body size, body image, and self-esteem in African American, European American, and Mexican American middle-class women. *Health Care for Women International* **23**, 460–466.
- Soh N.L., Touyz S.W. & Surgenor L.J. (2006) Eating and body image disturbances across cultures: a review. *European Eating Disorders Reviews* **14**, 54–65.
- Stice E., Hayward C., Cameron R.P., Killen J.D. & Taylor C.B. (2000) Body-image and eating disturbances predict onset of depression among female adolescents: a longitudinal study. *Journal of Abnormal Psychology* **109**, 438–444.
- Strahan E.J., Wilson A.E., Cressman K.E. & Buote V.M. (2006) Comparing to perfection: how cultural norms for appearance affect social comparisons and self-image. *Body Image* **3**, 211–227.
- Striegel-Moore R.H. & Kearney-Cooke A. (1994) Exploring parents' attitudes and behaviors about their children's physical appearance. *International Journal of Eating Disorders* **15**, 377–385.
- Striegel-Moore R.H., Dohm F.A., Kraemer H.C., Barr Taylor C., Daniels S., Crawford P.B. et al. (2003) Eating disorders in white and black women. *American Journal of Psychiatry* **160**, 1326–1331.
- Thomas K., Ricciardelli L.A. & Williams R.J. (2000) Gender traits and self-concept as indicators of problem eating and body dissatisfaction among children. *Sex Roles* **43**, 441–458.
- Thompson J.K. & Smolak L. (2001) Body image in children. In: *Body Image, Eating Disorders, and Obesity in Youth: Assessment, Prevention, and Treatment* (eds J.K. Thompson & L. Smolak), pp. 41–66. American Psychological Association: Washington, DC.
- Thompson S.H., Corwin S.J. & Sargent R.G. (1997) Ideal body size beliefs and weight concerns of fourth-grade children. *International Journal of Eating Disorders* **21**, 279–284.
- Tiggeman M. (1992) Body size dissatisfaction: individual differences in age and gender and relationship with self-esteem. *Personality and Individual Differences* **13**, 39–43.
- Tiggeman M. & Wilson-Barret E. (1998) Children's figure ratings: relationship to self-esteem and negative stereotyping. *International Journal of Eating Disorders* **23**, 83–88.
- United States Department of Health and Human Services (USDHHS) (2005) *Accurately Weighing and Measuring: Technique*. Health Resources and Services Administration, Maternal and Child Health Bureau: Washington DC. Available at: <http://depts.washington.edu/growth/module5/text/contents> [Accessed May 15, 2005].

- Vignerova J., Humenikova L., Brabec M., Riedlova J. & Blaha P. (2007) Long-term changes in body weight, BMI, and adiposity rebound among children and adolescents in the Czech Republic. *Economics and Human Biology* **5**, 409–425.
- Vignerova J., Riedlova J., Blaha P., Kobzova J., Krejcovsky L., Brabec M. et al. (2006). *The 6th Nation-wide Anthropological Survey of Children and Adolescents, 2001 (Czech Republic)* [VI. Celostátní Antropologický Výzkum Děti a Mládeže 2001, Česká Republika]. National Institute of health, Prague.
- Wood K.C., Becker J.A. & Thompson J.K. (1996) Body image dissatisfaction in preadolescent children. *Journal of Applied Developmental Psychology* **17**, 87–10.