Body Image Among Elementary-Aged Children: Development, Implications, and Interventions

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BODY IMAGE AMONG ELEMENTARY-AGED CHILDREN: DEVELOPMENT, IMPLICATIONS, AND INTERVENTIONS

by

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BODY IMAGE AMONG ELEMENTARY-AGED CHILDREN: DEVELOPMENT, IMPLICATIONS, AND INTERVENTIONS

ABSTRACT: Body image is the mental image or conception that one has of one’s body. Its development is effected by an individual’s life experiences beginning at birth. Statistics show that close to half of elementary-aged children are already dissatisfied with their bodies and have begun to develop negative body images. Review of the current literature suggests that family, peers, cultural values and the media, and changes in physical appearance related to adiposity rebound and puberty are the major causes of this unfortunate situation. Research is also showing that children are participating in unhealthy diet and exercise practices as a result of their negative body images. This leads to many nutritional concerns, including impaired growth due to calorie, protein, vitamin, and mineral deficiencies, as well as an increased risk for eating disorders. The best way to eliminate this problem is prevention. Programs have been developed for use in elementary schools that promote self-esteem and positive body image. Family dietary counseling, frequent family mealtimes, and parental education on normal child development pattern are ways to make the family a support system instead of a source of the problem. Appropriate physical activity and media literacy have also been associated with improvements in body image among children.
BODY IMAGE AMONG ELEMENTARY-AGED CHILDREN: DEVELOPMENT, IMPLICATIONS, AND INTERVENTIONS

INTRODUCTION

What is Body Image? Webster’s Dictionary (1) defines image as “a mental picture or conception,” suggesting that body image is the mental picture or conception that one has of one’s body. While this seems like a very simple idea, the components that work together to make up this self-image are very complex. Cash (2), a professor of psychology at Old Dominion University in Norfolk, Virginia, suggests that body image is formed based on cultural values, interpersonal experiences, physical characteristics, and personality attributes. All of these components, which are directly related to an individual’s life experiences beginning at birth, work together to determine whether one has positive or negative feelings about their body.

At very young ages, children begin to develop a sense of what their bodies can do. This is the beginning of the development of body image. Satter (3), a registered dietitian and registered clinical social worker, calls this the development of physical self-esteem. According to Satter, this physical self-esteem develops in a “step-by-step” fashion. As toddlers and kindergartners, children begin to learn the names of their body parts and how to move and use them. School-age children begin to think more about the things that their bodies are capable of and trying various activities to discover what they are best at. As stated by Satter (3), “What they discover and come to feel about themselves when they are little provides the foundation for their learning and attitudes at each stage of development. If all goes well, as children grow and mature, their attitudes and capabilities with respect to physical self-esteem become more and more empowered – and empowering.” She suggests that it is not until young adolescence that
children begin to compare themselves to their peers and become more aware of their size and shape relative to those around them.

The fact that “studies routinely find that about 40% of elementary school girls and 25% of elementary school boys are dissatisfied with their size and want to be thinner” (2) is evidence that children are not feeling “empowered” as they begin to understand their bodies. This suggests that children are being exposed to experiences that cause them to become unsatisfied with their bodies at very young ages. A review of the current literature points to a number of factors that may be responsible for this unfortunate situation. These include influences from family, peers, the media and culture, and physical body changes.

**FACTORS IN DEVELOPMENT**

During childhood, many beliefs and ideas are learned from the family. Children are completely dependent on their parents for all of their physical needs. This means that how the child looks (what clothes parents choose to dress them in) and their attitudes towards food (which foods are made available and which foods are good or bad) are learned from parents (2, 4). There are a number of studies that illustrate this relationship (4, 5, 6).

It has been reported that children naturally have the ability to adjust the amount of food that they consume according to the caloric density of the foods that they eat. However, this ability is not equal among all children. A study by Johnson (4) found that the children who did not adjust their food intake according to caloric density were more likely to have parents who exerted more control over their children’s food intake. Often times these more controlling parents were more likely to be on restrictive diets themselves, which was shown in this study to directly effect their child-feeding practices. These children who could no longer regulate their caloric intake tended to be more overweight, which put them at high risk for negative body
image. Parents may have their child’s best interest in mind and think that they are helping their child avoid a weight problem by enforcing restrictive eating practices, however, as this study shows, the restriction results in more harm than good (7, 8).

The Assessing Health and Eating in Adolescents with Diabetes (AHEAD) study produced similar results. This study interviewed two sets of girls with diabetes, one consisted of girls who reported using unhealthful dieting behaviors and the other consisted of girls who did not diet. They found that family meal structure and family weight concerns were the strongest differences between the groups. The results showed that over half of the girls in the unhealthful dieting group had families who rarely had structured meals and had parents who frequently talked about weight concerns. Less than ten percent of the girls from the non-dieting group reported these family traits (5).

Negative effects resulting from parental modeling of disordered eating and/or comments and teasing about weight issues are also seen among young boys. Phares (6) found that though the correlation was stronger among elementary school girls, “body dissatisfaction, bulimia, and drive for thinness,” as well as “lower levels of global self-worth” were also significantly related to family history of eating concerns and perceptions of parental teasing among boys. When parents are constantly dieting, making comments about their own weight, comparing one child’s physical appearance to another, or criticizing themselves or their children regarding weight issues it is common for their children to develop poor self-esteem and body image (2).

Whether it is in the form of “comments about weight and shape, discussions about body shape, modeling of weight concerns and weight control techniques” (2), or teasing (2, 6), peers also begin to have an impact on the development of body image in the elementary years as children begin to spend more time away from home (7). Teasing by peers has been found to have
a strong influence on body image and weight concerns (2, 6). This is likely related to the fact that much of this teasing is focused on appearance and weight (6).

According to Phares (6), these peer interactions are more significant among girls. In addition, she reported that among elementary aged girls, peers are one of the main sources for information on dieting and weight control, and that the amount of time spent talking to peers about dieting is directly related to disturbed eating and weight concerns.

A study by Jones (9) found that conversation about muscularity and appearance among male peers also had a negative effect on body image among adolescent boys. They found that frequency of these types of conversations increased with age. Thus it may be assumed that the difference in the effect of peer conversation on body image between boys and girls reported by Phares is related to age and may disappear in later years.

In addition to spending more time with peers, children also begin to understand culture and media messages. The cultural values of a society define which characteristics are beautiful or desirable and determine which attributes will be associated with these characteristics. In many cases these standards are not in the best interest of the population. For example, the ideal woman in U.S. culture becomes increasingly thin and the ideal male increasingly muscular as time goes by. Both are now at a level of thinness that is unobtainable by a vast majority of the population (2). These thin, beautiful ideals are associated with positive characteristics, such as friendliness, success, and strength (10). Obesity, the antithesis of thinness and muscularity, is portrayed as an undesirable characteristic and is commonly associated with negative traits such as laziness and lack of self-control (2, 11).

In a study performed by Klaczynski (11), it was discovered that Americans believe that weight is easily controlled through exerting willpower to overcome societal pressures to over eat,
in other words dieting. These beliefs result in negative stereotyping of obese individuals and many Americans hold the obese individual accountable for their obesity. This mentality becomes very damaging to self-esteem and body image when an obese child adopts this belief but is unable to gain control over their weight through dieting.

Many of these cultural standards are created and broadcast by the media (2). Not only are these messages present in media directed to adults, but, as Herbozo (10) found in her study, “cultural standards of physical attractiveness … also are present in children’s media.” Her study examined children’s media selected from the Amazon.com most popular titles list and the American Film Institutes Top Movies list. Each media item was analyzed for “messages that may shape children’s beliefs about beauty and thinness.” Some examples included “thinness is associated with positive traits (sociable, kind, happy, and successful), obesity is associated with negative traits (evil, unattractive, unfriendly, or cruel), and at least one obese character is seen eating food or in a setting related to food.”

They found that movies contained an average of 8.7 “body image-related messages” and that all of them contained at least one of these types of messages. The average for books was 2.8, and only two of the books analyzed did not contain any body image messages. They also found that obesity was associated with undesirable characteristics (evilness, unattractiveness, and cruelty) in almost two-thirds of videos and about one-fourth of books. These obese characters were also commonly portrayed as thinking about food or “placed in a setting related to food”. It has been estimated that the average school-aged child watches about 27 hours of television in one week (8), which allows for the viewing of about 117 body image-related messages per week according to these findings.
Herbozo (10) suggests that children are often unable to separate the real from the artificial, and that repeated exposure to these types of images leads them to believe that a thin body type is more common than it really is. As individuals, young and old, are repeatedly exposed to these images and ideas, they begin to use them as the norm against which to judge themselves (2), and this has been known to lead to symptoms of disordered eating (2, 10).

Results of a study by Ricciardelli (12) prove that these messages are affecting children. She found that boys ages eight to eleven felt pressured to increase muscles and often thought about strategies to increase their muscles. Girls of the same age were more often dissatisfied with their body size and wanted to be thinner. She also found that some children are feeling pressured to lose weight.

The fact that the cultural value of thinness is constantly portrayed in the media makes it easy to believe that an association exists between the amount of television a child is exposed to and negative body image (13). In her study of the effect of television viewing on fat stereotyping among grade school children, Harrison (13) found that boys who favored average-weight male television characters chose a thinner ideal body size for girls and women, and that the amount of “fat-girl stereotyping” among males was positively associated with the amount of television young boys watched. No connection between favoring a thin television character and demonstration of eating disorder symptoms existed. However, the fact that there was an association between television viewing and eating disorder symptoms – especially those related to “restrained eating” – suggests that children are “modeling the dieting and exercise behaviors that they see on television before they start to internalize the thin body ideal” (13).

In addition to setting the standards, the media also advertises many methods of attaining these characteristics, such as dieting, extreme exercising, and the use of numerous beauty and
fashion products (2). Harrison (13) suggests that since eating disorder symptoms were not related to the body size of favorite television characters, development of these symptoms is likely related to “content not depicting favorite characters, such as advertising for diet- and fitness-related products.” This suggestion is supported by reports that children often do not realize the difference between commercials and actual television programs and that the content of the commercials is often what the children remember best (8).

Physical changes such as adiposity rebound (7) and early changes related to puberty may have a negative impact on body image as well (2, 14). Between the ages of six and seven, children usually have an increase in body fat to prepare them for their upcoming growth spurt at puberty. This is referred to as adiposity rebound, and it is not uncommon for children, especially girls, to become worried about becoming overweight or become preoccupied with their weight and shape (7). Changes that occur during puberty also result in physical characteristics that are not socially and culturally desirable in today’s society; for example, increased adiposity is natural in girls (2, 14). This puts children at increased risk for negative body image and self-esteem, especially if these changes occur earlier than the majority of their peers (14). In William’s (14) study of the effects of physical development on self-esteem and body image, it was found that “among 11-year-olds, early matures ... exhibited lower ratings of self-esteem.” This was often related to the children feeling too fat.

**NUTRITION IMPLICATIONS**

The development of poor self-esteem and negative body image has major nutritional implications. Studies are finding that young children are participating in dieting, exercise (aerobic and muscle building) with the specific intent to change their physical appearance (15, 12). McCabe (15) found that almost 50 percent of boys and girls between ages eight and eleven
feared being overweight and had changed their eating and exercise habits to promote weight loss and/or gain muscle. They found that the individuals who had the most negative body image were those who most frequently were dissatisfied with their weight, thought about losing weight, and thought about gaining muscle.

As would be expected, their results showed that boys were more concerned with losing weight as well as gaining muscle while girls were mainly concerned about losing weight. A study by Ricciardelli (12) showed that, due to their increased concern with muscles, boys are twice as likely to think about using special foods – such as protein supplements and shakes – or exercise to increase their muscle size.

The early onset of body dissatisfaction and these diet and exercise behaviors may be even more dangerous than they seem. Not only have they been associated with the development of disordered eating (2, 10), according to Ricciardelli exercise and dieting are “major risk factors … associated with chronic body image problems, weight cycling, obesity, eating disorders, exercise dependence, and the use of steroids in adolescence and adulthood.” The fact that a majority of children who are participating in these behaviors are not over weight or obese is another major concern (7).

Dieting and disordered eating during childhood has even more negative effects than during adulthood due to the fact that children are still in the process of growing. Though growth during childhood and preadolescence is not as rapid as during infancy or adolescence, children will still have occasional growth spurts during this time and inadequate nutrition can prevent a child from reaching their full growth potential (7). Sufficient intake of vitamins and minerals as well as calories and protein are required for normal growth and development. For example calcium and vitamin D are vital to bone formation and zinc is necessary for growth and
deficiency results in poor appetite and wound healing (8). Most dieting habits among youth include skipping meals or avoiding entire food groups, which leads to severely deficient energy intake and deficiency of essential nutrients previously discussed. In addition to the nutrient deficits that accompany these unhealthy diet patterns, the intense hunger and cravings that accompany energy restriction are what often lead to bingeing episodes which have the potential to evolve into eating disorders (7).

INTERVENTIONS

Due to the serious nature of negative body image and unhealthy dieting patterns among elementary-aged children, a great need for treatment and preventative measures exists. In order to reach a larger number of children at one time, much effort has been put into investigating the benefits of incorporating body image improvement programs into the curriculum of elementary schools (16, 17). These programs have been created with the intent to stop the development of negative body image before unhealthy behaviors are adopted (17).

Research shows that poor self-esteem is directly related to body dissatisfaction (15). Thus, many of these programs have taken the approach of promoting positive self-esteem, along with media literacy, education about changes that naturally occur during puberty (16), and promotion of healthy eating practices (17). One example of a curriculum that has been tested and proven effective in improving body image among fourth to sixth grade children is “Healthy Body Image: Teaching Kids to Eat and Love Their Bodies Too.” It covers topics such as genetic influences on height and weight, physical changes related to puberty, the counter-productive effects of unhealthy dieting, the importance of appropriate exercise, media literacy, and how to develop healthy coping mechanisms. After being taught from this curriculum, children of both genders were more aware of media tactics, demonstrated less prejudice towards overweight
individuals, had a more positive self image, and could make better lifestyle choices (17). A major weakness of this study was that the program was only evaluated for short-term effectiveness.

Another study by McVey (16) also evaluated a curriculum that emphasized media literacy, self-esteem enhancement, body size acceptance, healthy dieting, stress management, and positive relationships. Their initial results were similar to the previous study – the intervention group showed increased body satisfaction, increased self-esteem, and decreased tendency to diet. However, repeated testing at six and twelve months following the intervention showed that the benefits observed in the intervention group slowly declined until they equalized with the control group. This occurred in all categories except tendency to diet. After twelve months the intervention group was still less likely to participate in unhealthy dieting. These results suggest that the continuous presentation of these ideas may be necessary to maintain the beneficial results.

A family dietary counseling approach may also be an option when a body image issue is suspected. Prospective randomized trials have shown that this is a safe and effective way to promote healthy eating habits among children between the ages of eight and eleven (18). Sztainer (5), a Registered Dietitian and professor of public health at the University of Minnesota, suggests that parents can play a very important role in promoting healthy body image by modeling appropriate healthy behaviors, creating an environment that makes it easy for their children to make healthy choices, focusing less on weight, and providing a supportive environment. Not only does including the entire family in this type of counseling create a strong support system for the child, it is a way to ensure that the parents are aware of the appropriate behaviors that they should be promoting.
Making a point to have regular family meals has been a common point in many studies as a way to promote healthy eating habits and positive body image (3, 5). Satter (3) suggests that family meals provide time for parents to ensure their children that they have a strong support system at home, as well as providing an opportunity to teach children about nutrition.

As discussed earlier, parents often begin enforcing restrictive eating patterns with their children to protect them from becoming overweight. As Satter recommends, the parents' role in child feeding practices is to provide appropriate, healthy food choices in the home. It is the responsibility of the child to choose what and how much to eat (3). It is important to educate parents about these role division and adiposity rebound and physical changes associated with puberty to help prevent parents from restricting the amount of food that their children eat. When parents are aware that it is normal for children to become a little chubby, it will help them feel more comfortable with the situation and allow them to reassure their child that the condition is only temporary (7, 8).

Appropriate physical activity has also been suggested as an effective way to improve body image, as long as it is not used for the sole purpose of weight loss. Exercise is a way to help people become aware of what their body is capable of doing that does not focus on physical appearance (2). A link between a more positive body image and conversations about muscle-building among peers has been observed among adolescent boys. These findings suggest that the boys who are talking more about muscle-building are more likely to “engage in muscle building activities” and are more confident in their appearance because they are physically fit (9).

One culprit in the decline of body image among children that is not so easy to alter is the media. However, an encouraging fact was discovered by Harrison (13). She found that girls...
who favored characters with average body sizes and weights considered weight to be unimportant, which suggests that having normal-weight role models is beneficial for girls. Teaching children to be media literate has also been successful in helping to improve youth’s body image, as was mentioned previously (16, 17). Both of these ideas take the focus off of trying to be thin and help children understand the difference between what is real and what is created by the media.

CONCLUSION

Research commonly shows that half of elementary-aged boys and girls are already showing body dissatisfaction and developing negative body image (2). Major contributors to this problem are family, peers, media and cultural values, and physical changes that occur during childhood and puberty. By educating both parents and children, and providing them with the skills to overcome the possible negative influence of these variables, it is possible to stop the development of negative body image before it begins.
Edith Bowen Body Image Curriculum

Developed and Taught by
Mindy Probst, Rachael Firmaje, and Kimberly Lucherini
As part of my senior practicum project I worked with a group of dietetics students to develop a body image curriculum for Edith Bowen Elementary School to help promote positive body image. After reviewing programs that had been used in other schools that had been proven successful, we developed our own set of lesson plans and were able to present them to each of the classes at Edith Bowen. It was a great learning experience for me, and I hope that I was able to have a positive impact on the lives of some of the children that I was able to teach.
1. Read “The Sneetches”
   a. Questions
      i. How do you think the sneetches are like humans?
      ii. The sneetches all wanted stars so that they could have friends.
          What kinds of things do people want in order to be popular?
      iii. How do people want their bodies to look to be popular?
      iv. Who decides what we are supposed to look like? Is there one way
          for everyone to look?
      v. What’s important is that we take care of our bodies—not try to do
          things to them so that you will be popular

2. Nutrition
   a. One way to take care of you body is to eat healthy!
      i. Does anyone know what kinds of foods are good for your body?
   b. Introduce the food guide pyramid
      i. Kid’s food guide pyramid for each child?
      ii. Talk about the different food groups
      iii. Have children name their favorite foods within the groups
      iv. How do we make sure that we eat foods from these nutritious food
          groups?
          1. Help mom plan healthy snacks and meals
          2. Help mom buy healthy foods

3. If we take good care of our bodies it shouldn’t matter how they look
   a. Everyone looks different
      i. Some sneetches had stars, some didn’t
      ii. Some people have brown hair, others have blonde
      iii. Some people have darker skin, others have lighter skin
   b. If we take care of our bodies we can be happy no matter how we look
1. **Namuh story summary**
   - There was once a village of people called the Namuh who were a lot like us and did many things we did—worked, played, went to school, etc.
   - There was a photographer who lived in the village who wanted to be very rich. He decided to take pictures of people and put them in the newspaper. Then other people would see those pictures and come to him to have their portraits taken.
   - People decided they liked looking at pictures of young and beautiful people the most, so that is what the photographer took the most pictures of—and it made him a lot of money!
   - Why did they like the pictures of the young and beautiful people? They were young and fresh and delicate and smooth and perfect without any lumps or bumps or wrinkles!
   - The photographer knew that perfect people didn’t exist, but he chose to take pictures of those that had the youngest-looking skin and the tallest and slimmest, then he would make them look perfect with lights and make up and computers.
   - Then he started thinking of the men...he chose to take pictures of men that were big and tough with lots of muscles. The Namuh loved these pictures of men and women because they were so beautiful and they wanted to be just like them.
   - There was a Namuh man who sold toothpaste and wanted to get rich just like this photographer did.
   - He decided to have the photographer take pictures of beautiful men and women with his toothpaste. Then the Namuh would think that if they used his toothpaste, they would be beautiful just like the Namuh in the pictures.
   - Other things caught on like orange juice, cars, tennis rackets, lawn furniture, food—and the photographer all took pictures of beautiful people with these products so that other Namuh would buy them and become beautiful.
   - These ads of beautiful and young Namuh men and women started to make everyone feel bad about themselves. How come they didn’t look like the Namuh in the pictures—so beautiful and young and perfect? Was that the way they were supposed to look?
   - Soon all of the young Namuh boys and girls grew up believing they should look like the models in the pictures and be young, slim, and perfect.
   - But nobody’s perfect! So when they failed and didn’t look like the models, they began to feel badly about themselves.
   - The Namuh women and men decided to go on diets to become as slim as the models. They also began to buy a lot of make up and color their hair to look just like them. They also started buying clothing that the models wore so that they could look like them.
   - One day the Namuh people decided they didn’t like how they were living. They wanted to eat good food and not worry about their weight. They
remembered the pictures hanging in their houses of parents and grandparents and people they loved. They were all different sizes and shapes, yet they loved them—even if they didn’t look like models.

- The Namuh realized that people are born to be all different sizes and shapes

**Discussion**

a. What does Namuh say backwards?
b. Do you think what happened to the Namuh can happen to us?

2. **Who decides what is beautiful?**

a. Cut out pictures of models (girls and guys) and talk about why they’re beautiful
   
i. Who decided that?
   
ii. What do you think is beautiful, and why do you think that?
   
iii. Everyone can make up their own kind of beautiful—it doesn’t have to do with looks!
       1. What kinds of actions do you think are beautiful? (hug, smile, showing love)
   
iv. Beauty can mean different things to different people—it doesn’t always have to deal with what your body looks like.

**Activity:**

- Close your eyes—think of someone you really love.
- Why do you love that person?
- Does that person look like the pictures of the models? You don’t love somebody because they’re beautiful. They become beautiful to you because you love them.
- Now, distribute the “Portrait” handout and ask the students to draw this person/people.
- Talk about someone you love and why—are they beautiful to you? Get some input from the class as well.
- Explain that being beautiful doesn’t mean that you have a perfect body. It can also mean that you’re a good person.
- No matter what you look like, I bet your mom and dads think you’re beautiful. *However* there are things about ourselves that we don’t like that can make us feel unhappy

3. **What you can/can’t change about yourself**

a. We may like some things about our bodies, and other things we may not like
   
i. Give examples…my legs, my freckles, my ears, etc.
   
b. Some of those things we can change, some of them we can’t
   
i. What about our bodies do we have no control over?
      1. Height
      2. Our eye color
      3. Our shoe size
      4. Skin color
5. Freckles
   - Why don’t we have control over these things?
   - Introduce them to genes
     o Ask them what a VCR can do—play, record, stop
     o Genes decide what your body can do—just like you decide what you want the VCR to do
     o Before we’re born, our mom and dad passed their genes on to us
     o Genes determine what we look like—we can’t change our genes!

ii. What can we change about our bodies?
   1. Our health
      a. What are 2 ways that we can use to change how healthy we are?
         i. What we eat and how much we exercise!
1. Many things make you who you are. Can you name some of these traits?
   - Talents
   - Physical appearance
   - Knowledge
   - Personality

2. Genes
   - Some of these things are inherited from your parents through genes.
   - Has anyone been told that they look like someone in their family? This is because of genes that your parents passed on to you.
   - Genes are like tiny computers that tell our bodies when to grow, how to grow, and when to stop growing.
   - They control:
     - Body shape:
     - Bone structure: length, width, and thickness of bones, which determine the shape of the body's frame, skull and facial structure.
     - Fat distribution patterns: base proportion of fat to lean tissue in the body and the location of fat stores.
     - Eye/hair color
     - The way our bodies change food into energy.
   - Our genes were programmed before we were born. So, we can't change the things that they control, and they will stay the same as you grow into an adult. Regardless of eating behavior or activity, some people will naturally be thinner or fatter.

3. Activity: Do you know who may have passed this on to you? (copy and distribute characteristics handout)
   - I want you to think of some of the things that you can't change about yourself that are the same as others in your family and write them on this paper.
   - Ask the children to share some of their ideas.
   - The rest of the things that make us who we are we learn from our families and friends and at school:
     - Sports
     - Dance
     - How to treat other people
     - What foods we like/dislike
     - Knowledge
4. Card Analogy (for this activity you will need a stack of cards, i.e. playing cards, paper cards, etc. and a volunteer)

- All of these things (genetic and personality) make up what is called our identity.
- People who have lots of things that make up their identity are stronger than those who focus too much on one part.
- Let's pretend that each one of these cards is a part of someone's identity. How hard is it to tear just one or two of them at a time? When you have a whole deck is it quite as easy? Now let's think of it in terms of a real person:
- Imagine someone who loves basketball so much that they spend every minute that they aren't in school practicing or reading books on how to become a better player or watching basketball games on TV. This person plays on a team, and their team is behind by two points with ten seconds left in the game. They take a shot from the three-point line to try and win it for the team, but the ball bounces off of the rim and doesn't go in the hoop. This person would be really sad. They would probably think about loosing the game for the rest of the week and feel like a failure because basketball is all that they think about.
- Now imagine someone else on the same basketball team. This person really likes to play basketball, but they are also really good at math. After loosing the basketball game, this person also feels bad, but the next day they get one of their math assignments back and they got all of the problems right. This makes them very happy, and the basketball game doesn't matter anymore.
- Too much focus on one aspect and we usually start to compare ourselves to people who look the way we want to look or are really good at something that we want to be good at. When we don't quite measure up to these people we feel like there is something wrong with us and we feel bad all of the time – especially if we focus on changing something that is controlled by genes that we can't change.
- It is best to try many things and find more than one thing that you are good at. Most people like to be friends with people who have a lot of parts to their identity.
1. **Remember last week when we talked about genes.**
   a. Our body has lots of genes that are programmed to tell our bodies when to grow, how to grow, and when to stop growing.
   b. Do you remember the things that they control?
      - Bone structure: the length width and thickness of bones, which determine the shape of the body’s frame, skull and facial structure.
      - Proportion of fat to lean tissue in the body.
      - Location of fat stores.
      - The rate that our body converts food to energy

2. **Many people believe that the main thing that influences how big or small, fat or thin a person is, is what they eat and how much they exercise.**
   a. Eating and activity can influence weight.
   b. But this is not the whole picture. We know also that genes program bodies to store more or less fat.
   c. The biggest reason for weight differences are built into the body. Each person’s body fights very hard to maintain a pre-set weight range that is right for him or her.
   d. Today we will learn an example of how the body does this by learning about how everyone’s body turns food to energy at different rates.

3. **The way our body burns the food we eat is kind of like a fire.**
   a. What do we feed to a fire? (wood/fuel)
   b. What would happen if you had a small fire and you put a lot of wood on it? (it would burn very slowly)
   c. What would happen if you put the same amount of wood on a big fire? (it would burn more quickly)
   d. Our bodies work the same way. Some people burn food more slowly and others burn food very quickly.

4. **METABOLISM GAME:**
   Materials: - 10 small envelopes
              - tape
              - lunch print-out
              - bell
              - 5 participants
   i. Everyone eat your lunch (put all the pieces of your lunch in your stomach)
   ii. The rate that your food is turned into energy is controlled by your brain and it happens all over in your body.
   iii. For this game we are going to put the food that has been used for energy in this second envelope called energy converter.
   iv. Each person has been assigned a pretend rate that they will convert food into energy. At the end we will see what happens to each person’s lunch.
v. In real life, food takes a couple of hours to be broken down in your stomach and turned into energy. Some foods are used more quickly or more slowly than others.

vi. For this game we will pretend that all of the food is used at the same speed and that for every 45 seconds that have passed in real life has been 15 minutes.

vii. Every time you hear this bell, follow the directions I gave you and move bites from your stomach to your energy converter. When your food is gone, tell me.

Signal 1: about 15 minutes have passed, move your food
Signal 2: about 30 minutes have passed, move your food
Signal 3: about 45 minutes have passed, move your food
Signal 4: about 1 hour has passed, move your food
Signal 5: about 1 hour and 15 minutes have passed, move your food
Signal 6: about 1 hour and 30 minutes have passed, move your food
Signal 7: about 1 hour and 45 minutes have passed, move your food
Signal 8: about 2 hours have passed, move your food

Students with fast metabolism will have emptied their stomachs, write 2 hours on their envelopes

Signal 9: about 2 hours and 15 minutes have passed, move your food
Signal 10: about 2 hours and 30 minutes have passed, move your food

Students with slower metabolisms will still have food left in their stomachs, tell them:

Your stomach would have broken down all of your lunch by now. Since it is not in your stomach any more but your body hasn’t needed it for energy yet, you will have to store it somewhere. Take the rest of the food from your stomach and tape it to your clothes so we can see what happens to it.

Since the food you are storing has been broken down in your stomach, do you think it still looks like bites of food? (No) What do you think it looks like when it is ready to store in your body? (fat)

Is fat bad? (No) Fat is important for many reasons in our bodies:

Lubricant for bones
Pads the joints
Keeps skin smooth and soft
Helps the body absorb certain vitamins

A natural amount of body fat is important. You all have it and need it. Fat is not a “bad thing” when it is the normal result of good choices about eating and activity. Body fat is reserve energy. It keeps you going so that you don’t run out of energy before your next meal.

Now that your stomach is empty, you will take food from your Reserve Energy storage to put in your energy converter as we continue. When you run out of reserve energy, tell me.

Complete the process:

Signal 11: about 2 hours and 45 minutes have passed, move your food
Signal 12: about 3 hours have passed, move your food
Signal 13: about 3 hours and 15 minutes have passed, move your food
Signal 14: about 3 hours and 30 minutes have passed, move your food
Signal 15: about 3 hours and 45 minutes have passed, move your food
Signal 16: about 4 hours have passed, move your food
viii. It has now been 4 hours since you last ate. Who would be hungry?

5. Conclude:
   a. Most children would be hungry by now. But let’s see what has happened to the food eaten by individuals that convert food to energy at different rates.
      - After the final signal, children with very slow and moderately slow rates will still have food taped on their bodies. They should leave it in place.
      - Have individuals report their status (i.e. when they ran out of food or how much food they have remaining. Individuals should stand in order (slow to fast) while the effect of their metabolism is discussed.

6. Summary of results:
   - Slowest rate: ½ of lunch is still stored as fat
   - Moderately slow rate: ¼ of lunch is still stored as fat
   - Average rate: lunch fully used in 4 hours
   - Moderately fast rate: lunch fully used in 3 hours
   - Fast rate: lunch fully used in 2 hours

7. Discussion questions:
   a. Fast rate: This group has had an empty stomach for 2 hours, and they used all of the energy provided by their food. How do you think they would be feeling now? (very hungry)
   b. Moderately fast rate: this group burned all of their lunch too, but only 1 hour ago. How do you think they are feeling? They would be just as hungry. They haven’t eaten in 4 hours and their stomachs have been empty for the same amount of time.
   c. Do you think that these two individuals convert food to energy fast or slowly? (fast) Which is fastest?
   d. Since these two burned up all their energy quickly, long before it was time to eat again, what do you think their body would look like, would it be fatter or thinner? (thinner)
   e. Slow and Moderately slow rate: These children still have food stored on their bodies. What do you think that means? (They convert food to energy more slowly, their lunch was not fully converted to energy in 4 hours, and some is still stored.)
   f. Are you sure it doesn’t mean they ate more food than these two (fast and moderately fast individuals)?
   g. Do you think that these children would be hungry? (Yes. Stored energy does not affect hunger. The brain tells us we are hungry when our stomach is empty.) Of course they are hungry! Their stomachs have been empty for as long as anyone’s. Since they are as hungry as the other children, they will need to eat soon too.
   h. Since these two didn’t use all of the energy from their lunch as stored it instead, what do you think their body would look like, would it be fatter or thinner? (fatter).
i. **Average rate:** What about these children? Do you think they are hungry?
   (Yes. Their stomachs have been empty too.)

   *Most people fit into this group – they have average rates of metabolism.*

   *What do you think their bodies would look like?* (Not fat, not thin, but in-between)

8. **What do you think determines how fast people convert food to energy?**
   - Eating the proper amount of food for our activity level.
   - For the most part, it is passed on to us from our parents. Different people with different genetic programs will have different rates. Each individual burns food at his or her own rate – fast, medium, or slow.
   - This means that a person who burns food more slowly, who eats a healthy diet, and exercises every day will convert food into energy more slowly, store more “reserve” fuel, and be fatter than someone who converts food to energy more quickly who follows the same healthy diet and exercises every day. In other words, a fatter body is the natural outcome for a person with a slower metabolism.
Energy Conversion Rate #1

Put one bite of your lunch into your energy converter every other time your teacher rings the bell.

Energy Conversion Rate #2

Put one bite of your lunch into your energy converter every time your teacher rings the bell, but skip every third ring.

Energy Conversion Rate #3

Put one bite of your lunch into your energy converter every time your teacher rings the bell.

Energy Conversion Rate #4

Put one bite of your lunch into your energy converter every time your teacher rings the bell. Put two bites in every third ring.

Energy Conversion Rate #5

Put two bites of your lunch into your energy converter every time your teacher rings the bell.
PART ONE
INTRODUCTION TO PUBERTY AND CHANGES
- Explain that this is a time for changes, both physical and emotional, in both boys and girls.
- During puberty, both boys and girls will grow at rapid rates. Explain that you will grow more quickly than you have in the past - for example, last year you might have grown 2 inches. During puberty, you may double that and grow 4 inches in one year.

TYPES OF CHANGES
- Explain that the types and rates of growth are different for each person, regardless whether they are a boy or girl.
- Growth is not proportionate. This is time when you will feel awkward, clumsy, and uncomfortable. You may start to notice that certain body parts are not equal to others.
  - Feets grow first
  - Next, legs and arms
  - Then, spine and bones
  - Mention that ears and the chin grow before other facial features
- It is also normal to gain more weight and body fat during this time.
- You will notice other changes as well, like in your skin, hair, voice, etc. Explain that this is because these glands and parts are growing too.

DESCRIPTION VS. JUDGMENT
- Explain to students that “fatter” and “thinner” are descriptive words, not judgment words.
- These words and the way we look as we begin to change do not make us better/worse people.
- We are all equal on the inside.

FOR GIRLS
- Girls typically begin to change before boys
- TV and the media tell us that all girls should be stick-skinny, but don’t believe them!
- Girls will begin to gain weight quickly – and this is normal!
- She may notice at first that she is bigger everywhere. As she grows up, the fat will go where it needs to and she will begin to look more round and more womanly.
- Explain that it is totally normal for a girl to gain 40-60 lbs in 2-4 years during puberty. Don’t panic!
- All girls experience weight gain at some point during puberty. We all grow and change at different rates.
• Show growth poster.

**FOR BOYS**
• Boys typically begin changing later than girls.
• However, once they do begin to grow, they catch up to girls very quickly. In fact, they will often grow taller and get more muscle than girls.
• What the media tells us about how boys'/men’s bodies should look like
• Explain to boys that they will probably grow taller before they begin to gain muscle. The growth process for boys will often continue even after they are adults in college.
• All boys grow and change at different rates, i.e. taller, more muscle, more fat, etc.
• Show growth poster.

**ACTIVITY**
• Timeline pictures
  o Give students papers that have three boxes labeled “What I Looked Like As A Baby”, “What I Looked Like When I Was 5 Years Old”, and “What I Look Like Now”.
  o Give students time to draw themselves at the different stages of life.
• Discussion
  o Have students share what differences they noticed between the stages of life.
  o Explain that they will continue growing and changing from this point, i.e. they will look even more different in five years than they do now

**PART TWO**
**INTRODUCTION TO GENETICS**

**DISCUSSION ABOUT PRE-DETERMINED GENETICS**
• Ask who knows what a VCR can do?
• Ask who knows how to operate one, i.e. record, stop, etc.
• Explain that we have billions of little “genes” that decide what we will look like. They are also in charge of when we change, how fast we change, and when we will stop changing.
• Before we’re born, our mothers, fathers, grandparents, etc pass on their genes to us.

**DISCUSSION ABOUT HOW GENETICS DETERMINES OUR BODY SIZES AND SHAPES**
• Genes determine the way our body will grow and what size we will be. Genes will tell our bodies how short, tall, fat, or thin to be.
• Explain that just because a person is fatter or thinner doesn’t always mean that their lifestyle is to blame, i.e. lazy, doesn’t exercise vs. controls appetite, exercises, etc.
• Explain how important it is not to judge others on body size. Body size and shape does not tell us who we are.
• Also tell students that it is important to exercise and choose nutritious foods regardless of body shape, so that we can become the healthy people that our genes want us to be.

ACTIVITY
• Give students the handouts about where their traits came from and let them fill that out.
• After they are finished, reiterate that we are who we are and we can’t always change that. Reemphasize that we should not judge others based on appearance, especially because we are all changing.
Body Image Curriculum  
Fourth Grade – Lesson Two

PART ONE  
HUNGER AND EATING

INTRODUCTION TO OUR BASIC NEEDS
• Ask students to name the five basic human needs (air, water, food, sleep, and warmth)
• Discuss the importance of those needs and what would happen if we did not fulfill those needs, i.e. we are sleep-deprived, we are very thirsty, etc.
• Explain that we start to act different when we don’t meet those needs, i.e. grouchy, sleepy, preoccupied, restless, etc
• Explain that our bodies need food to live the same way that we need air to breathe.

CONSEQUENCES OF DIETING
• Discuss the purpose and reasoning behind diets
• Explain that when we don’t listen to our body’s hunger and restrict food, eventually we will make up for it and eat a lot more than we normally would.
• Explain the consequences of dieting, i.e. rebound binging and weight gain, we get crabby/grouchy, and we just don’t feel very good
• Discuss how choosing a healthy diet and lifestyle is important, rather than dieting and restricting food

PART TWO  
THE PURPOSE OF FOOD

SATISFYING HUNGER
• Remind students that we just talked about the importance of listening to our hunger and satisfying it.
• Now ask them what their favorite foods are, and what one food they would eat all day everyday if they could.
• Ask them if they think this a very healthy way to live. Why not? What would happen? (we would gain weight, we would get a tummy ache, etc)
• Ask the students if all foods are the same. Why or why not?

THE PURPOSE OF FOOD
• Explain that food serves different purposes – flavor/enjoyment, energy/calories, nutrition, and variety
• Now discuss the primary purpose of food
  o To satisfy hunger (our basic need)
  o To receive the essential nutrients and energy we need to grow up healthy
  o To enjoy – it can be fun to share food and mealtimes with family and friends
• Ask how we know *how and when to eat* to stay healthy
  o Discuss that it is important that we listen to our hunger and our tummies
  o Tell students that hunger is like money, and we should spend most of our hunger on nutritious meals and snacks. Once we’ve done that, we can spend the rest on other foods.

• Ask how we know *what to eat* to stay healthy
  o When we listen to our bodies, we will know what to eat
  o Explain that sometimes when we eat sugary and fried foods, we become confused about knowing what to eat
  o Sometimes we need a reminder – explain what foods are important to eat regularly
    ▪ Whole grains
    ▪ Fruits and veggies
    ▪ Dairy, milk, and cheese
    ▪ Lean meats, eggs, and legumes
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  o Discuss with students how genetics and inherited genes does affect and will affect they way they change, grow, and what they will ultimately look like.

PART TWO
BODY IMAGE CHANGES OVER A LIFETIME
• Explain to students that they will constantly be changing until they are grown-ups.
• Discuss ways that we can feel good about ourselves while we are changing and growing.
• Read the poem “Terry Tadpole” and discuss what Terry was feeling, why she was scared, etc.
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