

Addiction Model Intervention for Obesity in Young People

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Preface

Up to now, the only treatment for obesity in young people that has produced significant long-term weight loss is <u>bariatric surgery</u>. Bariatric surgery has risks and side effects, is expensive, and <u>20-30%</u> do not lose weight, or they regain it. Besides, shouldn't we be treating the underlying cause of out-of-control overeating rather than the symptom, obesity?

You might say, "The underlying cause is poor lifestyle." Yet, significantly obese young people have the <u>quality of life rating</u> of youth with cancer on chemotherapy. If simply eating healthy and exercising would resolve their problem, why don't they do so, lose weight, and not be miserable anymore? Something else is going on.

What otherwise might we do? Residential immersion programs treat obesity essentially by "forced food withdrawal." This brings to mind what's accomplished at drug addiction rehab centers. In fact, there's mounting evidence that overeating and obesity may involve an addictive process. Brains of obese individuals show similarities to the brains of drug addicts, and the relationship with food described by obese individuals satisfies <u>DSM addiction criteria</u>. The classification of obesity as a disease of addiction is controversial and debated. Yet, even if obesity is not classified as an addiction, the addiction medicine field offers many approaches that are useful in the treatment of obesity in young people.

How might forced food withdrawal be accomplished in the outside world, similar to residential centers? Withdrawal from food is trickier than withdrawal from a drug, because totally quitting food isn't feasible. Nonetheless, it is feasible both to totally stop snacking and to gradually decrease excessive portions at meals.

This book presents a very simple approach to treating obesity in young people: 1) stop eating between meals (zero snacking) and 2) gradually reduce amounts (portion sizes) at meals. This approach, although simple, is nevertheless difficult for overweight and obese youth to achieve, because of the compulsive nature of their overeating.

The possibility that obesity may involve an addictive process has opened up exciting new treatment approaches for an otherwise intractable problem. This book presents practical methods founded on the principles of addiction medicine that we hope healthcare professionals may find useful in treating obese young people, as well as those youth wanting to lose weight on their own.

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Background

Since 1999 we have hosted an interactive website for overweight youth at www.weigh2rock.com. A book³ and a peer-reviewed paper⁴ resulted from the more than 140,000 bulletin board posts from the thousands or teens, preteens, and young adults using this site, as well as 110 monthly polls. Using food to cope with negative emotions (comfort eating) was frequently reported by posters. The way these youth described their relationship with pleasurable food satisfied nearly all of the DSM/WHO substance dependence (addiction) criteria (Appendix IV, DSM-IV/WHO Substance Dependence Criteria), and 66% reported feeling addicted to food. Several polls from the site have revealed foods these youth say they have the most problem resisting, so-called "problem foods" (Appendix I, Problem Foods List).

Our efforts to treat obesity in youth have evolved from a healthy eating and exercise approach, to comfort eating methodology, to an addiction-based intervention. We have conducted three 4-5 month pilot studies involving 137 obese youth (BMI > 95^{th} %tile) using the addiction model approach, implemented as an iPhone app, and we have published a peer-reviewed paper on this⁶.

These pilot studies have revealed that not only do obese young people have difficulty resisting "certain" problem foods (e.g. the Yale Food Addiction Scale), but also have difficulty with snacking/grazing on whatever foods are available, as well as consuming excessive amounts at meals, again involving whatever foods are available. Consuming excessive food amounts at meals contributed the most to their overweight problem and was the most difficult to combat. Yet, reducing food amounts at meals produced the greatest weight loss.

From the results of this research, we now believe that obesity in youth is due to a combination of two components:

1) <u>Comfort eating</u>, uncontrollable eating of highly pleasurable <u>problem foods</u>, commonly as a mindless form of self-medication for emotional distress ("feel good" foods), characterized by difficulty resisting and/or cravings for specific foods, similar to a "drug-of-choice" and involving food sensations (taste, texture). Comfort eating may become a "sensory addiction."

2) <u>Nervous eating</u>, involving the motor actions of eating (chewiness, crunchiness, licking, sucking, hand-to-mouth action, and swallowing), characterized by compulsive urges to eat non-specific foods, and manifested by snacking/grazing on whatever foods are available as well as consumption of excessive amounts at meals. Nervous eating may become a "motor addiction," similar to Body Focused Repetitive Behaviors (BFRB) such as nail biting and skin picking, which are considered behavioral addictions. Thus, behavioral addiction treatment methods may be helpful for treatment of obesity in youth.

Consumption of excessive amounts at meals may also involve comfort eating behavior, as some foods eaten at home meals are listed by youth as problem foods, e.g. pizza. And, nervous eating in both snacking and excessive amounts at meals is facilitated by pleasurable taste/texture of the foods.

Comfort eating and the apparent sensory addiction involving problem foods is comparable to substance dependence. Nervous eating and the apparent motor addiction is suggestive of "displacement behavior," which is universal among the animal kingdom as a means of dealing with stress. The brain tends to adopt (hijack?) any behavior that eases stress, in this case overeating. With repetitive use, brain changes solidify the comfort and nervous eating behaviors, resulting in loss of control, i.e. "overeating addiction."

In classic addiction treatment, withdrawal and abstinence from the addictive substance or addictive behavior, for a certain time period, generally results in resolution of cravings for the substance or cessation of urges to engage in the behavior. <u>Our studies have shown that problem foods, snacking, and excessive food amounts all respond to withdrawal and abstinence.</u>

It is likely that it is the food sensation (sensory addiction) component of overeating that responds to withdrawal/abstinence. The nervous eating (motor addiction) component likely responds to behavioral addiction (actually BFRB) treatment methods. Treatment of overeating involves treating both components separately but concurrently, as all foods involve both components in varying proportions.

Parental enabling

A novel explanation for child obesity⁸ stems from the observation that parents give "treats" to their child and extra food at meals to gain affection, love, and delight from the child. Food companies understand this, e.g. the Cool Whip Commercial - "Give the Cool Whip, Get the Love" - http://www.weigh2rock.com/videos/food_for_love.html. Parents may become psychologically dependent on this treat-induced affection and in the process enable weight gain and eating addiction in their child. Even when the child becomes obese with resulting health risks/problems, the parent may continue to provide food treats to the child, which is similar to "co-dependence" in families of alcoholics and drug addicts. Both the parent and child become psychologically dependent on (addicted to) the treats and extra food⁷. The enabling parent may or may not be obese, but typically is, as well. "Pet-parent" co-dependence is very probably the same reason that half of pets are currently overweight or obese.

Actual addictive tolerance may develop, such that the child demands more and more treats/food and higher pleasure level foods, or the parent insists on giving more and

more treats/food to the child. Grandparents, too, may be part of this co-dependent overeating enabling. At some point the parent may realize that the child has become overweight and may try to curb the treats and extra food. Parental withdrawal symptoms, owing to loss of affection from the child's lack of treats, may prevent the parent from doing this. Recently, a 270 pound 13 year old boy in one of our studies, was trying to cut down on lunch amounts at school by packing his own lunch. His mother insisted on putting candy "treats" in his lunch. When she was asked if she would not do this, she replied, "It's my thing." She did not continue her child in the study (Pretlow et al. 2015).

The child, likewise, does not want to go through withdrawal and may become angry from loss of "fixes" and shun the parent when treats/food are restricted. Aversion to the anger and "cold-shoulder" from the addicted child then perpetuates the parental enabling. The mother of a 287 pound 10 year old boy in another of our studies confessed that she gave treats to her son, because he would get very angry if she did not.

Several parents in our studies have argued that their children were not eating enough when reducing food amounts, even though the children were not losing weight or were continuing to gain weight.

An eating-addicted parent may overeat socially along with the child, encouraging such, and the child thus acquires the parent's eating addiction. A mother in our website's chat room confessed, "Sometimes when me and my daughter sit down with piles of junk food and 4 hours later I look around and the amount of food and calories we have eaten amazes me. It is like a drug for her and I."

Approach of this book

The basic approach of this intervention is simple: zero snacking and decrease amounts at meals. Accomplishing such uses methods founded on the principles of addiction medicine: 1) a <u>divide-and-conquer approach</u>; 2) <u>staged withdrawal / abstinence</u>; and 3) behavioral addiction (BFRB) treatment methods.

The divide-and-conquer approach breaks down the addictive behavior and the withdrawal process into components, which are attacked one at a time in discrete, small increments. Significantly more time is required for the divide-and-conquer approach, versus going "cold turkey" (big changes all at once), but withdrawal symptoms are minimized. We have not attempted a "cold turkey" approach with any participants in our studies, as our preliminary research indicated that few obese youth were comfortable with big changes in regard to eating behavior. We found that most participants were able to handle small increments, although "micro" increments were sometimes needed so that the individual can tolerate the withdrawal symptoms (e.g. gradually diluting soda

before actually abstaining for a day, abstaining from snacking for one hour, then two, then three). Nevertheless, the "cold turkey" approach may be tolerated in select individuals.

It is productive to divide treatment into problem foods, snacking, and excessive amounts at meals, and each involves treating both the sensory and behavioral addiction components.

1) <u>Withdrawal from problem foods</u>: Problem foods are specific foods for which the child or teen has cravings, seeks out or purchases, cannot resist when immediately available, and cannot stop eating when started. The child or teen identifies and lists all his/her problem foods and then abstains from each food, one-at-a-time, for nominally 10 days each, and until cravings and difficulty resisting the food have resolved (designated as "in-control" for that food). Then the child/teen progresses to the next problem food on his/her list. Two problem foods may be withdrawn from concurrently, but it is recommended that no more than two problem foods be withdrawn from at a time.

2) <u>Withdrawal from snacking/grazing</u>: This is accomplished by abstinence from snacking during distinct time intervals, such as morning, afternoon, evening or nighttime, nominally for 10 days each time period and until difficulty resisting snacking during that time period has resolved (designated as in-control for that time period). Then the child/teen progresses to the next time period, with the goal of zero snacking during the entire day. Snacking may be withdrawn from in more than one time period concurrently.

3) <u>Withdrawal from excessive food amounts</u>: This may be accomplished in two ways:

a) Cutting in half method. Cut everything in half eaten at meals, put half back,

and eat only half. Sharing with a friend or boxing up half when eating out is useful. Our evidence shows that obese young people generally eat twice as much as their bodies actually need for energy and repair. Thus, to lose significant weight they must eat half as much. Cutting the half in half again and putting a fourth back is a way to do this more gradually. Our experience is that the cutting in half method is effective but is sometimes difficult to implement, as overweight



youth have difficulty deciding how much to cut off and put back or how much they typically take initially. The decision of how much to take of cut off caused stress in participants, so as result they sometimes ate even more.

b) <u>Measuring/weighing method</u>. Measure or weigh typical amounts of all foods frequently eaten at meals and reduce amounts in incremental, staged percentages from starting amounts. Weighing foods is much easier to implement that the cutting in half method, as it turns the quantity of food served into a number. Thus, there is no "decision" and minimal stress.



4) Behavioral addiction methods are used in parallel for each withdrawal process.

Here is a link to blank charts for the above processes that may be printed out and filled in by participants: http://patientecare.com/workshop/charts.pdf

Selecting participants for this intervention

This intervention requires motivation on the part of participants to be willing to change their relationship with food and eating. The withdrawal process requires commitment to tolerate withdrawal symptoms of missing subtracted food, such as agitation, anger, and even depression, although these are manageable when withdrawal is conducted in small increments. Participants also must be willing to give up using food as a coping mechanism and develop new coping mechanisms that do not involve eating. They must be willing to talk about their weight and their struggles openly with their mentor/provider and to weigh-in daily. Additionally, parental cooperation is optimal but not absolutely required.

Please see Appendix II for a Screening Questionnaire, which we have found useful.

I. Preparation

Prior to beginning the intervention, the participant should write answers to the following items.

1) Motivation:

a) What I dislike about my weight (e.g. stretch marks),

b) Reasons I want to be thinner (e.g. fit into stylish clothes),

c) Provider may review with participant <u>how overweight affects the body</u> (e.g. 50 kg overweight is equivalent to a 50 kg bag of bricks on his/her back, weight on the joint

cartilages causing premature wear, etc.),

d) Provider may review with participant <u>diseases from being overweight</u> (e.g. type 2 diabetes, high blood pressure, fatty liver disease, etc.),

e) <u>Make a thinner image of participant</u>. Most obese youth have long ago forgotten what they looked like being a healthy weight. Presenting them a picture of what they would look like as a healthy weight person can be highly motivating. The provider would take a photo of participant's face, make it thinner by trimming off edges of the face, and paste the trimmed face onto an image of a healthy weight body. Then make a photocopy and print it out for participant. This may also be accomplished utilizing Photoshop.

f) Participant may read online <u>weight loss success stories</u> (e.g. at <u>http://www.blubberbuster.com/board/success.html</u>). Success stories from other overweight youth may inspire and encourage the participant and offer believable hope.

2) Coping Skills and Stress Reduction

Participant should do to the following:

a) <u>Keep a food/emotion diary for several days</u>. Write down every food eaten with estimation of quantity (e.g. cups, fist-size, number of helpings/servings), including all snacks eaten between meals. Also include how he/she feels before and after eating the food. This procedure helps the participant to realize what and how much he/she eats and the association of emotion with the type of food and amounts eaten.

b) Write down his/her <u>worries</u> (e.g. math in school) and then under each worry participant should write a <u>plan</u> for dealing with that worry (e.g. hire a math tutor).

c) Write down a <u>list of support people</u>, those who are willing to support his/her weight loss efforts. Support people are essential to get through withdrawal. Sometimes family members actually try to sabotage the participant's weight loss efforts, so such people should be carefully avoided.

3) Self-Esteem, shame, and secrecy

a) Anonymously write down <u>his/her story of how he/she became overweight, how being</u> <u>overweight affects his/her life (not being able to experience life fully), and his/her</u> <u>struggles and goals</u>. What the participant might share in anonymous writing can be very revealing. The young people in our studies were strikingly open about their struggles with their weight and overeating in their <u>anonymous</u> stories. But almost never did they acknowledge their struggles either in the weekly phone meetings with mentors, text messages, or in the monthly face to face meetings. Shame is a significant factor in obesity in young people. <u>Building trust that they will not be judged or revealed is imperative to decrease this shame and secrecy</u>.

b) Write down other items about self:

- his/her strengths,
- things he/she is good at,
- things he/she likes about the way he/she looks,
- what other people like about him/her,
- things he/she are thankful for in life,
- nice things he/she has done for other people
- what he/she may do to improve him/herself.

4) **Distractions**

Addiction to problem foods, excessive snacking between meals, or eating large amounts at meals all typically result from eating to comfort stress, sadness, or boredom and eating to ease tension or nervousness or simple urges to eat. This typically is mindless and may represent dealing with background stress or tension. Planned distractions can help avoid turning to food when having such urges or when sad, stressed, bored, or nervous. These distractions should be figured out ahead of time, as in the moment of an urge it is difficult to think of a distracting activity.

a) <u>Participant should list distractions/activities he/she enjoys</u>. <u>Activities with other youth</u> <u>should be included</u>, as such activities are useful for reducing loneliness and improving <u>self-esteem</u>.

In distracting activities we are not talking about exercise. We are talking about fun distractions, like roller blading,

hiking, gardening, listening to music, and reading.

Hobby clubs and clubs allowing contact with other youth (e.g. robotics or photography club) are suggested if sports are not appealing.



In the moment of an urge to eat, any distraction will do, even ironing or putting out the trash.

Obese young people may be worried about being teased if they seek activities with others. But, for example, they can join a camera club or fishing club, where no one cares how fast they can run. They all share the same interests, so teasing would not happen. Being isolated is one thing that can make kids unhappy, stressed, and bored, so clubs are wonderful for socialization.

Partner dancing is a wonderful way to interact socially with the opposite sex. Many overweight youth enjoy dancing, as no one cares if they are overweight. Taking a group dance lesson allows youth to switch partners continually.



b) <u>The following are suggestions for distracting activities</u>. Participants should think of their own distracting activities, as well.

Write the distraction ideas on small pieces of paper and put in a large jar. Then, when the child or teen is feeling sad, stressed, bored, or nervous or has an urge to eat and are tempted, they should reach into the jar, pull out a distraction, and do it.



Chat with my buddy	Make music
Ice skating	Meditate
Swimming	Paint your toenails
Play tennis	Go to a movie
Work on a puzzle	Read a joke book
Gardening	Talk with a counselor
Bicycling	Write down your thoughts
Walk someone's dog	Call a friend
Shoot basketball hoops	Go on a picnic
Play basketball with a friend	Have glass of hot tea
Roller blading	Play cards
Partner dancing	Walk in the park
Learn a hobby	Run/jog
Hiking	Make a bead necklace
Listen to music	Build paper airplanes
Take a bubble bath	Yoga
Go for a walk	Shape a piece of clay
Hug someone	Hang out with your pet
Picture a relaxing scene	Lift weights
Squeeze your hands together	Volunteer at a pet shelter
Say or read a prayer	Volunteer at a hospital
Laugh	Needle point
Stretch	Arts and crafts
Go outside	Knitting
Take deep breaths	Photography
Write in a journal	Put together a model
Get a massage	Take a car repair course
Watch the sunrise or sunset	Build electronics kit
Play a sport	Build a robotic kit
Read a magazine	Dance in your room
Sing or whistle	Meditate
Dance lessons	Read a book
Draw something	Paint a picture
Look at stars with a telescope	Learn a musical instrument
Write a poem	Carve something out of wood

Exercise: the main benefit of exercise is as a distraction rather that for burning calories.

5) Vicious Circles

Does the participant eat for comfort when sad, rejected, or stressed, gain weight, and then feel sadder or more rejected and need more food for comfort? Does the participant eat to cope with being obese itself? Does the participant give in to a

temptation, then feels that he/she has blown the diet, so then just gives up and binges? These situations are called vicious circles or cycles. Common vicious circles are listed in Appendix V with descriptions and suggested ways to break each circle.

a. Participant should list which Vicious Circles he/she relates to.

b. <u>Participant should write a plan for breaking each of his/her Vicious Circles</u>, such as seeking comfort and stress relief from other things besides food, like pets, volunteer work, and professional counseling.

Breaking a Vicious Circle at any point in the circle will stop or reverse the circle. Take for example, the Comfort Eating Circle. Doing things to improve his/her unhappiness will result in less need for comfort eating, thus breaking the circle. Or, finding an alternative source of comfort when upset, other than food, will break the circle, and so on.

6) Struggle points

- a) <u>Determine participant's struggle point(s)</u> (what they have the most difficulty avoiding) such as:
 - problem foods,
 - snacking/grazing between meals,
 - excessive food amounts at meals,
 - comfort/stress eating and bingeing,
 - eating out at restaurants, fast food outlets, and so forth.
- b) Explore each specific struggle point and develop solutions (plans).

7) Make The House Food Safe

a) <u>Assess the home situation</u>. Is the house filled with junk food (problem foods)? Are parents and family members contributing to the issue of problem foods, snack foods, excessive amounts at meals? Conducting a home visit may be warranted.

b) <u>Participant should write a plan for making his/her home safe from problem</u> <u>foods and snack foods</u>, so that such foods are not a temptation. Ideally, problem foods or snack foods should no longer be present in the home environment. Parental and family member cooperation is needed. It should be explained that part of being a family is accommodating health issues of family members, e.g. in a family with an asthmatic member there can be no hairy pets or stuffed pillows. Obesity in a family member requires similar accommodation. c) If parents or other family members will not help in making the home problem foods safe, what can participants do? Tips include the following:

1. <u>Make a grocery list with the parent or with whomever buys the food</u>. Make sure that problem foods, which the participant has difficulty resisting, are NOT ON THE LIST.

2. <u>Grocery shop with the person that buys the food</u>. He/she should follow the list and not get tempted into buying things not on the list, especially junk food.

3. <u>Keep problem foods in an area away from the participant.</u> If family members insist on bringing problem foods or snack foods home, keep such foods in areas like the garage or the offending family member's room or car.

3. <u>Make a plan ahead of time</u>. If parents buy junk food anyway, making a plan ahead of time will help participants to resist. For example, squeezing one's hands together, avoiding the kitchen, brushing one's teeth, going for a walk around the block, counting to 100, dancing to one song on the radio, calling a friend. Usually, the urge to eat the food will pass. Sniffing a foul smell or watching a gross video on YouTube (draining cysts) helped one girl in our study to avoid pizza repeatedly brought home by parents.

After the participant has completed the preparation, he/she is ready to begin the program and the withdrawal processes.

The following withdrawal processes are designed to be conducted in sequence; however, to save time they may overlap or be conducted concurrently.

II. WITHDRAWAL FROM PROBLEM FOODS

1. <u>Participant should identify and list all of his/her problem foods</u>. Problem foods are specific foods for which either he/she has cravings and seeks out or buys the food, or which he/she has difficulty resisting when the foods are in sight or in the immediate environment, such as home, work, or school, or participant cannot stop eating when started.

<u>Note</u>: Ninety percent (90%) of the 137 participants in our 4 studies identified one or more problem foods. Seventy percent (70%) of these participants seemed truly dependent/addicted to the foods, in that they reported cravings for the food, sought out

or purchased the food, and had significant difficulty staying away from the food. All remaining participants had at least a problem resisting a particular food when it was in front of them or in the immediate environment, such as the home or work. Candy, sugar-sweetened beverages, ice cream, chips (crisps in Europe and Australia), and fast food (take out) are examples of commonly addicted foods of the young people in our studies.

2. <u>Participant should list his/her triggers to eat problem foods</u>. Triggers are events or cues that occur immediately before a person eats a problem food, a snack, or large amounts at a meal. Triggers cause the emotional brain to want to eat food for pleasure or coping. Identifying and avoiding triggers to eat is much easier than avoiding the food when it is in sight.



Here are problem food trigger examples:

1) Whenever you have money in your pocket, you end up going to the store on the corner to buy candy,

2) When you pass by the donut store on the way home from school, you can never resist getting a donut.

3) Whenever your brother puts his soda pop in the fridge, you always drink it.

Money in your pocket, the donut store, and your brother's soda pop in the fridge are your problem food triggers.

Plan: To avoid those triggers do not keep extra money in your pocket, take a new route home from school, and ask your brother to keep his soda pop in the garage. <u>It is much easier to avoid your triggers, than when the problem food is in front of you</u>.

3. <u>Participant should write a plan to avoid his/her problem food triggers</u>. In truly problem food addicted youth, avoiding their triggers is the most effective approach.

Once the participant has completed the preparation items noted above and listed his/her problem foods, the participant is ready to start withdrawal from problem foods.

4. Participant then may withdraw from <u>one or two problem foods at a time</u>. (We do not recommend withdrawing from more than two problem foods at a time. Most participants in our studies felt that 1-2 at a time was the optimal number.)

a. Participant should select 1-2 foods and then avoid eating those foods completely.

b. Each day participant should indicate to the mentor whether the problem food was eaten since checking in the previous day and if he/she still has cravings for and/or difficulty resisting the food.

c. The mentor (provider) should offer support and encouragement to help participant avoid the problem foods.

d. Once the participant has been able to not eat the food for at least 10 days and no longer has either cravings or difficulty resisting it, the food will be labeled "In Control" and he/she may proceed to withdraw from the next problem food. This process should be repeated until all problem foods are in control. This may require several weeks, as many participants in our studies had 5 or more problem foods, and some participants went several weeks before they were finally able to resist a particular problem food. They should NOT resume eating any problem foods they have listed as "in control" during or after the treatment program for at least several months. (Note: It may be helpful to start with participant's least difficult problem foods.)

5. Withdrawal methods:



Intense cravings may occur for a few days when abstinence is initiated for each new problem food. Viewing photos of extremely obese people, viewing a gross picture (deer guts), viewing a foul video on YouTube (draining cysts), tasting something yucky, sniffing a foul smell, while viewing or imagining the problem food, may help to want it less in the moment. A foul smell may be created by allowing raw chicken juice to rot for 2-3 days and keeping it in a small jar. (We found the rotten chicken juice smell worked well for youth in our studies.)

Successful problem food withdrawal/abstinence does not result in substantial calorie reduction and weight loss in most youth, yet it is a gateway to snacking and food amounts control. Once participants realize that they have accomplished problem foods withdrawal/abstinence, they then have confidence for snacking abstinence and food amounts reduction. They realize that withdrawal symptoms are bothersome for a few days, and then get better each time they make a change. In some problem-food-addicted individuals, problem foods may constitute significant calorie intake and weight reduction from abstinence.

III. WITHDRAWAL FROM SNACKING/GRAZING

A major goal of this intervention is for participants to entirely eliminate snacking/grazing between meals. This is accomplished in staged, selectable time intervals, such as morning, afternoon, evening, or nighttime, to minimize withdrawal symptoms.

1. Participant should review the snacking entries in his/her food/emotion diary. Note the times of day and frequency.

2. Participant should select one or more time periods to abstain from snacking, such as morning, afternoon, nighttime or evening.

3. Participant should identify and list his/her snacking/grazing triggers or cues - what always happens right before snacking occurs.

Here are examples of snacking triggers:

a) Every time you go into the kitchen you end up snacking,

b) When you pass by the vending machines at school you always buy something,

c) You keep snacks in your room, your backpack, your locker, or your desk.

Our studies have shown that avoiding snacking triggers is the most effective process for eliminating snacking.



4. <u>Write a plan to avoid those triggers</u>. The kitchen, the vending machine, and snacks you keep near you are the triggers in the above example. To avoid those triggers you would stay out of the kitchen, do not go near the vending machine, and do not keep

snacks anywhere near you. It is much easier to avoid your snacking triggers, than when the food is in front of you.

5. Participant should check-in with their provider/mentor daily (as an accountability process) and report whether they have snacked during their selected time period(s) during the past 24 hours.

6. Once a participant is able to avoid snacking during a respective time period of the day for ten (10) or more days, that time period would then be labeled as "In-Control," and he/she would proceed to abstain during remaining time periods. (<u>Note</u>: It may be helpful for the participant to tackle his/her least difficult snacking time periods intially in order to build success and then move on to more difficult time periods.)

Methods to aid in eliminating snacking

Many of the following methods originate from treatment of Body Focused Repetitive Behaviors, e.g. nail biting and skin picking, to which we believe excessive snacking/grazing is similar.

a) TV / Computer snacking



Watching TV and playing computer video games may serve as an 'escape' from painful reality for young people. Periodically while watching or playing, the youth may be jolted back into reality. Snacking may occur to cope with this jolting, as a form of displacement behavior.

Nervous eating also may occur while watching TV.

Plan: Participant should not just sit and watch TV. Participant should engage in some other activity at the same time while watching TV, which will keep him/her in contact with reality. He/she should work on a project, hobby, or anything that involves doing something active, such as drawing pictures, doing needlepoint, cleaning the room, or walking on a treadmill. Food should not be kept near the computer or TV -- out of sight, out of mind.

b) Arriving home snacking



When young people arrive home from school, work, sports, or any event, they tend to immediately head for the kitchen for a snack. This is likely because they are still "wired" from the event and want something to munch on to expend the nervous energy, as well as distract from stresses of the day or the home. This is similar to a race horse coming across the finish line. Trainers keep race horses running for a while after crossing the finish line and only gradually slow them down. If they abruptly stop, the horses become quite agitated and may bite each other or the trainers.

Similar to race horses at the end of a race, the participant should engage in some type of winding down activity when arriving home, something to calm them gradually and relax their emotional brain. Thus, they should not just sit.

Plan: They should plan to do something to keep busy when arriving home and something fun if possible. For example, hang out with a friend, shoot basketball, take a walk or play with their dog, listen to music, or work on a hobby. Some kids find starting some of their homework right away helps them to calm down without eating. Above all, <u>stay out of the kitchen</u>.

c) Boredom snacking



Snacking from being bored is common with youth and typically happens on weekends and during vacations, <u>especially when in the house alone</u>. Boredom may actually be mislabeled anxiety, loneliness, or depression, as saying one is bored is more socially acceptable than saying one is anxious or depressed. Nevertheless, when there is nothing to do, this lack of stimulation is unpleasant, so young people may turn to food to relieve this. Usually foods requiring motor action are preferred such as chewy, crunchy foods like chips (crisps), cookies, or nuts.

Plan: To avoid snacking when bored, participants should plan fun activities to distract themselves from food, like non-competitive sports, hikes, clubs, hobbies, and musical instruments. They should not let themselves be in the house alone. They should get together with a friend or go out and do something.

d) Nervous snacking



When youth are nervous, anxious, or tense such as from school, a job, or family problems, their emotional brain wants them to munch and chew on something, similar to biting their fingernails. This expends nervous energy in the brain, relieves tension, and also distracts from the stressful situation. Of course, they typically are disappointed in themselves from eating and may gain more weight, both of which increase their anxiety and nervousness. Thus, they would then want to eat even more to relieve this -- a vicious circle. **Plan**: To avoid nervous snacking, the participant needs to do something else to deal with their nervousness, anxiety, and tension. Things that help reduce nervousness when tempted to eat are the following:



1) Squeeze their hands together tight, which releases nervous energy and tension and also keeps their hands from reaching for food.

2) Take a deep breath, hold it for a second or two, and then let it out. Repeat this.3) Write down the things they are worried about, and then write a plan for dealing with each worry.

e) Night snacking



Night snacking or night bingeing usually results from feeling lonely or stressed from the day or not being able to sleep. Night snacking may happen in secret, after the rest of the family has gone to sleep.

Plan: Things that help avoid night snacking are the following: 1) Brush your teeth immediately after dinner. 2) Do not watch TV before going to bed. Instead, read, listen to relaxing music, or write about your day or your problems and a plan for each problem.

Sleep: If getting to sleep is a problem, say to yourself: "no thoughts, just rest" and "night thoughts are not right thoughts." Think about a positive thing that has happened to you, even a year ago, like appreciation from someone you helped. Feel how good it feels to rest each part of your body, starting at your toes and working up. Remember, just completely relaxing each part of your body is almost as good as sleep.

f) Comfort and binge snacking



Comfort snacking or comfort eating is using food to make yourself feel better when sad or upset, very much like a form of self-medication. Snacking on sweet, soothing foods, like ice cream, cake, or chocolate, is a sign of comfort snacking. This may be mindless.

Plan: Participant should think up other comforting things to do when sad, instead of eating, such as call a friend, hang out with a pet, or volunteer at a soup kitchen or animal shelter.

<u>Binge snacking</u> – Binge snacking or binge eating is eating very large amounts quickly to cope with a substantial emotional pain or stress, such as bullying. Generally, the food eaten is any food that is available, and this typically occurs in secret. Binge eating is difficult to detect and treat. Young people may not be willing to contact a mentor or support person at the time, as easing the pain as fast as possible is the desperate priority. Usually, they feel quite disappointed in themselves afterwards. Our evidence indicates that binge eating is the extreme of snacking and the cause is the same (emotional distress), just more severe.

Participant should be asked if he/she ever becomes upset and eats large amounts in secret or gorges (binge eating).

Treating binge eating involves participants contacting a support person as soon as possible when upset.

Ways to head off a binge include:

- 1. Let the distress roll over you like a wave. Feel your pain, do not fight it. Let it sit there, just do not act on it. Realize that it will pass, and your pain will get less.
- 2. Cry, scream, or pound a pillow.
- 3. Write down what you feel before you binge, what are you upset about? Write what you might be able to do about it.
- 4. Remember that a binge makes you feel even worse afterwards.
- 5. Say to yourself out loud, "If I eat this food, I will feel a lot worse afterwards." Avoid the vicious circle.
- 6. Contact your weight loss buddy or call a friend or support person.
- 7. Get away from food. Take a walk.
- 8. Take a deep breath, hold it for a second or two, and then let it out.

- 9. Squeeze your hands tight and release.
- 10. Write down your problems, and your plan for each problem.
- 11. Head off the triggers, like do not go near the kitchen or fridge, or do not walk past the candy jar or drive past McDonald's. Go a different direction or get outside.
- 12. If you do cave and binge on food, write down or record exactly how you feel afterwards. Save this, so the next time you are about to binge you can read what you wrote or listen to your recording to help prevent it next time.
- 13. If you do cave and binge, do damage control write down what you might be able to do to fix the weight gain, like cutting back more for a few days. What can you learn from it, so it will not happen again?
- 14. The more you practice, the gets easier to resist a binge.

The medical literature contains statements that binge eating can be precipitated by restricting foods. Our evidence has shown the reverse. When problem foods and snacking were eliminated, binge eating decreased by 80% in our 4 studies (n=137).

g) Relaxing music



Soft music that has a slower beat tends to reduce stress and stress snacking. If participants experience stress (and find themselves eating due to this emotion), they might consider finding several songs to play when they need to wind-down and just RELAX. They can look at a picture of some relaxing scene, such as a waterfall, while listening to the relaxing music. They should close their eyes and imagine the beautiful scene.

h) Distress tolerance (urge surfing):



Urge surfing was one of the most useful methods in our studies for reducing the urge to snack.

Let a bothersome urge to eat roll over you like a WAVE~~~~~. Pause, feel, and be aware of your urge. RELAX, and "SURF" your urge, but without acting on it. Take a risk that you may be hungry or miss the comfort of the food, but that you'll be okay. Breathe in deeply, hold in for a few seconds, then let your breath out. Distract yourself and go about your life. Look at this as a new adventure.

i) Rubber band method



It is possible to stop the emotional brain's urges to snack by snapping a rubber band against the wrist each time you find yourself wanting to snack. Put a rubber band around the wrist snuggly but not tight. A fairly heavy rubber band should be used, so it does produce a bit of a sting when snapped against the wrist.

Plan: When you find yourself headed for the kitchen or fridge to get a snack, snap the rubber band against your wrist while focusing on the urge to snack. The jolt interrupts their snacking thoughts. Once this has been practiced a few times, simply wearing the rubber band on the wrist and looking at it in the moment can prevent snacking from occurring. This method worked especially well for participants in our studies who had to walk through the kitchen when going into their house or room.

Using the above nine snacking elimination methods and avoiding their snacking triggers, 70% of participants (n=27) in our second study reported that they were able to totally eliminate snacking for the entire day. Snacks eaten per day decreased from 2.73 to 0.37 (mean). 72% of participants (n=32) in our third study and 68% in our 4th study (n=24) were able to totally eliminate snacking.

IV. WITHDRAWAL FROM EXCESSIVE FOOD AMOUNTS

The divide-and-conquer approach of this overeating addiction intervention leads to the path of withdrawal/abstinence from problem foods, 1-2 at a time. This is followed by elimination of snacking/grazing between meals by abstinence from snacking during specific time intervals of the day, 1-4 at a time. This divide-and-conquer strategy minimizes withdrawal symptoms and is continued into the 'reducing amounts' process.

The interim goal of this intervention is <u>zero</u> eating between meals and eating only at 3 meals per day - breakfast, lunch, and dinner. Once participants are able to achieve that goal, they are then ready to work on reducing food amounts at meals.

If participants initiate reduction of food amounts at meals before eliminating snacking/grazing between meals, they tend to increase snacking between meals as compensation, a "seesaw" effect.

Procedure for Withdrawal from Excessive Food Amounts:

1. In our second study participants selected only one meal at a time to reduce amounts. This did not work, because they ate more at other meals to compensate. <u>Thus,</u> <u>amounts at all meals should be reduced at the same time</u>.

2. Participants should <u>identify and list food amount triggers or cues</u> – what always happens right before they eat a large amount of food at a meal.



Here are trigger examples:

a) Whenever you see extra food on the dinner table, you end up eating it.

b) Whenever you eat at a restaurant, they serve large portions and you always eat the whole thing.

 c) Whenever you eat at your grandmother's, she always puts heaps of food on your plate.
Extra food in front of you, eating out, and your grandmother's meals are your triggers to eat large food amounts.

3. Write a plan to avoid the food amount triggers.

Example Plan: To avoid those triggers you would:

a) Ask your mom to not have extra food on the dinner table but serve your plate and

then put the food away,

b) Either avoid eating out or immediately box up half of what is served and take it home to eat for a meal the next day. Or, share the meal with a friend.

c) Tell your grandmother that you are trying to cut down amounts and request that she put only your current (reduced) amounts on your plate.

It is much easier to avoid your large amount triggers, than when the large amounts of food are in front of you.

- 4. <u>The participant should select methods that he/she will use to reduce food amounts</u>, including:
 - a) No second helpings
 - b) Smaller plates and bowls
 - c) Naked food (no toppings such as butter, sauces, or sour cream)
 - d) Nervous busters: squeezing hands, white noise (flickering video pattern),
 - relaxation (deep breaths)

In our first study participants used a method of cutting in half amounts of all foods and putting half back, or cutting the half in half again and putting 1/4 back. This is a simple, straight forward method. Nevertheless, participants had difficulty deciding how much to cut off or put back. Furthermore, they were unable to determine how much they typically served themselves as a starting point from which to reduce.

Thus, in our 2nd, 3rd, and 4th studies, participants measured or weighed all amounts they ate at meals.

Measuring /weighing all food amounts at meals

Measuring/weighing all food amounts at meals <u>avoids</u> <u>the indecision of how much to take or put back</u> when reducing amounts. In our 4 studies this was <u>by far the</u> <u>most effective method for reducing food amounts</u>. It converts food amount into a number.

A 17 year old girl, commented, "It works because it's an 'exact number, ' I can't add more or less, there's no decision."

A 10 year old boy stated that weighing food amounts helped him most to lose weight, "because if you eyeball it, it lets you get away with more than you're actually supposed to have."



Measuring/weighing foods also_provides a firm reference point from which to reduce

amounts and maintain. It shows the participant that <u>eating less results in losing weight</u>, and it shows the participant the <u>actual amounts his/her body needs to run on</u>.

There are two ways to do the measuring/weighing procedure:

1) Limited number of mealtime foods:

a) Participant should make a list of 20-25 frequently served, "routine" foods at home meals. Participant will agree to eat only those foods for the rest of this program - including foods for breakfast, lunch, and dinner – and <u>nothing</u> else. Participant will gradually be reducing the amounts of those foods. Limiting to only 20-25 foods makes it much easier to reduce the amounts, because participant will frequently be eating each food and reductions will have more effect. Participant should carefully decide which foods to list. Participant should ask their parents or friends to help. <u>A dietitian is not a good source for help, as the list should be of whatever foods the participant typically eats and not necessarily "healthy" foods.</u> Participant will be able to "mix and match" the foods on their list for meals and repeat each one every 7-10 days.

b) <u>Participant should measure or ideally weigh typical amounts</u> (starting amounts) of all the foods he/she has at meals on his/her list and record the names and weights of the foods in a log or notebook. If participant does not know what typical amount he/she takes of the food at a meal, just start somewhere. If participant typically takes second helpings, both helpings should be weighed together as the starting amount.

Weighing foods with a <u>digital food scale</u> is the most repeatable method of measuring food amounts. The "Tare" function of the scale allows zeroing out the weight of the plate and each food in turn, when the foods are added one at a time to the plate for the meal. Thus, there is no mess, and the meal is ready to eat. (Appendix VI, Food Scale Weighing). Families should try to have the foods on participant'

Thus, approximately 7-10 days should be required to log starting amounts of all the participant's routine foods.

c) Once participant has logged starting weights all foods routinely eaten at meals, he/she then should incrementally reduce the amounts (weights) of all the logged foods by staged, percentage cuts. For example, 5-10% additive cuts are made, aiming for 40-50% reduction from starting amounts. Lesser percentage cuts (e.g. 2-3% at a time) diminish withdrawal symptoms, but most participants in our studies were able to tolerate 5-10% cuts, at least in the initial reduction stages.

Participant will eat **only** those progressively reduced amounts from his/her logged foods list, and no other foods, until his/her weight starts dropping. If his/her weight drops and continues dropping, the food amounts are kept at that percent cut level. If his/her weight stops dropping, amounts are reduced by further percent cuts of all the foods logged, until the weight resumes dropping.

Nearly all participants in our second and third studies reported that they missed the subtracted food amounts only a few days at each cut, when reduction was accomplished in these small increments. Thus, withdrawal symptoms were manageable. In our 4th study, participants reduced amounts in only 1-2% increments and hardly noticed that there amounts were being decreased, until the amounts looked visibly "small."

d) <u>Participant should check-in daily with the provider/mentor</u> and confirm that all food amounts are being measure/weighed at meals, until he/she reaches the goal weight. <u>Sending a photo</u> via their smart phone of the weighed food plate at each meal, with the diameter of the plate or bowl and the weights of the foods, enhances honesty of the participant.

2) No limit to the number of mealtime foods:

The second method to measuring/weighing mealtime amounts is having no limit to the number of foods the participant eats. Having no limit to the number of mealtime foods is more agreeable to parents and families, as the child/teen continues to eat the same foods as the family at meals.

The participant simply measures/weighs and records the amounts of every food eaten at meals. When a same food is served at subsequent meals, the amounts are gradually decreased in small increments, e.g. 2-4% reductions, if the participant's weight is not decreasing in the desired range, e.g. 0.5 kg per week.

In our 4 studies, it was necessary for most of the obese young people to reduce their food amounts by at least 50% or more of their logged starting amounts, in order to bring about significant weight loss.

An Excel-based chart which automatically computes reduced amounts is at http://patientecare.com/workshop/food_amounts.xlsm

Version not requiring Excel - http://patientecare.com/workshop/food_amounts.exe

Parental withdrawal: The parent, likewise, would go through gradual withdrawal from giving treats and excessive amounts at meals to the child/teen. The parent would need to implement "tough love" and must tolerate rejection and "cold-shoulder" from the child when curbing treats/food. If giving a specific treat/food by the parent can be totally abstained from or giving large portion amounts can be curbed to a new level for at least 10 days or more, the parental brain will change, and difficulty resisting giving treats and extra food at meals should cease.

Provider Tips to Assist in Successful Withdrawal of Excessive Food Amounts

a) <u>Removal of triggers</u>

After eating the reduced amounts of foods at a meal, participant may tend to go back for more food. Thus, removal of the temptation (trigger) of more food available is essential. Parents should remove extra food from the table. It is also helpful to serve food in one room and eat in a different room (buffet style). Allowing the participant to leave the dinner table, once the food on his/her plate is consumed, also helps.

b) Cheating at measuring/weighing food amounts

Several participants in our two studies, who were not losing weight, confessed to adding more food to the plate than the current reduced amounts in their food amounts log. Confirmation of weighed amounts by parents and asking participant to text a photo of the prepared plate with the diameter helps to avoid cheating. However, in the end, the participant must be the responsible party, or weight loss will not occur or persist. One 10 yo. boy said it drove him "crazy" to weigh his foods and try not to take more when the extra food was still sitting there. <u>His mother taking over the food weighing/reductions</u> process avoided further difficulty, and that boy was able to eventually lose 15% of his initial body weight. <u>See Motivation section VI.</u>

c) <u>Willpower vicious circle</u>

Trying to resist eating was stressful to participants to the point that they would eat simply to relieve the stress, a "no-win" situation. Participants indicated that trying to resist taking more food at meals bothered them more than hunger between meals when reducing amounts. <u>Getting the food out of sight as soon as possible, pre-weighing and freezing several meals in advance, someone else</u>

weighing the meals, distress tolerance, distractions, and simply taking a risk that they will be hungry all helped this willpower vicious circle.

d) Sneaking Food

Sneaking food by participants may occur between meals when reducing food amounts at meals. Thus, parents should be vigilant about this and try <u>not</u> to keep extra food around the house, even placing a lock on the refrigerator and pantry. Again, however, the participant must be the responsible party. Most participants in our studies, who confessed to sneaking food, reported that they did not actually want to sneak food; they felt driven to do so. Helping participants to block such compulsive urges should be the goal, rather than policing or reprimanding them. (See "j)" Temptation Tips below).

e) Explaining withdrawal symptoms

Each time a new reduction cut is made, the participant may feel hungry, not full, not satisfied, deprived, or cranky after or between meals. It should be explained that these are <u>withdrawal symptoms</u>, or "brain hunger" and not body hunger, and that the symptoms will resolve in 2-3 days. Explain that the brain will change within 2-3 days, and that the participant generally will no longer miss the subtracted food. Most participants in our studies were surprised that they did not miss the subtracted food, when amounts reduction was made in small increments.

If a participant's weight does not drop in 4-5 days, or levels off, the participant should be asked to make another percentage cut. Withdrawal symptoms will again occur, but <u>reassure participant that the symptoms will again resolve in 2-3</u> <u>days</u>. This staged withdrawal in small increments generally does not result in participants missing the subtracted food significantly, which again was surprising to participants.

f) Eating at home

Participants in our studies reported that they did eat large amounts in meals at home. Parental cooperation and involvement in food lists to work on and amount of food served is imperative.

g) Eating out

Eating out of the home is even more characterized by eating large amounts, because typically large portions are served at restaurants and also at friends' and relatives' houses. Weighing foods when eating out is generally not feasible. Thus, <u>minimizing meals eaten outside the home is important</u>. When eating out, cutting in half and boxing up half of the meal immediately at a restaurant, or

sharing the meal with a friend or family member are ways of controlling amounts when eating out. Nevertheless, <u>minimizing eating out is the goal.</u>

h) Support persons help

Someone else either serving their plate or weighing their foods was reported by several participants to greatly help them reduce food amounts. Parents should help younger participants weigh their foods.

i) <u>Being hungry</u>

Explain to participants that being hungry (body hunger) at times is acceptable, similar to being sleepy sometimes. Explain that when you are sleepy you do not immediately drop to the floor and go to sleep. Similarly, you can wait until later to eat. Most participants indicated that hunger symptoms would pass if they ignored the feeling, thus it was likely "brain hunger." Body hunger (stomach grumbling) is fairly tolerable for several hours. Brain hunger (feeling need or urge to eat) is less tolerable but can be dealt with by distractions and urge surfing.

j) "<u>Healthy</u>" Food:

Dictating the types of foods for participants to eat is tricky, as even "healthy" foods may be eaten in excess. Thus, we don't recommend any mention of healthy eating. However, eliminating high fat foods does result in twice the caloric reduction of other foods per volume.

k) Temptation Tips: When tempted to eat larger amounts:

1) <u>White noise video pattern</u>, look at an old TV screen pattern. A flickering pattern has been shown to quell cravings, probably by relaxing the brain or serving as a distraction. White noise videos can be found on the web: http://www.youtube.com/watch?v=RVvQWZ7mg0U

2) <u>Squeeze your hands tight together</u> in the moment of temptation. Or, sit on your hands to avoid reaching for more food.

3) <u>Take a deep breath</u>, hold it for a few seconds, then let it out. Repeat.

4) <u>Avoid your triggers to eat - out of sight out of mind</u>. **ANY food in site is typically a trigger to eat for obese individuals**.

5) <u>Put a snug rubber band on your wrist</u> and snap it against your wrist in the moment when you are tempted to eat more.

6) Use distractions, like music and hobbies

7) <u>Tackle stress</u>. We tend to eat more when we have a stressful day. Write down your problems/worries and a plan for each. If stressed over a decision, do a pro-con list with rating of each reason.

8) <u>Distress tolerance</u>: As with snacking urges, letting the urge to take or eat more roll over you like a wave works as well. Feel the urge, pause, and realize you don't have to act on it. Don't panic, don't fight it, just relax, and "surf" the urge. Take a deep breath, hold it for a few seconds, then let it out. The urge may not totally go away, so look at like an annoying, sore back, distract yourself, and go about your life in spite of it. But, it will get better the more you try this.

9) Look at life as an adventure.

As noted previously, we recommend that the three described withdrawal processes of this intervention be conducted largely in sequence. Problem food withdrawal is a gateway to snacking withdrawal. Participants realize that withdrawal symptoms are bothersome for a few days and then resolve, each time they make a change. Eating between meals (snacking) should be eliminated prior to tackling excessive amounts at meals, so that increased eating between meals does not occur when reducing amounts at meals.

<u>Nevertheless, for more motivated youth, it is feasible to overlap or conduct</u> <u>processes concurrently to hasten the intervention.</u> Several participants and parents in our 2nd study complained that a 6 week problem food process was excessively long when carried out prior to initiation of the other two processes. In our 3rd study a two week problem food elimination period, followed by a four week snacking elimination period concurrent with continued problem food elimination worked well before initiation of a 10 week food amounts reduction period.

V. Other Components of Treating Obesity

A. Phone calls

In each of our three studies, weekly 15 minute phone calls with a mentor were essential for engaging participants in the intervention, as well as acquiring substantial qualitative information.

B. Weight Loss Buddy

Weight loss buddies are sometimes helpful for support and accountability. Participants may share their weight charts, motivations, etc. as well as chat with each other. This can promote camaraderie and provide support. Yet, most of our four studies' participants reported that they did not communicate significantly with each other or share information, because they did not know each other and were embarrassed to talk with someone they did not know about their weight. Face-to-face social gatherings were attempted to offset this, but participants still interacted minimally.

C. Peer Support

Peer support has been shown to be very helpful for weight loss. The <u>weigh2rock.com</u> website contains several peer bulletin boards. Participants may post messages or reply to forum messages for peer support. These boards are monitored daily by a healthcare professional. Face-to-face group meetings are also helpful for peer support.

D. Weigh-ins

Participants should weigh themselves daily and record their weights. Evidence shows that the more frequent the weigh-ins, the more weight is lost. The mentor should monitor the weights frequently to determine if the participant is properly engaging in the intervention and whether the intervention is working. Requiring participants to send a digital photo of the scale display between the feet, as well as parental verification, are ways to monitor accuracy of weigh-in data. Twenty percent (20%) of participants in our first two studies faked their self-reported weigh-in data and 5% in our third study.

D. Group meetings

At our initial group meetings it was difficult to get participants to talk. Then we made a startling discovery: <u>wireless microphones connected to a loudspeaker</u>. The young people, as well as their parents, talked on an on as the wireless microphones were passed around, even though they still did not share their struggles.

VI. Motivation/Resistance

<u>Success</u>

Success might be defined as 'effort to change' eating behavior rather than weight loss (or reducing weight gain). Nevertheless, 'effort to change' is difficult to assess. Initially, in our second study, participants complained that there was excessive pressure to lose weight. Fearing that this might be stressing them, causing them to eat even more, we thereupon issued a statement that there was no pressure to lose weight in the study. We said that the goal of the study was to learn a "process" and retrain their brains, so that eating control would no longer be a problem. Unfortunately, that statement came back to haunt us. The participants in the 2nd study took it literally and used it as justification to avoid eliminating their problem foods, snacking, and excessive food amounts. Thus, we recommend that weight loss be presented as the goal when using this intervention.

Motivating obese young people

This described addiction-based intervention shows promise. The challenge is persuading obese young people to try it. Most obese youth in our studies rated the question "How much does being overweight bother you?" as a 10 on a scale of 1-10 (1=least, 10=most) and that being overweight bothered them more than giving up the foods and amounts they loved. Even so, some became quite angry when asked to eliminate problem foods and several when asked to reduce the large food amounts to which they were accustomed, and some dropped out as a result. Others would never admit what they were actually eating. Fear of withdrawal symptoms, loss of a major coping mechanism (eating), and a need for nervous eating are likely all part of their resistance.

We were startled that participants in our 4th study suddenly opened up and described their struggles. This might be because at the first meeting we offered a financial reward to those who would be the most open and honest in the study.

The following are some thoughts on motivating obese youth to use this intervention:

- Studies of obese youth have found that their quality of life is significantly lower, and severely obese youth have the quality of life rating of youth with cancer on chemotherapy⁴. Thus, given the low quality of life of obese youth, one would expect that they would jump at any chance to eliminate their obesity. Such was not the case with participants in our two studies. Most resisted the intervention.
- It is difficult to distinguish willful pleasure-seeking with food versus true lack of control and inability to change in obese young people. The quandary is whether

obesity is due to brain changes, which the individual cannot help, or is it a voluntary choice? Several youth in our studies reported that they have been overweight so long that they are accustomed to it. They are fatalistic that they will always be that way and do not know how to change. Also, change is scary. One of the oldest clichés is, "Better the devil you know than the devil you don't." A 400 lb. 21 year old in our 2nd study reported that fear of dying from obesity was what finally motivated him to try to lose weight, although he still fabricated his remote weigh-ins. Even though those who said pleasure was the only reason they overate, they still confessed they were disappointed in themselves afterwards, which is consistent with being "hooked" on the pleasure of eating.

- Obese young people have well-honed defense mechanisms and arguments and rationalizations against encroachment on the foods that they are hooked on. Many in our studies claimed that exercise was their key to weight loss. Yet, jogging 40 km (25 miles) is required to work off only 1 lb. (0.45 kg). In contrast, reducing their typical food amounts by only 25% would result in a 1 lb. (0.45 kg) weight loss in only a few days. (See Appendix III, Losing weight by exercise versus reducing food amounts). Furthermore, the Early Bird Diabetes Study showed that lack of physical activity has little correlation with development or resolution of obesity in young people. Rather, obesity causes lack of physical activity.⁵
- As noted in the Background section, parents may enable overeating in their children, because when providing treats or extra food to the child, the parent usually receives love back from the child, which reinforces the parental behavior and may result in weight gain in the child. Convincing the parents of their behavior and that their child does not need more food when the child is not losing weight or is gaining weight, is first necessary in order to work with the child.
- Once most participants in our two studies actually tried the intervention and realized that they could lose weight without missing the food, they reported that this motivated them to continue, until interrupted by life traumas resulting in their overeating again. Initially persuading them to face their overeating problem head-on, try the intervention methods, and continue the methods in spite of life traumas, is the challenge that providers face. Ongoing persuasion and support is essential.
- Undertaking the methods of this intervention by participants, such as weighing their foods, can be fatiguing. Explain to participants that it is similar to practicing for sports or a musical instrument, which also is tiring, but is necessary in order to get better and better at the task.
- Seventy-nine percent (79%) of participants in our second study (n=34) and 85% in our fourth study (n=35) reported that they had <u>bothersome urges to eat</u>, which they wished to extinguish. This is suggestive of a compulsion, similar to Body Focused Repetitive Behaviors. BFRB treatment methods, such as snapping a

rubber band against their wrist, taking a deep breath and letting it out, squeezing their hands together to quell an urge to eat in the moment, or distress tolerance (surfing the urge) do seem effective. Encouraging participants to try such BFRB methods, as well as to measure/weigh their foods, appears to be the most promising approach.



- <u>The concept of the emotional brain versus the thinking brain (above illustration)</u> seems to appeal to young people, namely that the emotional brain has control over their overeating. The thinking brain knows that overeating will make them unhappy afterwards, and they need to train their thinking brain to take over their eating control. Participants can talk to their emotional brain, similar to talking to a young child. Comparable to working with a young child, they can acquire ways to deflect their emotional brain from tempting food.
- Similarly, the concept of body hunger versus brain hunger resonated with participants. Body hunger is a sensation (stomach growling) and is tolerable for several hours similar to sleepiness. Brain hunger is an emotion, an "illusion," and "need" or "urge" to eat something. Brain huger is less tolerable and resisting if often makes it worse. But brain hunger can be dealt with by distractions and urge surfing (relaxing and not acting on it) with the knowledge that it will fade.
- Explain to participants that withdrawal results in changes to their emotional brain. Their emotional brain is what makes them feel that they need to snack and eat large amounts. Once the emotional brain changes, it no longer makes them feel that they need to eat so much.
- Explain to participants that their brains are young and changeable. Retraining their brains is much easier when young, similar to learning a language when young. Attempting this process when age thirty or forty is much more difficult.
- We awarded points, exchangeable for money, to motivate the youth to carry out the intervention procedures in our studies.

Overeating as an addiction is a novel concept for young people (as well as providers), yet our studies found that it resonated with participants, although it did somewhat increase their guilt about overeating. They can be persuaded that withdrawal symptoms will pass, and new coping mechanisms can be developed. Perhaps the idea gives them new hope. Obese young people need believable hope that they can change their relationship with food and permanently lose weight.

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Disclaimer:

This intervention has been tested in four pilot studies without control groups.

Results of the pilot studies shows significant potential for the addiction model approach in treating obesity in youth. Further research on this approach is warranted, and randomized control trials are needed. In addition, further research is essential on motivating obese youth.

A workshop on the methods of this invention is at http://patientecare.com/workshop/

Children's Hospital Los Angeles (Univ. of Southern California) has conducted a controlled study which showed that this approach appears to be superior to conventional multispecialty obesity clinics. http://weigh2rock.com/presentations/W8Loss2Go_Poster_Alaina.pdf

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Appendices attached

- I. Problem foods
- II. Study Admission Screening form
- III. Losing weight by exercising versus reducing food amounts
- IV. WHO/DSM-IV Substance Dependence (Addiction) Criteria
- V. Vicious Circles
- VI. Food Scale Weighing

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Appendices

I. Problem Foods List:

One hundred seventy-four overweight youth responded to polls on weigh2rock.com, which asked what food they had the most problem resisting, what food they felt they were addicted to, or what food they couldn't keep out of their minds. Below are the top foods with which they had the most problem. To avoid getting addicted to new foods, participants should beware of these foods.

Food	# of kids	
candy	19	
pizza	15	
chocolate	14	
crisps (chips)	13	
soft drinks	12	
fast food	9	
sweets	8	
ice cream	7	
cake	6	
burgers	5	
cheese	5	
junk food	5	
pasta	5	
french fries	4	
cookies	4	
milkshakes	2	
snacks	2	
doughnuts	2	
bread	2	

II. Participant Screening Form

First Name: Last Name: Age: Gender: Hale Female
Race: Caucasian (white) Black Asian Latino Native American Other
Home Address: City: State: Zip Code:
Email Address: Phone Number: Parent phone Number:
Birthdate: Height: ft. in. Weight: Ib.
Name of your doctor or the clinic you go to for healthcare:
Is your doctor agreeable to your participation in a weight loss program? CYes CNo
What is your weight goal? What medical conditions do you have?
What medications do you take?
Do you have a scale at home? ^C Yes ^C No Do you have an iPhone 4S, 5, or 5S? ^C Yes ^C No
Describe your home status (example: I live with my mom and dad, foster parents, grandma, guardian, aunt, older sister, etc) Do you live part time with your mom and part time with your dad?
What is your grade point average in core subjects in school? (e.g. math, science, English):
Are you in an Individual Education Program (IEP)? ^C Yes ^C No
How many days were you absent from school during the last semester (last 90 days)?
Do you have a job? O Yes O No If yes, how many hours a week?
What are your plans for the summer (job, vacation, camp, trips, etc., where and how long)?

For the next several questions please indicate your response to each question on a scale of 1-10, with 1 being "Not at all" and 10 being "A lot." Please be honest.

1. How mu	1. How much does being overweight bother you?											
1 🔘	2 0	3 🔘	4 ©	5 🔘	6 🔘	7 🔍	8 🔘	9 🔘	10 🔍			
Not at all									A lot			

2. How committed are you to losing weight?										
1 🔘										
Not at all									A lot	

3. How confident are you that you can lose weight?											
1 🔘	2 0	3 🔘	4 ©	5 🔘	6 🔘	7 🔘	8 🔘	9 🔘	10 💿		
Not at all									A lot		

4. How much will your family help you to keep problem foods out of the house, avoid snacking, and reduce food amounts at meals?										
1 ©	2 0	3 🔘	4 ©	5 🔘	6 🔘	7 ©	8 🔘	9 🔘	10 💿	
Not at all									A lot	

5. How willing are you to weigh-in and send data every day over the iPhone to the program staff?											
1 0	2 0	3 🔘	4 🔘	5 🔘	6 🔘	7 ©	8 🔘	9 🔘	10 🔍		
Not at all	Not at all A lot										

6. How wi	6. How willing are you to totally stop snacking between meals? (Note: with this app you won't miss the									
1 🔘	2 🔘	3 🔘	4 🔘	5 🔘	6 🔘	7 ©	8 🔘	9 🔘	10 💿	
Not at all									A lot	

7. How willing are you to weigh amounts of every food you eat at every meal and record it?										
1 0	2 0	3 🔘	4 🔘	5 🔘	6 🔘	7 🔘	8 🔘	9 🔘	10 🔍	
Not at all									A lot	

8. How wi	8. How willing are you to reduce the amounts of foods you eat at meals in small steps? Note: Using this											
method you won't miss the food. This process is required as part of the program.												
1 🔘	2 0	3 🔘	4 🔘	5 🔘	6 ©	7 🔘	8 🔘	9 🔘	10 💿			
Not at all									A lot			

9. You will make a list of up to 25 different foods you will eat for meals. How willing are you to pick 4 to 5										
foods per meal from <u>only</u> your list and no foods outside of your list?										
1 0	2 🔘	3 🔘	4 🔘	5 ©	6 🔘	7 🔘	8 🔘	9 🔘	10 💿	
Not at all									A lot	

10. How willing are you to participate in weekly 15 minute phone appointments with program staff, where										
you will talk about your progress, struggles, and plans for the week?										
1 🔘	2 🔘	3 🔘	4 🔘	5 🔘	6 🔘	7 ©	8 🔘	9 🔘	10 💿	
Not at all									A lot	

11. How willing are you to meet with program staff at an initial 4-hour group meeting, two mid-program 2- hour meetings, and one final 3-hour meeting?											
1 🔘	2 0	3 🔘	4 🔘	5 🔘	6 💿	7 🔘	8 🔘	9 🔘	10 💿		
Not at all									A lot		

Where did you hear about the program (which clinic, radio station, newspaper, other, be specific}?

Why would you like to be in this program?

<u>Note</u>: This program does not focus on dieting or exercise to lose weight. Are you willing to commit to the approach of this program, which is reducing all food amounts, in small steps, so you won't miss the food? • Yes • No

Type below any questions or comments you may have.

III. Losing Weight by Exercising Versus Reducing Food Amounts

Exercising (http://www.nutristrategy.com/caloriesburnedrunning.htm)

- Jogging at 5 miles/hr (8 km/hr) expends ~750 calories per hour for a 220 lb. (100kg) person
- 3500 calories in 1 pound (0.45 kg) of body fat
- 3500 / 750 = 5 hours jogging or 25 miles (40 km) at 5 m/hr (8 km/hr) to lose 1 pound (0.45 kg)

Reducing food amounts

- If you eat 3000 calories per day (typical for obese people)
- and you reduce amounts you eat by 25%
- (3000)(.25) = 750 calories per day
- 3500 / 750 = 5 days. You can lose 1 pound (0.45 kg) in 5 days by reducing your food amounts by only 25%, which is a lot easier than jogging for 5 hours.

IV. DSM-IV/WHO Criteria for Substance Dependence

A **maladaptive pattern of substance use**, leading to clinically significant impairment or distress, **as manifested by** three (or more) of the following, occurring at any time in the same 12-month period:

- 1. Tolerance, as defined by either of the following:
 - 1. A need for markedly increased amounts of the substance to achieve intoxication or desired effect

or

- 2. Markedly diminished effect with continued use of the same amount of the substance
- 2. Withdrawal, as manifested by either of the following:
 - 1. The characteristic withdrawal syndrome for the substance

or

- 2. The same (or a closely related) substance is taken to relieve or avoid withdrawal symptoms
- 3. The substance is often taken in larger amounts or over a longer period than was intended
- 4. There is a persistent desire or unsuccessful efforts to cut down or control substance use
- 5. A great deal of time is spent on activities necessary to obtain the substance (e.g., visiting multiple doctors or driving long distances), use the substance (e.g., chain-smoking), or recover from its effects
- 6. Important social, occupational, or recreational activities are given up or reduced because of substance use
- 7. The substance use is continued despite knowledge of having a persistent physical or psychological problem that is likely to have been caused or exacerbated by the substance (e.g., current cocaine use despite recognition of cocaine-induced depression, or continued drinking despite recognition that an ulcer was made worse by alcohol consumption)

From: http://www.ncbi.nlm.nih.gov/books/NBK64247 Also at: http://www.uscourts.gov/uscourts/federalcourts/pps/fedprob/2006-09/accountability_table1.html

V. Vicious Circles

The following are examples of overeating vicious circles with suggestions for breaking each circle.

Comfort Eating Vicious Circle 1



This Vicious Circle is about eating to make yourself feel better when sad or upset. Then you gain more weight, which makes you even sadder, so you comfort eat even more. Eating lots of sweet, soothing foods, like ice cream, cake, or chocolate, is a sign of comfort eating. Typically, this is mindless.

Ways to break it: Before you eat something, write down in your food diary how you feel and then what you eat. If you feel sad and you eat something sweet or creamy each time, you are likely comfort eating. Figure out other comforting things to do instead, like call a friend, get a pet, or volunteer at a soup kitchen or animal shelter.

Comfort Eating Vicious Circle 2



This vicious circle is about giving in to a craving, then you feel disgusted, mad, and disappointed in yourself. So you comfort eat, which makes you feel even more disappointed in yourself, so you eat even more, and so on.

Ways to break it: Learning how to handle giving in to a craving without feeling disgusted, mad or disappointed is the way to break this vicious circle. It's "damage control." When you cave, just pick yourself up, brush yourself off, go on, and try again. The more you try, the easier it gets.

Stress Eating Vicious Circle 1



This vicious circle is when you need to munch on something when stressed or bored. Eating lots of crunchy, chewy, "busy" foods like fried food, ribs, nuts, candy bars, or crisps (chips) is a sign of stress eating. Or, it may be any food that is available.

You typically feel worse afterwards, or stress eating may be mindless.

Ways to break it: Stay away from the foods that you eat when stressed. Find ways of dealing with stress that don't involve food, like relaxing deep breaths, distracting fun activities, and typing your problems in your journal, with plans for each problem.. If you eat the food anyway, pick yourself up, brush yourself off, and try again. The more you try, the easier it gets.

Stress Eating Vicious Circle 2



This Vicious Circle is about eating to relieve the stress of being overweight itself. The individual is stressed about the fact that he/she is unable to lose weight or continues to gain and the angst of not being able to do things that other youth can do. This stress causes him/her to turn even more to food for stress relief.

Ways to break it: Accept the fact that you are overweight and can't control your eating. It is a medical disorder, but realize that it is curable. It is possible to eliminate foods you crave or have a problem resisting, eliminate snacking, and reduce large amounts eaten at meals and not miss the food. It is possible to cancel bothersome urges to eat in the moment. Pat yourself on the back for taking the first step.

Binge Eating Vicious Circle



Bingeing is eating a very large amount of food in a short period of time. Afterwards, you typically feel disappointed and disgusted.

Ways to avoid a binge. Typically, a stressful event like exams or being badly teased causes a binge. Here is a plan for participants:

- 1. Let the distress roll over you like a wave. Feel the pain, don't fight it. Let it sit there, just don't act on it. Realize that it will pass the pain will get less.
- 2. Cry, scream, or pound a pillow.
- 3. Write down what you feel before you binge, what are you upset about? Write what you might be able to do about it.
- 4. Remember that a binge makes you feel even worse afterwards.
- 5. Say to yourself out loud, "If I eat this food, I will feel a lot worse afterwards." Avoid the vicious circle.
- 6. Chat with your weight loss buddy or call a friend or support person.
- 7. Get away from food. Take a walk. It gets easier to resist a binge, the more you practice.
- 8. Take a deep breath, hold it for a sec, and then let it out.
- 9. Squeeze your hands tight and release.
- 10. Write down your problems, and your plan for each problem.
- 11. Head off the triggers, like don't go near the kitchen or fridge, or don't walk past the candy jar or drive past McDonald's. Go a different direction or get outside.
- 12. If you do cave and binge on food, write down or record exactly how you feel afterwards. Save this, so the next time you are about to binge you can read what you wrote or listen to your recording to help prevent it.
- 13. If you do cave and binge, do damage control write what you might be able to do to fix the weight gain, like cutting back for a few days. What can you learn from it, to keep it from happening again?

Grazing Vicious Circle



Grazing is eating or drinking continually. Keeping candy in your pocket or desk, always sipping a soda, frequent trips to the "goodies" table at work or school, and frequent getting snacks from the vending machine are examples of grazing.

Ways to break it: Avoid the triggers of having food around you - out of sight, out of mind. When you have the urge to graze, let it roll over you, feel it, but don't act on it. Once you try this, the urges will pass. When they come back, they will get less each time. Look for other ways to relieve stress, such as squeezing your hands together, taking deep breaths, writing your problems down with a plan to deal with each problem. And, realize that when you give in to the urge to graze, you usually feel worse afterwards, and it keeps the circle going.

Self-Esteem Vicious Circle



This vicious circle is about gaining weight, which lowers your self-esteem, so you care even less about how you look, so you eat more and gain more weight and so on. You tend to forget about clothing styles, because it's harder to find stylist clothing in larger sizes.

Ways to break it: Even though you have gained weight, you can still look attractive by styling your hair and seeking out stylish clothing in larger sizes. You can find clothing tips online (e.g., http://www.blubberbuster.com/board/clothingFashion.html)

Slip-ups Vicious Circle



This vicious circle is about slipping up and eating what you're trying to avoid. Then you feel "I've blown it, so I might as well eat what I want."

Ways to break it: Success breeds success - when you slip up, just go right back to your plans in the program, then you won't feel that you've blown it, and you'll keep going. Learn from what happened so you can avoid it happening again. It's called "damage control."

Will Power Vicious Circle



This vicious circle is about trying to resist a craving or tempting food, which stresses you out the more you try to resist, so you finally cave and stress eat.

Ways to break it: Don't try to fight a craving or temptation. Just let it roll over you like a wave. Feel the desire for the food, just relax and don't act on it. The craving will pass in a minute or two. Distract yourself with something fun that keeps your hands busy, like a project, a drawing, or playing a musical instrument. And get away from the tempting food.

Exercise Vicious Circle 1



This vicious circle is about not exercising, because you are not able to move much without getting out of breath.

Ways to break it: Don't worry about exercising, just do any physical activity that you enjoy, like maybe volleyball, swimming, walking your dog, or dancing lessons. Strength training with free weights is also good exercise. The main benefit of exercising is not burning calories but raising your endorphin level and relieving stress.

Exercise Vicious Circle 2



This vicious circle is about not exercising because you are embarrassed to be seen exercising, or you fear being teased.

Ways to break it: Find some fun activity you enjoy doing, like partner dancing. It doesn't matter what size you are, moving is fun, particularly to music. You can dance by yourself in your room. Again, the main benefit of exercising is not burning calories but raising your endorphin level and relieving stress.

VI. Food Scale Weighing

A <u>digital food scale</u> is the best way to measure the amount of each food eaten at meals. Here's how to use the digital food scale:

- 1. Place a medium-size plate on the food scale and then turn the scale on. The scale will zero out the weight of the plate. Or, push the "Tare" button to zero out the weight of the plate.
- 2. Put your first food on the plate, like pasta, the amount you typically would take. Only the weight of the pasta will appear on the scale. Record the weight of that food in your food list.
- 3. Push the "Tare" button on the food scale. The weight of the plate, plus the first food, will be zeroed out.
- 4. Add your second food to the plate, the typical amount. The new weight will be only that of the second food. Record the weight of that food in your food list.
- 5. Repeat for each food of the meal. Then you are ready to eat.
- 6. Repeat this procedure for each subsequent meal until you have recorded the typical amounts of all foods that you eat at meals.
- 7. Try to narrow down your foods to a limited number of "routine" foods that you can repeat every 7-10 days.

Once you have weighed and recorded amounts of all the typical foods you eat at meals, you are ready to compute your reduced amounts, for example a 25% reduction in amounts of all your foods listed. When you have computed the reduced amounts, then at each subsequent meal you will weigh out the reduced amounts of each food you add to your plate, in the same manner as when you were recording the amounts.

- 1. Use the Tare button to zero the plate weight.
- 2. Add the first food to the plate. Adjust the amount of the food you to equal the current reduced amount on your food list.
- 3. Use the Tare button to zero both the food and the plate weight.
- 4. Add the next food for your meal to the plate. Adjust the amount of the second food you to equal the current amount on your food list.
- 5. Use the Tare button to zero both the weights of the two added foods and the plate weight.
- 6. Repeat this procedure for every food for that meal.
- 7. Once you've added all the foods for your meal per the current amounts on your food list, you are ready to eat.
- 8. Repeat this procedure for each meal thereafter.

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