Clinical literature shows a strong association between bulimia and impulsivity, with individuals showing considerable problems with impulse control.\(^1,2\) Although increased levels of novelty-seeking and low degrees of frustration tolerance have been well studied in the bulimic temperament,\(^3,4\) not as much attention has been devoted to the relationship between bulimia and aggressive behavior. A link between eating disturbances and aggression is shown in an empirical study regarding increased irritability in those who restrict calories.\(^5\) Also, rats are more prone to fight competitively when food restrictions are imposed upon them.\(^6\) In humans, a significant association between eating disturbances and aggressive conduct in adolescent girls has been shown.\(^7\) Such studies, taken together, suggest a strong link between aggression and bulimia.

For clinical purposes, animal research has resulted in several different classifications for aggression: territorial, maternal, intermale, irritable, fear-induced, and instrumental.\(^8\) These can further be labeled as either “covert” or “overt” subtypes. My research study focuses on women with bulimia nervosa, and their behavioral manifestations of these two aggressive subtypes. I work with the definition of overt aggression as involving confrontational and often affectively charged and poorly controlled behavior. This includes acts such as hitting, violent conflict resolution, and assault. The other category is covert aggression, which is non-confrontational and involves acts such as stealing and other surreptitious behavior. Bulimic women not only feel a loss of control when it comes to their eating habits, but they often struggle with interpersonal relationships, rules, and regulations. Bingeing and purging is one mechanism used by these women to regulate their emotions and cope with stress. One might expect, then, that aggression would be yet another outlet for their frustrations and struggles.

This study hypothesized that bulimic women are more likely to display covert as well as overt aggression in comparison to women without eating disorders. Bulimic female subjects, as well as non-bulimic female controls, were asked to complete a structured set of questions describing their most recent aggressive behaviors, binge/purge episodes, and other activities. The research does not claim that aggression leads to bulimia or that the disorder fos-
ters aggressive behavior. Causal relationships can only be identified once the prevalence of a certain personality trait is established, and it is this prevalence that I hope to demonstrate.

Participants consisted of 40 women, aged 18-23, who responded to flyers and emails advertising the study. Recruiting was done at Stanford University, Menlo College, Foothill College, Canada College, and Santa Clara University. Separate flyers were used for recruiting bulimic women (n=20) and women without eating disorders (n=20). All participants received $20 compensation for 1 hour of their time, and individual sessions were conducted in the Psychiatry building at Stanford Medical Center. Excluded from the study were females who were currently anorexic or who were not currently enrolled in school. Individuals with co-morbidity for other psychiatric problems, such as depression, were allowed in the study. Within a given population of bulimic women, comorbidity with other illnesses is common, and exclusion of such individuals would not provide representative results. There were 3 international bulimic women (Estonia, Malaysia, and China) and one international control participant (Egypt). A $3000 Undergraduate Research Opportunity grant from Stanford University was used to cover costs of compensation and publicity.

After approval from Stanford University’s Human Subjects Committee, flyers and emails were posted on college campuses, as well as local gyms, restaurants, counseling centers and sororities. During the 1-hour interview session, a consent form was read out loud to all women, notifying them of risks associated with this study, as some subjects might feel discomfort when recalling personal information from their past. They were allowed to leave the study at any time, or they could refrain from answering any questions participants enjoyed describing emotional events in their lives, and it may have had some benefit for them. The act of constructing a narrative can often help individuals better understand their experiences by making complex issues more simple and understandable.

The following is a list of common psychiatric assessments, listed in order of use during individual interviews. Three written questionnaires, one oral assessment and one free-write method composed each session. The JWHS and EDE are well-reviewed tools developed by Stanford’s Department of Psychiatry and Behavioral Sciences. All of the published assessments have been repeatedly tested for validity and have been used in their most current versions:

**Juvenile Wellness & Health Survey** (JWHS-76): 19 questions from this assessment were asked that focused on recent alcohol use, drug abuse, exercise routines, relationship behavior, sexual activity and menstrual patterns.

**Modified Aggressive Acts Questionnaire (MAAQ, Sagar A. Unpublished 2002):** This questionnaire has five separate categories of overt and covert aggression including specific behaviors, thoughts and acts. Subjects were asked to mark any acts that occurred in the past 4 weeks, and also to identify whom the behavior was directed towards in the case of overt aggression. Self-injurious behaviors were also noted. Acts on the MAAQ are weighted according to their level of aggression, and a separate score is provided for overt acts and covert acts from resultant data.

**Aggressive Acts Questionnaire** (AAQ): Subjects were asked to identify their most aggressive overt act and their most aggressive covert act that they listed on the MAAQ. Then, this assessment identifies the acts as it relates to pre-meditated, impulsive, mood-based and agitated aggression. The AAQ asks participants to rate the act on a 5-point scale of Definitely No to Definitely Yes. The act can then scored as to its level of aggression, and it can be placed into the four aforementioned categories.

**Eating Disorder Examination** (EDE): This oral interview involves the researcher and subject working together to obtain an accurate picture of the subject’s eating behaviors and attitudes. Thirty-three questions from the EDE are administered during this study. Questions regarding restrictive behavior, exercise, obsessive thoughts about food, bingeing, purging, laxative use, and body satisfaction are asked. Investigators scale answers between 0 (healthy behavior) and 6 (extremely unhealthy behavior).

**Pennebaker Method:** At the end of the session, subjects are first asked to free-write for a period of 4 minutes about the overt act of aggression, and then they are asked to free-write about the covert aggressive act for 4 minutes. The Pennebaker method states that in their writing, subjects should really let go and explore their very deepest emotions and thoughts, writing about the same experience the entire time. Ideally, they will also write about significant experiences or conflicts that they have not discussed in great detail with others.

Of the bulimic subjects, 18 women employed self-induced vomiting as their form of purging. Two women used intense exercising alone as a method of purging after binges. The EDE conducted on bulimic women indicates a range of 1 bulimic episode per week to 5 bulimic episodes a day, everyday of the month. Some experimental women did not use laxatives at all as a method of purging, although 15% of them used 1 to 6 laxatives a day in addition to vomiting. Only three females used diuretics.
A t-test performed on results from the MAAQ and AAQ indicated that the bulimic women in this study scored significantly higher on the scales of aggression than non-bulimic women did.

Overall, bulimic women scored higher for displays of and levels of aggression, with statistical significance in all four categories when compared to the control population. As expected, bulimic women also scored higher on the assessment of the EDE. One control participant’s data was removed from the pool because scoring on the EDE revealed that she had recently recovered from anorexia. Bulimic women also scored significantly higher on the JWHS, specifically with regard to alcohol intake.

Qualitative analysis of the Pennebaker free-write indicates that 72.5% of the entries from bulimic women discussing aggressive acts are related to issues of food, body image and exercise. In the control population, 17.5% of the entries related the aggressive behavior to these topics. The most recurring themes for both control and experimental participants during the free-write period included fights with parents, partners, and friends, as well as activities surrounding alcohol.

Many psychological, educational, medical, and forensic studies have focused on aggressive behavior. Rates of impulsive and aggressive behavior, such as suicidal gestures, parasuicidal gestures, extreme alcohol abuse, sexual promiscuity, and shoplifting, are elevated in bulimic individuals. However, aggression itself is not a DSM-IV diagnostic category for bulimia nervosa. If aggressive behavior can be observed as a sign of bulimia or other self-destructive behavior, then medical professionals and psychologists can better diagnose individuals.

The results support the hypothesis that manifestations of overt and covert aggression are more common in women with bulimia. If the aggressive behavior is indeed closely linked to the binge-purge cycles, than future investigations should examine whether reducing levels of aggression can be successful in helping women recover from bulimia. In order to examine this however, longitudinal studies need to be conducted on whether or not a causal relationship does exist between the behavior and the disorder. Also, participants should be diagnosed for co-morbidity of other illnesses in order to see how those factors contribute to the aggressive personality. Additionally, the Pennebaker free-write indicates that, for many bulimic women, aggression is linked to issues of food, body image and exercise. It can be valuable for therapists to acknowledge this connection while helping a patient overcome bulimia. Therapy that focuses on reducing levels of aggression or channeling aggression in healthier ways could

Table 1: Results of the MAAQ & AAQ for Control and Experimental Subjects

<table>
<thead>
<tr>
<th></th>
<th>CONTROL (n=20)</th>
<th>BULIMIC (n=20)</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAQ score for overt act</td>
<td>Avg=7.1 SD=5.95</td>
<td>Avg=15.9 SD=8.25</td>
<td>3.87</td>
<td>0.0040</td>
</tr>
<tr>
<td>AAQ scaled rating for most overt act</td>
<td>Avg=52.3 SD=8.07</td>
<td>Avg=64.05 SD=7.10</td>
<td>1.96</td>
<td>0.0578</td>
</tr>
<tr>
<td>MAAQ score for covert act</td>
<td>Avg=7.95 SD=4.80</td>
<td>Avg=16.25 SD=18.36</td>
<td>4.89</td>
<td>0.0001</td>
</tr>
<tr>
<td>AAQ scaled rating for most covert act</td>
<td>Avg=53.2 SD=11.01</td>
<td>Avg=61.47 SD=7.26</td>
<td>2.80</td>
<td>0.0079</td>
</tr>
</tbody>
</table>

Table 2: Results of the EDE. A score of 0 indicates extremely health eating habits, the maximum score is a 246 indicating severe bulimic behavior.

<table>
<thead>
<tr>
<th></th>
<th>CONTROL (n=20)</th>
<th>BULIMIC (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDE Avg.</td>
<td>45.65</td>
<td>141.7</td>
</tr>
<tr>
<td>SD</td>
<td>14.26</td>
<td>28.1</td>
</tr>
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</table>
have a profound impact. Aggressive behavior can be released through self-injurious behavior, bingeing, and other acts listed on the AAQ. However, it can also be released through alcohol, sex, drugs, and exercise. It is important to factor these levels of activity into any analysis. In any study of psychiatric disorders, researchers must rely on self-report methods from participants. The level of willingness of individuals varies, with the shame and frustration of such disorders affecting the collected data.

With regards to overt and covert displays of aggression, one can also hypothesize that different types of treatment are more suitable for reducing levels of aggression based on the subtype. Future studies can be conducted to see if bulimic women displaying more overt aggression are more responsive to pharmacological and psychosocial intervention, whereas those displaying more covert aggression may be better suited for cognitive-behavioral therapy. In treating bulimia, drug therapy has been used more often than cognitive-behavioral approaches, yet drugs have been comparably less effective. Future studies, structured similarly to this one, can hopefully shed light on how different types of aggressive behavior in bulimic women may require different types of therapy, which are based on different etiologies of the disorder. Ultimately, it is clear that bulimic women need to have outlets for their aggressive behavior, and they must be taught alternative methods of coping so that bingeing and purging are no longer the most ideal options in their minds. In addition to further exploration of the bulimic temperament, researchers should conduct more randomized control experiments regarding treatment-based approaches to bulimia nervosa.

**Works Cited**


**Suggested Reading**


