Intolerance of Uncertainty: A Risk Factor in the Development of Anxiety and Eating Disorders

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Anxiety is thought to be an important driving force in the development and perpetuation of eating disorders, and it been clearly shown that anxiety traits or the presence of an anxiety disorder commonly occur prior to the development of an eating disorder (Biol Psychiatry 2007; 16:348).

Cognitive models of psychopathology that emphasize the role of cognitive biases in the etiology and maintenance of problems such as anxiety disorders have also been applied to anorexia nervosa (AN) and bulimia nervosa (BN) (Beck & Clark, 1997; Eysenck, 1992, 1997; Shafran et al., 2007). Intolerance of uncertainty (IU) has been identified as a cognitive bias that may play a large role in these disorders.

The importance of cognitive biases has been supported by research in both children and adults demonstrating that individual differences in how much we focus on stressful or negative emotional stimuli are related to psychopathology (Lonigan & Phillips, 2001). Beck and Clark’s 1997 model proposes that the purpose of the early stages of cognitive processing of incoming information is to assign priority to certain stimuli over others. Thus, cognitive biases direct an individual’s focus of attention and are important in understanding anxiety and other disorders. This model suggests that individuals may have “hypervalent cognitive schemata” (cognitive frameworks), where “reality” in general is viewed as threatening. Thus, information about oneself, the world, and the future is continuously processed as dangerous by some individuals. Barlow (2002) suggested that these schemata act as trait-like sources of vulnerability for the development of anxiety and its related disorders (Barlow, 2002).

More specifically, highly anxious individuals tend to interpret ambiguity or uncertainty as significantly threatening (Muris, 2010). According to Barlow (2002), this cognitive bias, i.e., a general propensity to interpret ambiguity or uncertainty as significantly threatening, almost without exception seems to reflect the presence of anxiety and its disorders, forming a psychological “marker” of anxiety. For example, many stimuli that an individual encounters in daily
life are actually ambiguous. For example, entering a social situation or driving a car could be benign but might also indicate impending danger should they be processed as threatening. Research has shown that elevated anxiety and its associated intolerance of uncertainty are potentially fundamental cognitive processes that may be risk factors for the development and maintenance of eating disorders.

**How Anxiety Leads to Eating Disorders**

Anxiety disorders occur more frequently in AN compared to the general population (Kaye et al., 2004). Subjects with AN may more quickly be conditioned to fear-producing stimuli, and may have greater difficulty with extinction of anxious behaviors (Strober, 2004). Furthermore, there is evidence that there is a shared transmission of anxiety disorders and eating disorders (Keel et al., 2005).

Given this clear association between anxiety and eating disorders, it is not surprising that similar cognitive biases demonstrated in anxious individuals have also been found in persons with eating disorders. Cognitive biases, specifically intolerance of uncertainty, have been shown to have important implications for the development of eating disorders. Sternheim et al. (2010) found that uncertainty was uncomfortable for AN individuals and resulted in a strong desire for control (i.e., organizing and planning).

Persons with eating disorders appear to control their eating, weight, and shape as a way to address their perceived lack of control over interpersonal and overall life stressors, and these behaviors could be an attempt at establishing control and managing internal uncertainty around life events. If there is in fact intolerance of uncertainty in various environments in eating disorders, then focus on the eating disorder itself could be a means of alternate control and thus alleviating the negative emotion from intolerance of uncertainty (IU).

In a study we conducted that examined IU in eating disorders, both individuals with AN and BN had significantly higher intolerance of uncertainty compared with a control group. In addition, individuals with eating disorders and without current anxiety or depressive disorder demonstrate elevated IU compared with controls (Frank et al., 2011). In a nonclinical population of individuals with problematic or normal eating attitudes, Konstantellou et al. (2010) found that those with problematic eating attitudes scored higher on measures of IU. The authors hypothesized that: (1) factors found in individuals with eating disorders, such as need for control, may be due to high levels of IU, and (2) IU may be a risk factor for needing certainty but also a maintaining factor resulting in using the eating disorder as a way to achieve certainty.

One of the most common anxiety disorders found in individuals with eating disorders is generalized anxiety disorder (GAD) (Pallister & Waller, 2008), and Konstantellou et al. (2011) investigated shared vulnerability factors between the two disorders. Results of their study indicated that individuals with eating disorders and GAD scored similarly to those with EDs without GAD on a measure of IU. Additionally, EDs with and without GAD scored significantly higher than controls on intolerance of uncertainty. This indicated that GAD was not driving high IU, which may be inherent to EDs, and thus a potential trait marker.

Along these lines, and consistent with conditions that commonly co-occur with eating disorders, IU has more recently been linked to obsessive-compulsive disorder (OCD) (Tolin, Abramowitz, Brigidi, & Foa, 2003). Not surprisingly, an excessive need for certainty (Makhlouf-Norris & Norris, 1972) significant anxiety around obtaining certainty (Beech & Liddell, 1974; Kozak, Foa, & McCarthy,
1987) has been found in individuals with OCD. Further, it has been suggested that compulsions and rituals may be driven by IU (Tolin et al., 2003). Social anxiety (Carleton, Collimore, & Asmundson, 2010), panic disorder (Buhr & Dugas, 2009), and depression (Dugas, Buhr, & Ladouceur, 2004) have also been linked to IU.

By way of explanation as to how IU leads to symptoms, individuals with ineffective instrumental and emotional coping strategies are challenged in their efforts to adapt. Anxious individuals engage in behaviors designed to achieve certainty in order to gain a sense of control over perceived negative situation (Krohne, 1993). Thus, IU may drive worry, obsessions, compulsions, and other behavior and cognitions that have been linked to various forms of anxiety and eating disorders. However, behaviors and cognitions may serve as less than effective processes through which one attempts to adapt (Holaway et al., 2006).

**Clinical Implications**
Given the importance that IU may have in the development and maintenance of anxiety and eating disorders, it seems imperative that clinicians assess and treat this cognitive bias. The Intolerance of Uncertainty Scale (IUS; *J Anxiety Disord* 1998; 12:139) is a helpful self-report measure that specifically assess for this bias in individuals. Treatment should consist of methods that focus on challenging this bias as well as the resultant need for control. Cognitive behavioral techniques that focus on challenging maladaptive beliefs regarding certainty as well as developing exposure and response prevention exercises that result in habituation to feelings of uncertainty and loss of control should be utilized (Starcevic & Berle 2006; Tolin et al., 2003). For example, patients with AN may be directed to attend a social situation (i.e., party) without engaging ahead of time in behaviors potentially designed to establish control, such as excessive exercising.

**Conclusion**
In conclusion, IU is elevated in most anxiety disorders, as well as in AN and BN, and may be a mediating factor in the expression of anxiety and eating pathology. Therefore, perception of control and intolerance for uncertainty should be particularly considered in the work with these patients since anxious individuals are characterized by their own perceptions of not being able to handle situations that are uncertain.

**Suggested Reading**


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UPDATE: EDNOS: A Diminished Diagnosis in DSM-V?

A team of eating disorders professionals from Portugal designed a test to assess the impact of proposed changes in diagnostic criteria in the coming DSM-V on the prevalence of cases of eating disorders not otherwise specified (EDNOS) in the community. As Dr. P. Machado and colleagues reported at the September 15-17 European Council of Eating Disorders, in Firenze, Italy, when they re-analyzed 85 cases of EDNOS drawn from two epidemiologic study community samples (n=3048) and reclassified them using both the provisional criteria of the DSM-V and the proposed criteria for Broad Categories for the Diagnosis of Eating Disorders (BCD-ED), the diagnosis applied to far fewer patients. The authors found that applying the draft proposed by the DSM-V workgroup (www.dsm5.org) dramatically reduced the number of previously diagnosed cases of EDNOS from 85 to 55. Using the Walsh and Sysko (2009) proposal of a set of broad categories of eating disorders, the number of EDNOS cases dropped from 85 to 5.

Anorexia Refeeding Guidelines Are Challenged

"Low and slow" may not be the way to go.

Current widely used guidelines for refeeding hospitalized teens with anorexia nervosa (AN) have been challenged by a team of researchers at the University of California, San Francisco (UCSF). According to the researchers, teens who are hospitalized do not gain considerable weight during their first week in the hospital when current refeeding guidelines are followed (J Adolesc Health, January 2012).

Current guidelines from the American Psychiatric Association, American Dietetic Association, and other groups state that patients should start with approximately 1200 kcal/day and advance slowly by 200 kcal/day every other day. The "start low and go slow" approach is taken to avoid the refeeding syndrome, a potentially deadly condition that results from rapid shifts in electrolyte levels during refeeding.

Andrea Garber, PhD, RD, who led the study, and her colleagues in the Division of Adolescent Medicine at UCSF, found that the current recommendations for refeeding were not effective among a group of 35 teenage girls, most of whom were Caucasian. The girls had been admitted to the hospital with low blood pressure, low body mass indexes, low heart rate and low body temperature. A large proportion of the girls received low-calorie diets based on the current guidelines. The girls received 6 small meals per day and were given high-calorie liquid supplements when they refused food. Heart rates were checked continuously and electrolyte levels were measured twice a day. Even though those who had the low-calorie diets did not develop refeeding syndrome, approximately 83% initially lost significant amounts of weight and had no overall weight gain until the eighth day of hospitalization.

Although 94% of study participants started on less than 1400 kcal per day, the study included diets that ranged from 800 kcal to 2200 kcal to analyze the effect of increasing calories.

Low-calorie refeeding led to greater weight loss

The University of California researchers found that girls who were started on low-calorie diets lost considerably more weight in the hospital, while the higher-calorie diets resulted in a shorter time in the hospital. In fact, Dr. Garber noted that for each 100 additional kilocalories, the hospital stay
was one day shorter.

Thus, the authors feel that the current guidelines for refeeding teenage patients with AN are too cautious. Other issues were also raised by the study. For example, while insurance costs may be reduced as a result of shorter hospital stays, patients may not be ready to be discharged. No adverse effects were reported among the girls who were on higher-calorie diets.

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**Can Teenagers with AN Give Consent for Treatment?**

*The very nature of their illness often interferes.*

Parents have long acted as decision-makers for their teenage children who need treatment. This has been based on an assumption that adolescents do not have enough cognitive maturity to make their own decisions about treatment. Sheri L. Turrell, PhD and colleagues at the University of Toronto noticed that to date there had been no empirical comparisons of the ability of teens with and without mental illness to understand, appreciate, reason, and make their own treatment choices (*Int J Eat Disord* 2011; 44:703).

Dr. Turrell and her co-authors also noted that the issue of capacity is daunting when the patient has anorexia nervosa (AN). Intervention with AN patients can be problematic due to a combination of the tenacity and egosyntonic nature of AN and most patients’ denial that they are ill. Since AN patients are frequently reluctant to participate in recommended treatment, it would be logical to assume that they would be poor candidates for making decisions about their own treatment.

To test their theory, the authors designed a study of 35 adolescents with AN, all of whom were inpatients in a tertiary care, university-affiliated hospital, and 40 healthy adolescents from the community. The goal was to compare the ability of the inpatients and healthy adolescents to make decisions about treatment. To do so, the authors used hypothetical vignettes describing medical and psychiatric illnesses requiring treatment decisions. After obtaining consent from the patients’ parents, the team approached potential participants, and all agreed to participate. All the participants completed the same measures: body mass index, the Eating Attitudes Test (EAT-26), the Youth Self-Report, a self-report questionnaire for 11- to 18-year-old covering a broad range of symptoms, including internalizing and externalizing problems. Participants also took the Wechsler Abbreviated Scale of Intelligence, and the Immediate Verbal Memory subscale of the Children’s Memory Scale. To test their treatment decision-making ability, the participants participated in the MacArthur Competence Assessment Tool Treatment (MacCAT-T), a semi-structured interview that assesses the four components of capacity to consent to treatment in the context of real and/or hypothetical illnesses. All participants were presented with two hypothetical vignettes depicting individuals with illnesses, scoliosis and depression. The participants were presented with two treatment options, the risks and benefits of each, and finally with the participants reasoning about which treatment choice they would prefer. Information about each illness was given.

In addition to responding to the two vignettes, participants with AN completed the MacCAT-T in relation to information relevant to their own admission for AN. Although it was made clear that “no treatment” was not an actual option in their own cases, this was used as a second treatment option.
Patients were less able to make consistent treatment decisions

The authors reported that participants with AN were less able than community participants to engage in consequential reasoning, less apt to generate everyday consequences of their decisions, and less able to make logistically consistent decisions about the vignettes. The authors noted that since many persons with AN perceive the illness as an integral part of their identity, it may be very difficult for them to objectively compare and contrast the pros and cons of treatment.

Most of the teens with AN and those from the community were in high school (71% and 70%, respectively). Participants with AN had significantly lower BMIs and higher EAT-26 scores than did their counterparts from the community. One participant from the community was removed from the study when the screening showed she had symptoms of an eating disorder.

The authors suggest that future studies focus on factors that relate to indications of capacity, as well as attempting to gain a better understanding of the impact of hospitalization on reasoning—both with an eye to protecting AN patients’ rights to informed consent about treatment.

Coping with ‘Bad Body Image Days’

Nearly half of a group of college women used eating to cope with body image concerns.

Results of a recent study of first-year college women has revealed new information about coping mechanisms college women use to deal with concerns about body image. One finding was that college women with body image concerns react in two distinct ways: either with a self-defeatist attitude or by adopting self-improvement strategies, including setting healthy exercise and eating goals (Body Image 2011; 8:335).

Dr. TeriSue Smith-Jackson and colleagues at Utah Valley University, the University of Utah, and Brigham Young University used several semi-structured interviews with 30 first-year female college students to uncover the women’s strategies for dealing with “bad body image days.” The researchers initially surveyed 235 first-year students about the issue of body image. They then conducted a semi-structured interview with 30 women who had body image concerns. The women’s identities were kept confidential. The women in the study group had an average body mass index (BMI, kg/m²) of 24 (range: 18.4 to 39.3 kg/m²). Of the 30 women, 43% indicated that they wanted to lose weight, while 37% said they were not doing anything about their weight. No participants were trying to gain weight.

Each woman participated in a 45- to 75-minute semi-structured face-to-face interview about body image experiences. For the coping section of the interview, the interviewer led the discussion by saying, “Sometimes girls can get down or discouraged because they do not like their appearance, weight, or body shape/size. You may or may not have experienced this.” Participants were then asked what they do to help themselves feel better when they don’t feel good about how they look. Each participant was then measured for height and weight, so the researchers could compare them to other university populations. Each participant was also provided information about campus resources for body image concerns and eating disorders and a $50 gift card to the university bookstore.
Modes of coping

When asked what they do when they don’t feel good about themselves, many of the girls responded with what other women do in that situation. Talking in the third person was very common throughout the interviews, according to the authors, who think that the participants felt more comfortable talking about an uncomfortable subject in this way.

The women used a variety of coping mechanisms, including: exercise and healthy eating, changing their appearance or going shopping, socially interacting, turning to spirituality or religion, getting out of their apartments, or, in a few cases (3 women), isolating themselves at home. For 43% of the women, exercise made them feel better about themselves. Four women (13%) also mentioned that their eating habits improved when they were exercising regularly. The next most common approach was to use more makeup or re-do their hair when they felt bad about themselves. Others talked to friends and family members (23%) or went on Facebook to see how many messages showed that friends cared about them. Only one student explicitly described how she accepted herself rather than coping with pressures of or conforming to societal norms. She described standing before the mirror for periods such as 20 minutes and eventually getting used to the image before herâ€””This is who I am,” she would say, “Nothing is going to change. This is who I am.”

The authors also found that there was a self-perpetuating cyclical relationship between eating and feeling bad. That is, when the women felt bad about themselves, they ate, which made them feel worse about themselves. Forty-three percent of the women mentioned eating to cope with body image concerns. About 10% of the girls mentioned restricting eating and other psychological problems. Eating then led to negative feelings about themselves, and the cycle continued. A common outcome was being depressed or frustrated. One woman described her frustration as, “staring deeper into the hole.” In contrast, 30% of the women talked about braking this cycle by self-improvement, such as eating better, exercising or changing their appearance.

The authors think that their findings shed light on and hopefully will prompt additional investigation into methods of coping with varying degrees of body image dissatisfaction among women.

A Growing Trend: Lower Admission Weights for Patients with AN

Taking a proactive stance against waiting to admit patients for inpatient care.

According to British eating disorders specialists Drs. Richard Sly and Bryony Bamford, inpatient eating disorders unit are increasingly being asked to admit patients at lower body mass indexes (BMIs), often delaying hospital treatment until it is medically unavoidable. At their hospital, St. George’s Hospital, London, there has been a consistent drop in inpatient BMIs for adults with anorexia nervosa (AN), from a yearly average of 14.1 kg/m² in 2007 to 13.6 kg/m² in 2009.

The two physicians designed a study to explore two hypotheses: first, that patients admitted at lower BMIs will have poorer weight outcomes at the end of treatment, and next, that these patients will have higher rates of re-admission within one year of discharge (Eur Eat Disorders Rev
To test the hypotheses, the authors studied 79 females and 3 males recruited from a national eating disorder inpatient unit. The mean age of participants was 27 years and participants met *DSM-IV* criteria for AN restrictive subtype (80.5%) or AN binge-purge subtype (19.5%). Participants were assigned to two groups: those with a BMI greater than 15 (15 patients) or BMIs less than 15 kg (67 patients). Patients were allocated to a “poor weight outcome” subgroup if their discharge weight was less than 17.5 or to “good weight outcome” subgroup if their discharge weight was more than 17.5.

**How patients did**
As the authors had anticipated, there was a significant positive correlation between a patient’s admission BMI and discharge BMI. Patients who had been admitted with BMIs greater than 15 had significantly higher BMIs on discharge than did those whose BMIs had been less than 15 on admission. Dropout rates were similar between the two groups (53% and 54%). Weight gained and duration of treatment were approximately the same in the two groups of patients.

As predicted, 95.5% of patients who had been originally admitted for treatment at BMIs less than 15 were readmitted to treatment within a year of discharge; only 1 patient with a pre-admission BMI above 15 was re-admitted. Thus, there was a significant relationship between low admission BMI and subsequent re-admission for treatment.

As Drs. Sly and Bamford note, no differences were seen in total weight gain across hospital stay, which meant that those patients admitted at lower weight were subsequently being discharged at lower weights. Nearly one-third of patients admitted below a BMI of 15 were readmitted for treatment within 1 year. Should longer hospital stays be promoted to achieve healthy weight gain before discharge or should patients be admitted at an earlier stage of AN to maximize the chances of patients achieving a healthy weight gain before being discharged? The authors obviously vote for being proactive, and admitting patients earlier to achieve a better outcome and reduce the need for re-hospitalization.

**Body Dissatisfaction Among Overweight Black and White Girls**

*The first study to show little difference between races.*

The increasing trend toward obesity among American children is a true public health concern. Results of one 2010 study noted that more than a third of children between the ages of 6 and 11 years in the U.S. are currently overweight (body mass index [BMI, kg/m^2]) for age ≥ 85th percentile (*JAMA* 2010; 303:242). Along with the increased weight come not only significant physical health problems but risk factors for body dissatisfaction and other eating problems.

A recent study assessed racial differences in body dissatisfaction among Black and White girls in a randomized trial (*Body Image* 2011; 8:379). Authors N.R. Kelly, C.M. Bulik, and S.E. Mazzeo of Virginia Commonwealth University, Richmond, and the University of North Carolina, Chapel Hill, note that since pediatric obesity is more common among black children in the U.S. than among their white peers, one might expect overweight black girls to report greater dissatisfaction with body size. Yet, historically this has not been the case; instead, black girls typically endorse a
larger ideal body size and have greater body satisfaction than their white counterparts.

The authors assessed racial differences in BMI percentile, body size perceptions and ideals and body dissatisfaction among girls participating in the Nourishing Our Understanding of Role Modeling to Improve Support and Health (NOURISH) study, an intervention for overweight children. Using the body silhouette method, Dr. Kelly and colleagues recorded body dissatisfaction and body size perceptions among 58 girls. The girls were 6 to 11 years of age, and 66% were black and 34% were white. The Silhouette method includes 9 ranked drawings of male and female figures that incrementally increase from underweight to overweight.

The participants were instructed to select their current and ideal silhouettes from the 9 choices. Body dissatisfaction was then calculated by ascertaining the absolute differences between participants' current and ideal silhouettes. Height and weight were measured in a private room, and used to calculate BMI percentile. Height was measured by trained staff to the nearest ¼ in., using a stadiometer and weight was measured to the nearest ¼ lb, using a medical balance beam scale. On a demographic questionnaire, parents or caregivers were asked to provide the child's age, race, and gender.

Body size perceptions, ideal size, and dissatisfaction did not differ

Unlike earlier studies, there was no significant difference in body dissatisfaction between white and black girls. Only one girl from the entire group was satisfied with her body, and all others selected a smaller ideal silhouette than their current one. Although the difference was not statistically significant, black girls selected a silhouette to represent their current body size that was one size larger than the white girls' choice; consistent with this pattern, the average BMI for the black girls was higher (98.1 percentile) than the white girls (96.8.1 percentile).

This is the first study to suggest that both black and white girls seeking weight-loss intervention report similarly high levels of body dissatisfaction. The authors feel that this strengthens an emerging argument that despite an overall preference for a larger body size, this cultural tolerance for size diversity might not extend to the higher end of the BMI spectrum, especially among persons seeking weight loss treatment. Also, although black girls in the study preferred a larger body size than did their white peers, their average ideal silhouette was significantly smaller than that reported by black youth in the community. This finding might have significant clinical implications for racially diverse girls enrolled in weight-loss intervention programs, given the noted association between drive for thinness and body dissatisfaction.

99% of girls preferred a smaller body size

As the authors noted, 99% of girls in their study preferred a smaller body size than their current one. This is consistent with a recent study of body dissatisfaction among children enrolled in a weight management trial (Zeller et al., 2010), but contrasts with community-based studies, where only between 52% and 63% of overweight youth preferred a smaller body. And, as in earlier studies, overweight girls underestimated their body size. These body size misperceptions could be related to trends in BMI in the U.S. Since most of the girls in this study were black, it might be that the body size of the girls in this sample was relatively normal with respect to their peer group.

Drs. Kelly, Bulik, and Mazzeo caution that since the study sample was exclusively composed of overweight girls who agreed to participate in the NOURISH program, a pediatric obesity intervention, results from the study can't be generalized to other children who are not seeking
Auditory Hallucinations in Anorexia Nervosa

A puzzling occurrence that was treatable.

When a 14-year-old girl got home from summer camp, she steadily reduced her intake, avoiding lunch and snacks; her weight fell until she reached a body mass index of 14 kg/m$^2$, and was hospitalized. She told her clinicians that the reason she had stopped eating was because she felt she had a ‘fat belly.’ As reported by Dr. Luis Rojo-Moreno and his colleagues at the University of Valencia, Spain, approximately 1 week after admission the patient reported hearing male voices ordering her to ‘stop eating or you will develop a belly.’ The voices were heard before meals and before she went to sleep. The voices caused her great anguish, and she could not determine where they originated. All blood tests, including enzymes, vitamins and heavy metals, were normal.

The patient was treated with risperidone (Risperdal®), a drug commonly used to treat schizophrenia, at a progressing dosage of up to 4.5 mg/day. The voices gradually disappeared and the patient was symptom-free when she was discharged from the hospital. She was diagnosed with anorexia nervosa, restrictive subtype.

A second, older patient

The authors also described a second patient with AN who had auditory hallucinations. In this case, the patient was an 18-year-old female hospitalized with a diagnosis of restrictive type AN. When she was admitted, her BMI was 16.4 kg/m$^2$. The patient had an eating disorder for one year that had been triggered by friends’ comments about her body. She developed a phobia about weight grain, had a distorted body image, restricted her food intake, and developed amenorrhea. She became aggressive toward her family members, using threats, aggressive gestures, and manipulative behavior.

During the second week after being admitted to the inpatient unit, the patient began complaining about hearing voices originating outside of her head. She thought the voices said, ‘Don’t eatâ€”they are trying to trick you’ (referring to the hospital personnel).

As in the case of the first patient, this patient was also treated with 4.5 mg/day of risperidone. Her symptoms lessened, but then tended to reappear during stressful situations. The voices caused great anxiety and at one point the patient had to be restrained. A month and a half after admission and after undergoing psychological as well as pharmacological treatment with selective serotonin reuptake inhibitors (SSRIs) and an antipsychotic agent, the patient was asymptomatic and was released with a diagnosis of restrictive type AN.

In both cases, the auditory hallucinations were recognized casually when clinicians asked the patient if she heard voices. The onset of hallucinations occurred after the onset of the eating disorder, and the appearance of symptoms coincided with the first few weeks of admission to a unit specifically designed for treating eating disorders. The hallucinations responded quickly to
A warning voice

Hallucinations are rather common among eating disorder patients. When patients are asked about their thoughts, they often report that they hear a voice telling them not to eat or that if they eat they will be fat. Isolated cases have been reported of co-morbidity between AN and psychosis. In one of the few psychopathological studies about psychotic symptoms in patients with eating disorders, the authors believed that the most common symptoms were delusions (mostly paranoid delusions) and auditory hallucinations and generally appeared within the context of a major affective or schizoaffective disorder (Int J Eat Disord 1984; 145:420).

The authors also point out that eating disorders frequently have a high psychiatric comorbidity; for example, in one study, 97% of anorexic patients had a diagnosis of axis I comorbidity (Psychosomatic Med 2006; 68:454) They also note that the good symptomatic response to antipsychotic medication shown by both of their patients supports the possibility that this could be a defining symptom in a subgroup of AN patients who require distinct pharmacological and perhaps psychotherapeutic treatment. However, the therapeutic improvement might also be a nonspecific effect of these drugs linked to reduction of stress.

Clues to Eating Disorders in College Freshmen Home for School Break

Eating disorders are easy to conceal, especially when the college is far from home.

When college freshmen across the U.S. come home for the holidays, parents and family members as well as friends may discover that their favorite student has developed an eating disorder during his or her first semester. Bonnie Brennan, clinical director of Denver's Eating Recovery Center's Adult Partial Hospitalization Program, Denver, notes that for many young adults, pressures of the first semester of college can create “the perfect storm” for developing an eating disorder. This is easy to hide from family members, particularly if the student attends college far from home.

Five winter break warning signs

According to Brennan, there are 5 winter break warning signs that may indicate that a teen has an eating disorder or could be at risk of developing one:

1. Noticeable weight loss or weight gain since he or she entered college.
2. Helping with the preparation of holiday meals but not eating them.
3. Excessive exercise, even exercising outdoor in cold conditions.
4. Withdrawal from family and friends, and avoiding social gatherings, even if she or she hasn’t seen family members and friends for months.
5. Discussing college in a “stressed out” or obviously anxious manner or altogether avoiding conversations about school.

Parents are encouraged to seek assessment of eating disorders if they notice these or other troubling behaviors in teens home for winter break. According to Brennan, academic and social pressures and anxiety tied to being away from home for the first time are common triggers of first-semester eating disorders. A 2006 poll of U.S. college campuses conducted by the National
Eating Disorders Association found that 1 in 5 college students believe that at some point they have had an eating disorder.

**Exercise Intervention for Women with AN**

*One key is emphasizing healthy exercise programs.*

For from 40% to 80% of women with AN, excessive exercise is a proverbial dual-edged sword: it brings guilt but also provides relief about not gaining weight. Most of these patients also have a great aversion to fat, and report the major reason to exercise is to retain their shape and keep weight off. Also, many AN patients are at high risk for a variety of serious medical complications, such as bone fractures, electrolyte imbalances, and sudden death, which can be caused by or exacerbated by excessive exercise.

Christie Zunker, PhD and colleagues at the Neuropsychiatric Institute, Fargo, ND, evaluated six exercise intervention programs in clinical settings, including three that were conducted in hospitals (*Int J Eat Disord* 2011; 7:579) identified in the medical literature.

In one controlled study, by Calogero and Pedrotty (*Eat Disord* 2004; 112:273), designed to decrease excessive exercise among women in a residential eating disorders treatment center, a 60-minute exercise session was conducted four times a week and included a combination of stretching, posture, yoga, Pilates, partner exercises, strength training, balance, exercise balls, aerobic activity, and recreational games. Women with AN in the exercise group gained 33% more weight compared to women in the control group. In another study, 16 outpatients diagnosed with AN were randomized to either an exercise group with a 3-month graded exercise program or to a control group where patients were encouraged to limit their exercise (*Int J Eat Disord* 2000; 28:101). The graded exercise protocol consisted of seven levels, depending on the patient's percent ideal body weight (% IBW) and percent body fat (% BF). For example Level 1 exercise included stretching three times a week for patients who were less than 75% IBW or 19% IBF, compared to Level 7, where the patient protocol included stretching, resistive strengthening exercises, and low-impact cardiovascular exercise three times a week for those at 100% IBW or 25% body weight. Both those in the exercise and control groups increased their BMI and % BF. The slight differences found between groups may have been due to the small sample size because four patients dropped out and only 12 participants completed the study.

According to Dr. Zunker and her co-workers, limited empirical findings demonstrate a positive correlation between responsible physical activity and weight restoration in patients with AN. It seems important to develop comprehensive treatments to promote weight restoration, including gradually encouraging healthy amounts of physical activity, for patients with AN who exercise excessively despite injuries and contrary to medical advice.

**Dental Fear and Anxiety**

*Eating disorders increase anxiety levels.*

Few people look forward to a visit to the dentist’s office, but patients with eating disorders facing oral surgery apparently have much higher-than-normal anxiety and fear about dental work,
according to a recent Turkish study by Yigit Sirin and co-workers in the Department of Oral Surgery at Istanbul University (*J Oral Maxillofac Surg* 2011; 8:2078).

Dr. Sirin and colleagues studied 61 patients with eating disorders and an identical number of age-, gender-, and education-matched healthy controls and 2 consecutive randomly selected clinical and nonclinical samples of 220 females, all of whom took the Modified Dental Anxiety Scale (MDAS) and Dental Fear Survey (DFS) before surgery.

The mean scores of the MDAS and DFS for the study population correlated negatively with age and positively with a previous unpleasant visit related to dentistry. Patients with eating disorders had significantly greater mean scores on the MDAS than the clinical and nonclinical group. A significant difference was found in the DFS subscale of “fear of specific situations and stimuli” compared with the healthy matched controls and clinical and nonclinical subjects.

The authors concluded that patients with eating disorders can be more sensitive to the auditory, visual, and contact stimuli of oral surgery under local anesthesia. They also had higher levels of dental fear and anxiety than routine clinical patients and randomly selected subjects from a nonclinical environment. It’s also conceivable that at least some of their increased fear was related to more extensive eating disorders-associated dental pathology. As a result they may have been anticipating more extensive dental repair work than those in the comparison groups.

### How Eating Disorders Affect Fertility and Pregnancy

*Some women may need additional psychological support, particularly early on.*

Eating disorders often disrupt menstrual cycles, but little is known about the long-term effects of eating disorders on fertility and attitudes toward pregnancy. A recent study compared rates of fertility and attitudes toward pregnancy among women with a lifetime history of anorexia nervosa (AN) and bulimia nervosa (BN) and a general population of women.

The study included 11,088 women participating in the Avon Longitudinal Study of Parents and Children (ALSPAC) (*BJOG* 2011; August 3 [e-pub ahead of print]). All participants were asked to complete questionnaires at 12 and 18 weeks gestation. Among all women, 171 (1.5%) had a lifetime diagnosis of AN; 199 (1.8%) had lifetime diagnoses of BN, and an additional 82 participants (0.7%) had lifetime histories of both AN and BN. The remaining 10,636 women (96%) formed the general population comparison group.

**Pregnancy was more likely to be unintentional**

A higher proportion of women (39.5%) with a history of AN or BN took longer than 6 months to conceive compared to women in the general population (25%). The results of the study also showed that women with AN and BN were more than twice as likely (6.2%) than the general population group (2.7%) to report that their current pregnancy was unintentional. However, when asked at 18 weeks gestation, only the women with AN but not BN were more likely to report that their current pregnancy was unintentional. In this group of women, 41.5% reported that their pregnancy was unplanned, compared to 28.6% of the women in the general population.

Twenty-one percent of women with AN and 20% of those with AN plus BN, but only 12% of those
in the general population---had been seen by a physician for lifetime fertility problems. Women with a history of AN and BN were more likely than those in the general population (6.2% vs. 2.7%, respectively) to have received medical assistance in conceiving their current pregnancies and were more likely to take more than 6 months to conceive. However, the women with eating disorders were no more likely to take longer than 12 months to conceive than were the women in the general population.

**A negative reaction at first**

Women with eating disorders were more likely to have negative reactions when they first discovered they were pregnant, although these feelings tended to disappear by 18 weeks gestation. Women with histories of lifetime AN or AN plus BN were more likely than women in the general population to view motherhood as a personal sacrifice.

Thus, fertility is only modestly affected among women with lifetime eating disorders. Healthcare providers should counsel women with histories of eating disorders that they probably can have children, even when their menstrual patterns have been disturbed. And, because of the sometimes negative attitudes toward pregnancy, women with eating disorders might require additional psychological support, particularly during the early stages of pregnancy.

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**BOOK REVIEW: Eating Disorders in Children and Adolescents: A Clinical Handbook**

*Eating Disorders in Children and Adolescents: A Clinical Handbook* (By Daniel Le Grange, PhD and James Lock, MD PhD. New York, NY: Guilford Press, 2011; 512 pp; $70)

Our field has benefited greatly from several excellent clinical handbooks, but very few have been devoted solely to eating disorders issues in children and adolescents. In this outstanding volume Daniel Le Grange and James Lock, a clinical psychologist and child and an adolescent psychiatrist, who themselves contribute a great deal of important and well-regarded research and scholarship focusing on family-based treatment and other areas of work with adolescent populations, have brought together an international group of researchers and clinicians who provide up-to-date overviews of key themes and topics. These include not only the usual suspects, but some innovative areas of inquiry as well.

Organized in seven sections, the contributors address etiology and neurobiology, epidemiology and, of course, diagnosis and classification, medical issues and assessment, treatment, prevention and the role of parents. Of note and importance to clinicians, 10 of the 25 chapters concern treatment. In each chapter, the focus is on issues unique to or especially important to children and adolescents with eating disorders, as in assessment and treatment of medical conditions.

Many of the chapters are worthy of special comment, but space limits me to selecting just a few to illustrate the high value of this volume. After excellent introductory chapters on neurobiology and environmental and genetic risk factors, Michael Strober and Tara Peris undertake a unique consideration of “The role of family environment in etiology: a neuroscience perspective,” in which they skillfully integrate the developmental implications of genetics, epigenetics, neurobiology, temperament, different patterns of family dynamics and the impact of stress on biological and psychological development. There’s a great deal here for clinicians to comprehend and work with. The chapter on “Assessment of Eating Disorders in Children and Adolescents” by Katherine Loeb,
Melanie Brown, and Michal Munk Goldstein, is rich with clinical examples comparing patients and parents as informants and a very useful and detailed summary of issues and recommendations for the assessment of diagnostic criteria in children and adolescents. The chapter includes a virtual consumers’ guide to the field of structured and semistructured interviews and rating scales for patients and parents available to clinicians and researchers. Starting off the treatment area, Mary Tantillo and Richard Kreipke focus on “Improving connections for adolescents across high-intensity settings for the treatment of eating disorders,” a critical topic about which little has been written. Their thoughtful discussion will be of value to all clinicians who find themselves attempting to provide “wrap-around” services by contending with and across different care settings and health-care institutions. The chapters on psychotherapy, including family-based, individual, and parent-focused, are excellent. A chapter on “A parent’s perspective on family treatment” by Harriet Brown is extremely instructive.

Lots of other highlights await the reader. Treatment teams can easily organize study and discussion groups for team-building and continuing education around these chapters. Clinicians serving children and adolescents with eating disorders and their families can find no better contemporary volume to guide their treatment.

— J.Y.

Q & A: Pericardial Effusion

Q. An adolescent patient of mine was recently hospitalized on a pediatric service for medical stabilization and was told that she has a pericardial effusion. How often does that occur, and how serious is it? (B.K., Nashville, TN)

A. Prior studies in the U.S. and Italy have demonstrated pericardial effusion in about 20% to 25% of adolescents with anorexia nervosa (AN) who required medical hospitalization for being severely underweight. According to Dr. Philip Mehler, who specializes in the treatment of severely ill adult patients with AN, pericardial effusion has not been a problem in the patients he’s seen (personal communication). A large case series of adolescents has recently been published from a child and adolescent psychiatry university department in Berlin (Eur Child Adolesc Psychiatry 2011; Nov 16. [Epub ahead of print]). In this study, 173 consecutively admitted adolescents (aged 12-17 years) with AN were compared to 40 healthy adolescent control subjects of the same age, but of normal weight. Clinically silent pericardial effusions were found in 34.7% of the patients but in none of the controls. Patients with pericardial effusion showed significantly lower initial body mass indexes (kg/m2), had more prominent low T3 syndrome, and had longer hospitalizations than patients without this finding. The pericardial effusion remitted in 88% of the patients after weight restoration. I’m not aware of long-term studies of out come or of the longer-term clinical implications for these patients.

— J.Y.

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