

Perceived Social Standing and Weight-Related Outcomes in Adolescents

This study examined associations between youths' individual and family subjective social status (SSS), body mass index (BMI), and weight perceptions. Participants ranged in age from 11–18, 57.8% identified as female, and 85.5% as Caucasian. Regression analyses revealed that individual and family SSS were negatively associated with BMI and overweight perceptions, but not underweight perceptions. Results support the inverse relationship between SSS and BMI, and provide new information regarding adolescents' SSS and weight perceptions. Implications for family and consumer sciences professionals are provided; findings underscore the importance for examining the relationship between social status and health in future research.

As technology advances and the number of new sedentary activities grows, the United States is facing an increase in another area—children's waistlines. Recent analysis of data from the National Health and Nutrition Examination Survey (NHANES) indicated that child obesity rates have more than tripled in the past 30 years (Centers for Disease Control and Prevention, 2010; National Center for Health Statistics, 2007; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). More specifically, obesity percentages for children between the ages of 2 and 5 increased from 5% to 12.1%, those between 6

and 11 years went from 6.5% to 18%, and percentages for 12- to 19-year-olds grew from 5% to 18.4% (Fryar, Carroll, & Ogden, 2012). Similar patterns exist in obesity trends among American adolescents by gender. Since the 1980s, the prevalence of obesity among adolescent boys has experienced steady increases from 4.8% to 19.6% in 2010, whereas the statistics for girls indicated a rise from 5.3% to 17.1% over this same time period (Fryar, Carroll, & Ogden, 2012).

In addition to negative health outcomes in adulthood, such as obesity, type II diabetes, cancer,

hypertension, dyslipidemia, liver disease, gallbladder disease, sleep apnea, respiratory problems, and osteoarthritis (Centers for Disease Control and Prevention, 2015b; Guo, Wu, Chumlea, & Roche, 2002), overweight children and youth face risks to their social and psychological well-being (Gray, Kahhan, & Janicke, 2009). Schwimmer, Burwinkle, and Varni (2003) noted, for example, that “obesity is one of the most stigmatizing and least socially acceptable conditions in childhood” (p. 1818). Overweight youth are often targets of social bullying and they frequently are teased, harassed, and saddled with negative labels based on weight-related characteristics (Gray, Kahhan, & Janicke, 2009). It is not surprising, then, that overweight youth often struggle with difficulties related to depression, lowered self-esteem (Allen, Byrne, Blair, & Davis, 2006), anxiety, and feelings of inferiority (BeLue, Francis, & Colaco, 2009). Peer victimization

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is negatively related to children's level of physical activity, which can exacerbate unhealthy weights (Storch et al., 2007). In other words, childhood obesity leads to stigmatization and victimization, which can have an impact on a child's weight. This negative, cyclical pattern illustrates the importance of interventions that reduce childhood overweight and obesity rates.

Childhood obesity is a complex condition that can have many contributing factors, and researchers have devoted considerable attention to understanding the ways in which socioeconomic status (SES) directly and indirectly contributes to this problem. Studies have established a direct and inverse relationship between SES and weight among youth (Murasko, 2009; Strauss & Knight, 1999). The mechanisms through which SES has indirectly influenced rates of childhood obesity have included parental weight (Semmler, Ashcroft, van Jaarsveld, Carnell, & Wardle, 2009), availability of nutritionally sound food choices within the home (Lo, Chang, Lee, & Wahlqvist, 2009), food security (Casey et al., 2006), and neighborhood (Ziviani et al., 2008). SES is typically measured using parental income, education, and occupational prestige (Duncan & Magnuson, 2003), and researchers are beginning to consider the ways in which subjective evaluations of social standing also may affect well-being.

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This study emphasizes social status effects on health outcomes in youth and calls direct attention to perceptions of status. Specifically, this research is focused on the perceptions of both family and individual rankings within surrounding social hierarchies and how they affect youths' weight-related outcomes; a review of the literature indicates that this has not yet been explored. Calling attention to this relationship expands scholars' understanding of developmental outcomes as they relate to each foundational component within family and consumer sciences (FCS): the individual, the family, and community. Having this knowledge contributes to a more holistic understanding of human development and equips professionals with specialized insight on how best to optimize well-being.

REVIEW OF LITERATURE

The position in which one views themselves in relation to others has the ability to influence health and well-being. Marmot

(2003) pointed out that relative deprivation can lead to absolute deprivation by means of creating inability to fully and proudly participate in society. This isolation creates risks for the health of those who view themselves in lower ranks of society. This notion is similar to that of one's subjective social status (SSS), which refers to the way in which individuals view their position or ranking within surrounding societal hierarchies. SSS has been associated with a number of health outcomes in adults (Adler et al., 2008; Demakakos, Nazroo, Breeze, & Marmot, 2008; Hu, Adler, Goldman, Weinstein, & Seeman, 2005) and has even been considered a better predictor of long-term health (Singh-Manoux, Marmot, & Adler, 2005). The limited body of literature that examines related trends among youth has revealed that SSS is positively associated with self-rated health (Goodman et al., 2001; Page et al., 2009), negatively associated with body mass index (BMI) (Goodman, Slap, & Huang, 2003), and that a high SSS in the school environment may serve as a protective factor against adolescent weight gain (Lemeshow et al., 2008). Certain evidence has revealed that individual SSS held stronger associations with BMI when compared to measures of objective status for some adolescents (Goodman et al., 2003).

Adolescence is a time of emerging independence as youth begin their transition toward adulthood. Childhood social status is primarily dependent on familial characteristics; however, adult social status is dependent more on self-determinants (Goodman et al., 2001). Therefore, adolescence is a time for establishing self-characteristics used to identify social positioning within surrounding environments. SSS effects during adolescence have not been examined widely, but there is evidence to suggest that SSS has powerful effects on overall development of youth. Literature focusing on the relationship between adolescent SSS and weight typically used BMI and did not consider the perceptions of weight. Studying perceptions of weight among youth is of equal importance due to the impact that perceptions have on emotional, behavioral, and physical health (Allen et al., 2006; Kim & Kim, 2009; Storch et al., 2007). Through exploration of the relationship between SSS, BMI, and perceived weight status,

this study successfully addresses a gap in the literature. More specifically, this study considers two levels of SSS: family and individual. Family SSS refers to a young person's perception of his or her family's ranking within American society in terms of financial well-being as well as job and educational prestige. Individual SSS assesses youths' perceptions of their personal ranking within their school community as it pertains to academic success and social evaluations. It is hypothesized that family SSS and individual SSS will be negatively associated with BMI and weight perceptions.

METHODS

Sample and Procedure

Participants for this study were recruited during the 2008 creative problem-solving competition, Destination ImagiNation (DI) Global Finals. Approximately 6,000 students, living in various areas around the world, participated in this event. For this study, assenting American students in grades seven and higher whose parents had previously provided parental consent were invited to participate. Data were collected in tent stations located at various locations on the grounds where the DI Global Finals were held. Age-appropriate surveys were given to each participant to collect general demographic characteristics, dietary and physical activity habits, perceived weight status, and perceived family and individual social status. After completing surveys, participants were then directed to a station in which a trained research assistant measured their height and weight to obtain the data necessary to calculate BMI. Participants received a decorative pin in exchange for their participation.

Participants ($n = 1,152$) were American youth who ranged in ages from 11 to 18, 57.8% ($n = 666$) were female, and 85.5% ($n = 985$) were White. Although a small proportion of parents reported data on SES ($n = 239$), those who did indicated that their children were from relatively affluent, educated families (71.8% of responding parents had a college degree, and nearly half reported incomes in excess of \$100,000). A full description of the sample can be found in Table 1.

Table 1. Descriptive Statistics

	<i>N</i>	%	<i>MEAN</i>	<i>SD</i>
Demographics				
Age			13.73	1.70
Male gender	486	42.2		
Non-White race	152	13.2		
Dependent variables				
Body Mass Index				
Normal ^a	821	71.3		
Overweight ^b	192	16.7		
Obese ^c	134	11.6		
Weight perception				
Normal weight	667	57.9		
Underweight	208	18.1		
Overweight	273	23.7		
Subjective Social Status				
Family SSS			6.81	1.32
Individual SSS			8.12	1.56

^a Body Mass Index between 5th and 85th percentiles
^b Body Mass Index between the 85th and 95th percentiles
^c Body Mass Index larger than the 95th percentile

Measures

Subjective Social Status. The SSS–Youth Version (Goodman et al., 2001) was used to measure perceptions of social status at both the family and individual levels. To measure family SSS, participants were presented with a picture of a 10-rung ladder and were asked to imagine that the ladder represented how American society is organized. Participants were asked to imagine that people with the most money, education, and highly respected jobs occupy the top ladder rungs, and those with the least money, little or no education, and least respected jobs comprise the bottom rungs of the ladder. Participants were then asked to think about their family and to indicate where their family would be on the ladder. To measure individual SSS, participants were asked to imagine that the 10-rung ladder represented their school wherein the top rungs consisted of people with the most respect, highest grades, and highest standing; the bottom rungs included those who no one respects, with whom no one wants to hang around, and who have the worst grades. Participants then indicated where they would place themselves on the ladder. After data were collected, responses to both the society ladder and school community ladder were coded such that “1” indicated the lowest standing and “10” indicated the highest standing.

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BMI. Height and weight measurements for each child were collected twice by the same trained researcher to ensure accuracy. Values were converted into BMI measurements and categorized into percentile ranges with the use of a growth chart. Following guidelines established by the Centers for Disease Control (2015a), a BMI less than the 5th percentile encompasses the underweight category, normal weight extends between the 5th and 85th percentiles, overweight falls between the 85th and 95th and the obese category is equal to or greater than the 95th percentile. Due to the small size of the underweight category ($n = 19$, 1.6% of the original sample), these participants were dropped from the data set prior to analyses. Upon completion of recoding, participants fell into the normal weight ($n = 821$, 71.3%), overweight ($n = 192$, 16.7%), or obese categories ($n = 134$, 11.6%).

Weight Perception. Participants were asked to specify the status in which they perceived their own weight by responding to a close-ended question within the survey. Participants were able to select from five categories ranging from *very underweight* to *very overweight*. Similar categories (e.g., *very underweight* and *slightly underweight*) were later combined to reflect weight perceptions falling within one of three categories: underweight, normal weight, or overweight. All but four participants completed this question. Following data management, youths’ weight perceptions fell into one of three categories: normal weight, underweight, and overweight (see Table 1). Regarding accuracy of perceptions, 67% ($n = 550$) of those with a normal BMI perceived themselves as such,

and 47.9% ($n = 92$) of the overweight category and 84.3% ($n = 113$) of the obese category perceived themselves as being above a healthy weight range. Upon further examination of inaccurate weight perceptions, it was discovered that participants who inaccurately perceived their weight tended to underestimate their BMI status. For instance, 25% ($n = 205$) of the normal weight participants felt they were underweight, and 50.5% ($n = 97$) of the overweight participants felt their weight ranked within a normal weight category. Among obese participants, 13.4% ($n = 18$) felt they were of a normal weight and 1.5% ($n = 2$) reported an underweight status.

Analysis Plan

Linear and nominal regression techniques were used to examine the relationship between subjective social status, BMI, and weight perceptions. Too few adolescents in the current study were underweight to permit analyzing them separately and were therefore dropped from the data set prior to analyses, which resulted in three levels of the BMI variable: normal weight, overweight, and obese. Given the underlying hierarchy of these weight categories, linear regression was used to analyze data. In contrast to BMI, weight perceptions cannot be assumed to conform to a hierarchy and were therefore analyzed using multinomial logit models, with the normal weight group serving as the reference category. Given the association that has been established in current research between gender (Murasko, 2009; O’Dea & Caputi, 2001) and race (Hanson & Chen, 2007; Wardle & Marsland, 1990) on weight-related outcomes, these variables were included as statistical controls in all analyses.

RESULTS

BMI

Family SSS was negatively associated with BMI ($\beta = -.040$, $t = -2.521$, $p = .012$), suggesting that youth who perceived their families as having higher social standing had a lower BMI than youth who viewed their families less favorably in terms of standing. Individual subjective status within the school environment also was negatively associated

Table 2. Linear Regression Analysis Between Subjective Social Status and Body Mass Index ($R^2 = .03$)

	BETA	SE	t VALUE
Family SSS	-.040*	0.016	-2.521
Individual SSS	-.027*	0.014	-1.978
Male gender	-.151*	0.041	-3.701
Non-White race	-.159*	0.060	-2.659

Note: * $p < .05$.

with BMI ($\beta = -.027$, $t = -1.978$, $p = .048$) such that those holding a higher perception of personal ranking within the school community tended to have lower BMIs (see Table 2). Results also indicated that males ($\beta = -.151$, $t = -3.701$, $p = .041$) and non-White participants ($\beta = -.159$, $t = -2.659$, $p = .008$) tended to have higher BMI levels.

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Weight Perception

Family SSS and overweight perception were negatively associated in that each rung increase in family SSS decreased the odds of holding an overweight perception by a multiplicative factor of .879 ($OR = .879$, $p = .026$, $CI = .785, .985$). Similarly, individual SSS and overweight perception were negatively associated with a one-rung increase in individual SSS, resulting in a decrease in overweight perception by a multiplicative factor of .832 ($OR = .832$, $p = .000$, $CI = .759, .912$). (See Table 3.) Interestingly, males were significantly more likely than females to view themselves as both underweight ($OR = 2.426$, $p = .000$, $CI = 1.7600, 3.344$) and overweight ($OR = 1.473$, $p = .010$, $CI = 1.098, 1.976$) when compared to the normal weight perception group. Race also displayed significant results, with non-White participants being more likely to perceive themselves as overweight when compared to the normal weight perception group ($OR = 1.613$, $p = .019$, $CI = 1.082, 2.406$).

Table 3. Multinomial Regression Analysis Between Subjective Social Status and Weight Perception (Cox and Snell Pseudo $R^2 = .055$)

	UNDERWEIGHT PERCEPTION			OVERWEIGHT PERCEPTION		
	ODDS RATIO	p VALUE	CONFIDENCE INTERVAL	ODDS RATIO	p VALUE	CONFIDENCE INTERVAL
Family SSS	0.967	0.593	.853, 1.095	0.879	.026	.785, .985
Individual SSS	0.979	0.703	.877, 1.093	0.832	.000	.759, .912
Male gender	2.426	.000*	1.760, 3.344	1.473	.010	1.098, 1.976
Non-White race	0.947	0.831	.575, 1.561	1.613	.019	1.082, 2.406

DISCUSSION

The ways in which objective measures of SES affect adolescents' weight (BeLue, Francis, Rollins, & Colaco, 2009; Costarelli & Manios, 2009; Goodman et al., 2003; Murasko, 2009) and weight perceptions (Costarelli & Manios, 2009; O'Dea & Caputi, 2001; Wardle & Marsland, 1990; Wardle et al., 2004) has been well documented in the literature. Researchers have increasingly appreciated the role that adolescents' perceptions of social status play in health. This study expanded these efforts by examining the relationship between SSS, BMI, and weight perceptions among youth.

Family SSS was inversely associated with BMI in that youth perceiving their family's ranking as high in society tended to have a lower BMI status, a finding consistent with previous research (Goodman et al., 2001). This finding may speak to the accuracy with which youth perceived their family's access to fundamental and social resources, which work to sustain healthy weight statuses for members. Given the small proportion of parent-reported data on objective status, this study was unable to investigate this trend; it should be considered in future research. Family SSS also was significantly associated with weight perceptions, such that youth who viewed their families as having a lower social status were more likely to perceive themselves as being overweight. These relationships may best be understood in the context of affective states. Research has suggested an inverse relationship between family SSS and depressive symptoms during adolescence (Goodman et al., 2001). Furthermore, adolescent depression has been associated with poor perceptions of health (Katon et al., 2010), thus explaining why low

family SSS might be related to the increased likelihood of holding an overweight perception in the current study. This finding demonstrates the interconnectedness of internal and external processes as well as family impact on developmental outcomes in the form of self-evaluations.

Adolescent depression has been associated with poor perceptions of health, thus explaining why low family SSS might be related to the increased likelihood of holding an overweight perception in this study.

Youth who ranked themselves low within the social hierarchy at school were more likely to display a higher BMI status and also were more likely to hold an overweight perception. This finding is consistent with the literature (Goodman et al., 2001; Lemeshow et al., 2008) and further supports the notion that perceived SSS has the power to compromise a young person's physical health in negative ways. Several mechanisms may explain why low individual SSS creates risks for obesity early in life. Goodman and colleagues (2001), for example, found that individual SSS within the school environment was significantly related to self-esteem levels in youth. Coupled with research indicating that self-esteem and obesity in youth are inversely related (Strauss, 2000), one explanation is that having a low perceived status at school can create susceptibilities for weight gain through feelings of self-worth and personal confidence.

The negative association between individual SSS and weight perception is likely due to personal opinions concerning social desirability and success with peers. As indicated in the literature, having a low SSS within the school community is associated with a young person's popularity in that same environment (Goodman et al., 2001). Furthermore, popularity has been inversely associated with body satisfaction (Graham, Eich, Kephart, & Peterson, 2000), which explains how low individual SSS could cause a person to perceive themselves as being socially undesirable due to overweight or obesity. Future research is warranted that focuses on possible direct effects that individual SSS has on weight-related variables.

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Obesity in America has been a long-standing concern among FCS scholars (Spangler, 2013). Individuals, families, and communities at large have struggled in the fight against childhood obesity for decades now, and the rising concern associated with impact on well-being is undeniable. Scholars have been proficient in establishing the association between objective status and health outcomes, but in order to capture a holistic view of health and well-being we also must consider how individuals make sense of their own social standing relative to others. Scholars have begun to address adult perceptions on childhood obesity (Tripp & Choi, 2014), but extending this further to consider children's own perceptions would expand our realm of knowledge on the full impact of self-evaluative processes.

The current study expands our understanding of developmental outcomes that are situated within complex social systems by highlighting the intersection between the individual, their family, and greater society. The ways in which a young person envisions their family and themselves in

relation to others can have an impact on well-being by either serving as a protective factor from negative health outcomes or by predisposing them to additional risk factors particularly in the presence of unfavorable perceptions. Understanding the ways in which family- and self-evaluations within surrounding communities affect well-being will allow FCS professionals specialized insight to empower youth, enhance self-efficacious thoughts and behaviors, and optimize general well-being. Considering how youth feel about their personal status at school as well as their family's status within American society will enable FCS professionals to more effectively contribute to the overall quality of life among American youth.

Limitations of this study include an underrepresentation of diverse populations and the cross-sectional nature of the data. Also, participants in this study were, on average, less overweight or obese as compared to national averages. These limitations constrain the generalizability of the findings. In collecting information regarding weight perceptions, participants responded to a close-ended question that offered five response options. Descriptions delineating each weight perception category were not provided, which may have hindered the accuracy of participants' self-evaluations. Future research should consider a longitudinal approach to demarcate the temporal patterning of relationships between subjective SSS, BMI, and weight perceptions and should consider the value in open-ended data collection techniques. Last, future research should investigate more closely the direction of effects when considering SSS, weight perception, and actual weight. For example, this project discovered that low individual SSS is a predictor of holding an overweight perception, which has been explained as having a negative impact on popularity, thus causing a person to perceive themselves as being in a socially undesirable state of overweight or obese. However, one could argue that the reverse also could be true, that viewing oneself as overweight or obese could cause a low individual SSS. Future research on this subject should take a longitudinal approach in order to better identify the direction of effects. Overall, the current study's findings underscore the importance of encourag-

ing future research that includes factors that mediate and moderate the relationship between social status and weight perceptions.

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