



CENTRU DE CERCETĂRI ȘTIINȚIFICE ÎN PSIHOLOGIE

Effects of anxiety on eating habits: eating behavior, hunger, dietary restraint, anger, guilt.

Author: Ruxandra ȘTERBEȚ

Abstract

The effect of anxiety on dietary intake of humans has been investigated through a number of laboratory, clinical and cross-sectional studies; no prior study, however, has examined potential associations between anxiety and overall dietary patterns. This research paper is focused on the question how people with anxiety can experience several eating behavioural disorders. In the majority of cases, anxiety is not the only thing a man or woman suffers with, it is often a co-occurring disorder with an eating disorder [Yannakoulia, 2008]. Aim of the present study was to describe dietary patterns in relation to anxiety trait in a nationally representative sample of Moldovan adults. This paper explores seven variables related to eating habits such as: *dietary patterns (1), persistent appetite (2), food as a reward (3), sense of guilt after normal feeding (4) or after eating junk (unhealthy) food (5), stress associated with overeating or binge eating (6), feelings of anger in case of starvation (7)*.

We have found that subjects with a low level of anxiety disorder adopt healthier eating habits than individuals with a high level of anxiety. By all counts, and with proven results, it is no wonder that more anxious, compared to less anxious, men and women exhibited different dietary patterns, eating attitudes and behaviors towards food as a coping mechanism to the prejudice of intrapersonal and interpersonal relationships.

Keywords: anxiety, eating disorder, stress, eating habits, dietary patterns.

1.Introduction

Anxiety disorder is one of the most common mental disorders, with high levels of chronicity, distress and functional impairment. Research on anxiety is one of the most active areas in psychology, and it has been the focus of considerable study especially in the last two decades [Abdel-Khalek & et al 2004]. The human anxious psychophysiological response was first scientifically described by Sigmund Freud as a feeling of imminent and pressing danger that could be based on objective or moral risk [Freud, 1936]. A more contemporary definition considers anxiety as an organic response, characterized by apprehension and increased surveillance in situations of uncertain danger or potential threats to the integrity of the organism [Grillon, 2008]. Diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-V) include the following: excessive anxiety, worry for at least six months and difficulty controlling the worrying. The anxiety is associated with three or more of the below symptoms for at least 6 months: restlessness (feeling keyed up or on edge), being easily fatigued, difficulty in concentrating or mind going blank, irritability, muscle tension, sleep disturbance and irritability.

State anxiety and Trait Anxiety

Yet, in the study of anxiety, researchers differentiate aspects of anxiety into state and trait, respectively defined as a more transient reaction to an adverse situation, and as a more stable personality attribute in experiencing events. State anxiety reflects the psychological and physiological transient reactions directly related to adverse situations in a specific moment. In contrast, the term trait anxiety refers to a trait of personality, describing individual differences related to a tendency to present state anxiety [Leal, Pollyana Caldeira, Goes, & et al 2017]. Trait anxiety is, therefore, relatively stable over time and considered an important characteristic of patients with anxiety disorders, as they present higher trait anxiety in comparison to healthy individuals. According to Spielberg's early formulation [Vagg, P. R., Spielberger, C. D. & O'Hear, 1908], anxiety is a unidimensional construct including both *state* and *trait anxiety*, considered to be different sides of the same coin. However, other authors suggested *trait* and *state anxiety* to be separate multidimensional constructs.

Effects of anxiety on eating habits

In recent years, an increasing number of studies are providing evidence for diet as a modifiable risk factor for mental health problems, such as depression and anxiety. However, despite the effect of anxiety on dietary intake of humans has been investigated through a number of laboratory, clinical and cross-sectional studies, there is a lack of data regarding the effects of anxiety disorders on eating habits and overall dietary patterns. Often without realizing it, individuals can fall into a habit of eating when they feel worried, anxious, nervous, or stressed. A 2004 study [Skarl, 2015] found that two-thirds of people with eating disorders suffer from an anxiety disorder at some point in their lives and that around 42 percent had developed an anxiety disorder during childhood, well before the onset of their eating disorder. Other relevant studies have shown that those with Binge Eating Disorder have a greater likelihood of experiencing significant symptoms of anxiety compared with the general population [Telch, C.F. & Stice, E., 1998].

A study conducted by Yannakoulia & et al in 2008 explored the eating habits in relation to anxiety symptoms. They reported that more anxious, compared to less anxious subjects exhibited different dietary patterns. In particular, the "light" dietary patterns that emerged in the less anxious men and women did not appear as distinct patterns among men and women in the upper anxiety tertile.

The aim of the present study was to evaluate the correlation between state anxiety in subjects with certain levels of anxiety and the eating habits and dietary patterns. This study examines the role of anxiety symptoms in predicting dietary choices.

Research Hypothesis:

It is hypothesized that the anxiety influences eating attitudes and behaviors towards food such as: dietary patterns, persistent appetite, food as a reward, sense of guilt after normal feeding or after eating junk (unhealthy) food, stress associated with binge eating, feelings of anger in case of starvation.

2. Material and Method

2.1. Participants:

Data was collected from 125 participants (100 women, 25 men), aged between 18 and 55 years, that participated in an online survey on eating behavior based on affective behaviors.

2.2. Research design:

A cross-sectional survey design was used. Two questionnaires were used in the research.

1. The first Questionnaire indicates the level of the symptoms of generalized anxiety of the respondents by asking them to rate themselves on 5 questions by using a 5-point Likert scale. See (Appendix 1).
2. The second Questionnaire was used to identify the dietary patterns and eating habits of the respondents by asking them to answer on 7 questions that included information about: dietary patterns, persistent appetite, food as a reward, sense of guilt after normal feeding or after eating junk (unhealthy) food, stress associated with binge eating, feelings of anger in case of starvation. See (Appendix 2).

All the dietary patterns and eating habits included in the research were selected at random.

The questionnaire regarding the level of the anxiety may have a minimum value of 5 points and the maximum value of 25 points. Conventionally, the subjects were divided into 3 groups depending on the total score that was accumulated.

- 1) 5-10 points : low level of anxiety
- 2) 11-17 points: medium level of anxiety
- 3) 18-25 points: high level of anxiety

2.3. Procedure:

Once a participant read and signed the informed consent form, they were able to answer the questions from the two online questionnaires. The answers of the cumulative percentages of the 3 groups of subjects regarding eating behavior were compared. The simple variation of the mean responses was taken into account on eating behavior depending on the intensity of the level of anxiety.

3. Result

1. The distribution of the subjects according to the level of anxiety

The level of anxiety	Number of subjects	Percentage (%)
Low	38	30.4
Medium	61	48.8
High	26	20.8

2. The responses of the subjects regarding the eating behavior depending on the level of anxiety.

The level of anxiety	Average Score Percentage (%)									
	dietary patterns (1)			persistent appetite (2)		food as a reward (3)		sense of guilt after normal feeding (4)		
	Stable	Variable	Depending on the presence of hunger	Yes	No	Yes	No	Yes	Sometimes	No
Low	13.2	23.7	52.6	44.7	55.3	47.4	52.6	26.3	31.6	42.1
Medium	19.6	29.4	41.2	58.8	41.2	64.7	35.3	35.3	33.3	31.4
High	30.6	30.6	36.1	61.1	38.9	75.0	25.0	50.0	19.4	30.6

The level of anxiety	Average Score Percentage (%)					
	sense of guilt after eating junk (unhealthy) food (5)		stress associated with overeating or binge eating (6)		feelings of anger in case of starvation (7)	
	Yes	No	Yes	No	Yes	No
Low	47.4	52.6	28.9	71.1	44.7	55.3
Medium	54.9	45.1	35.3	64.7	45.1	54.9
High	61.1	38.9	58.3	41.7	66.7	33.3

4. Discussions

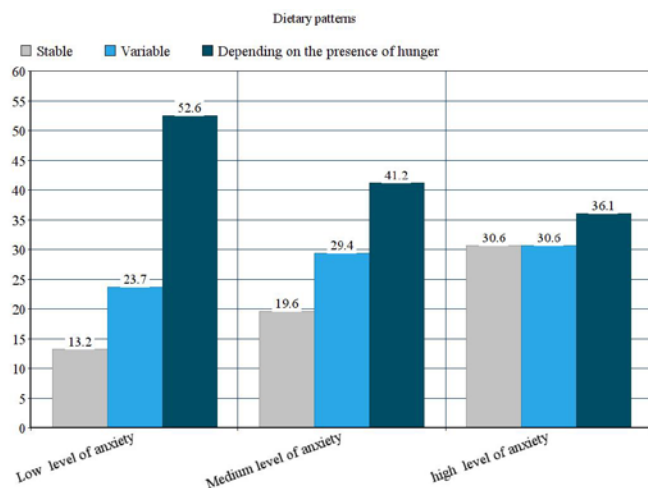
1. Dietary Patterns

The analysis of the results suggests two observations:

- a) **The higher the level of anxiety, the more the individual tends to prefer a stable diet.**
- b) **The lower the level of anxiety, the more the individual elects to eat only when he or she is hungry.**

When confronted with an anxiety-producing threat to self-esteem, eaters

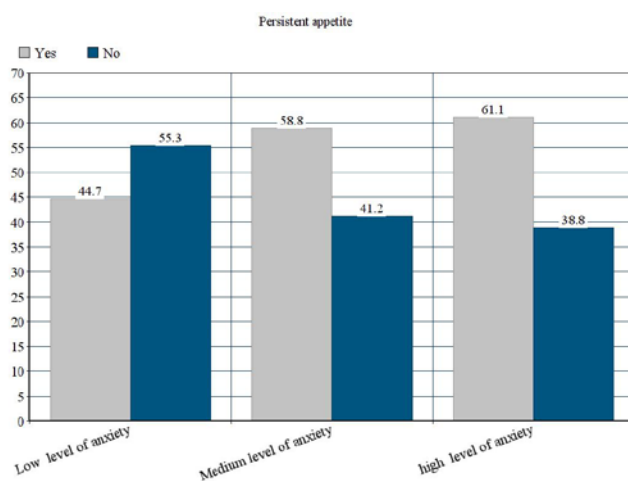
(dieters) increase their food consumption and consume food as a way to escape the problems they have to deal with. Moreover, due to the fact that there are several personality traits commonly associated with eating disorder (ED) like: high perfectionism, impulsivity, harm avoidance, sensation seeking and neuroticism in combination with low self-directedness, assertiveness, and cooperativeness [Fassino S, Amianto F, Gramaglia C, Facchini F, Abbate DG., 2004], we tend to believe that those who are more anxious use to care less about the way



they feel sensations in their bodies, even neglecting hunger, according to its biorhythm. Thus, the higher the level of anxiety, the more people prefer stable dietary patterns, rather than being able to respond in commensurate with their own biological sensations, like hunger. One possible reason for the above statement would be the fact that the deficits in perceived control are critical in the experience of anxiety as mentioned by Chorpita and Barlow's (1998) in discussion on control and anxiety. There exists a diversity of literature supporting the notion that an immediate sense of diminished control is commonly associated with the immediate expression of anxiety. That is, anxious people are inclined to believe that they are out of control in their lives, consequently, through compensation, they want to take control over as many things as possible, otherwise, they show a tendency to be of the opinion that something bad will happen. Respectively, they are prone to have a strict control over their dietary patterns, if not, anxious people would think that they are not in charge of their body and in out-turn they would get sick.

2. *Persistent Appetite*

Relating on the second variable we intended to see a correlation, **we have found a significant increase in the persistent appetite as the level of anxiety grows up.** The reason behind this mutual relationship is that anxious people don't feel safe much of the time and that lack of safety is the major

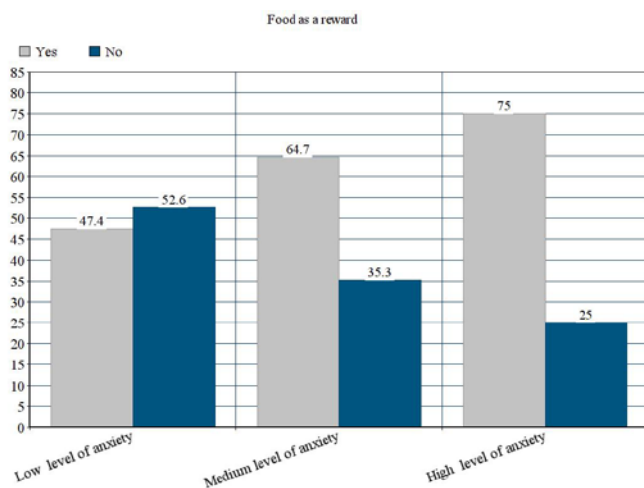


trigger for the subject to regain his or her state of security. The slogan for Mars Inc.'s chocolate candy bar, "Milky Way: comfort in every bar," describes the phenomenon in which individuals eat to comfort their stress-related negative emotions. Individuals can eat more or eat differently under stress, or presenting a significant level of anxiety with most gravitating toward palatable foods that are high in sugar, fat, and calories [Adam & Epel 2007, Torres & Nowson 2007]. A notable number of longitudinal studies suggest that chronic life stress, namely associated with feelings of anxiety may be causally linked to weight gain, with a greater effect seen in men.

Stress-induced eating may be one factor contributing to the development of obesity. Furthermore, anxiety symptoms and disorders frequently co-occur with overeating, and studies have shown that those with Binge Eating Disorder have a greater likelihood of experiencing significant symptoms of anxiety compared with the general population [Telch, C.F. & Stice, E., 1998].

3. *Food as a Reward*

In this section, we have determined a positive relationship between the level of the anxiety someone presents and his or her perception of food as a reward. Anxiety is a feeling of worry and it can be a reaction to stress, or it can occur in people who are unable to identify significant stressors in their life. Likewise, stress makes people susceptible to

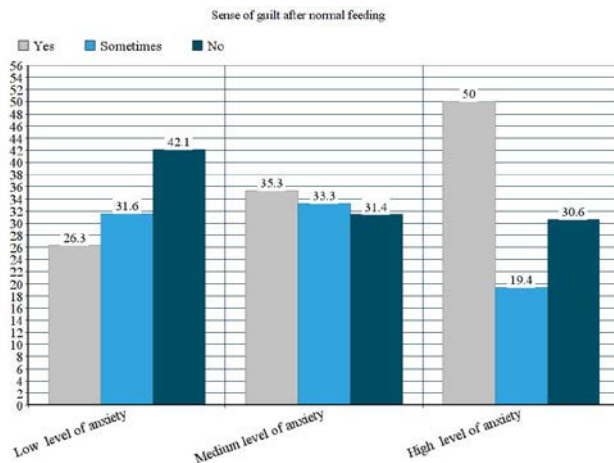


substances that, via reward processing, motivate individuals to over consume them [Sinha 2008]. As mentioned above, personality traits commonly associated with eating disorder are high perfectionism, reward dependence, sensation seeking, and obsessive-compulsiveness [Fassino S, Amianto F, Gramaglia C, Facchini F, Abbate DG., 2004], thus anxious people use food as a reward. Additionally, feelings of anxiety and being under stress triggers dopamine release, as reliably shown in nonhuman animals (Dallman 2010) and in a few human studies (Pruessner et al. 2004, Wand et al. 2007), and this dopamine release has further downstream effects on food seeking and eating (Dallman 2010). Dopamine is a neurotransmitter that codes for pleasure and enhances the desire for food (Volkow et al. 2013).

4. Sense of Guilt after Normal Feeding

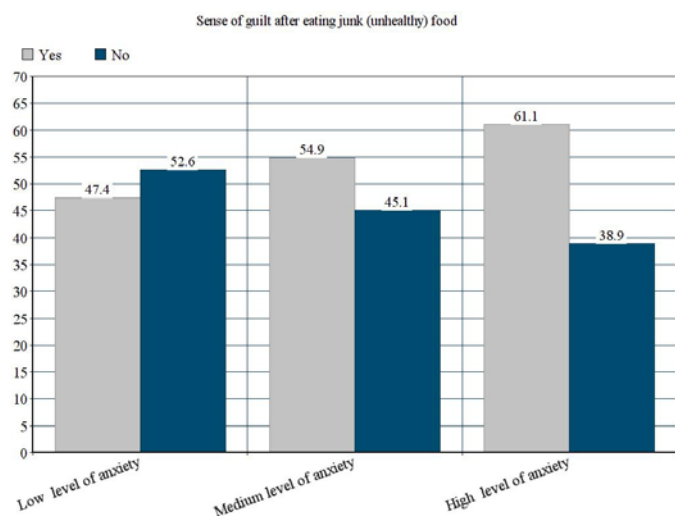
This study revealed one major finding: **the higher the level of anxiety, the more people feel guilty after eating**, as a normal feeding process. In justification of this behaviour, we assume that anxious people are conscious about the fact that they use to compensate and resort harmful or negative thoughts and ideas

while eating in order to cope with their anxiety. Many theoretical models emphasize fluctuations or changes in self-esteem and negative affect, including feelings of shame and guilt, as factors that are present in those with high levels of anxiety. Thereby, the higher the level of anxiety, the more you reckon about yourself of not being worthy to feel good, or to take the pleasure from daily habits like eating, you feel constantly preoccupied with a dilemma like was it done correctly or did you do it in a right way as it is supposed to be done.



5. Sense of Guilt after Eating Junk Food

A second major finding was that anxious people feel guilty also after eating junk food, so the higher the level of anxiety, more intense people feel their guilt. There is strong evidence for a negative association between anxiety and healthy eating, as well as a positive association between anxiety symptoms and caloric intake [Brown, S.; Schiraldi, G.R.; Wroblewski, P.P., 2009].



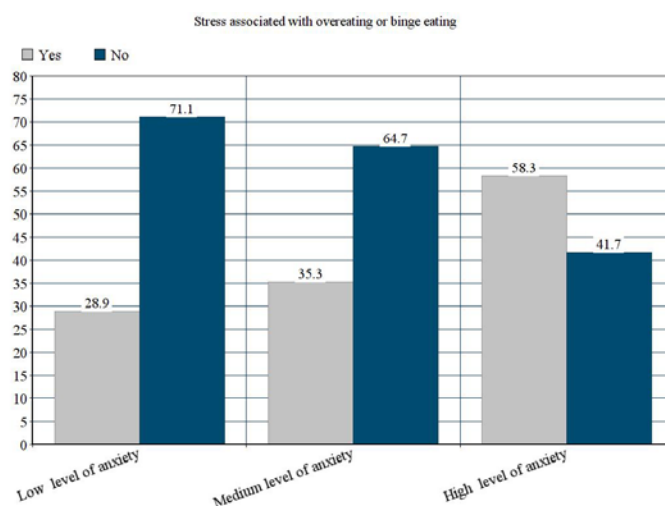
In general, studies have found that individuals who are depressed as a result of feeling anxious are more likely to consume more calories, have higher Body Mass Index (BMI) and poorer diet quality [Flórez, K.; Dubowitz, T.; Ghosh-Dastidar, M.B.; Beckman, R.; Collins, R.L., 2015.].

Another interesting finding is that men with higher levels of anxiety were more likely to have worse diets (i.e., increased saturated fat, decreased fruit and vegetable intake)[Michelle M. Keck , Helize Vivier, & et al., 2020]. Stress triggers our body’s “fight or flight” response that releases cortisol - a hormone produced by the adrenal glands - into our bloodstream. In this way, cortisol increases hunger because the body craves energy to combat whatever stressor we may be facing. We especially turn towards junk food because our body craves energy-dense foods that are high in calories, sugar, and fat [Migala, J.,2015]. Unfortunately, these foods actually increase stress further and contribute to weight gain.Thus anxious people feel a profound sense of loss of control that evokes guilt and self disgust while they consume junk food.

6. *Stress associated with Overeating or Binge Eating*

There was a significant relation between anxiety and overeating.

Anxiety is the result of a response to an uncomfortable or stressful situation, likewise in this circumstance the food plays the role of a mediator and seems to effectively distract the subject from his troubles while eating. Usually, people who try to make themselves



more relaxed or more in a pleasurable state — that’s actually the majority of people - those people eat more food. Binge eating is defined as consuming an excess amount of food in a limited period of time [Gormally J, Black S, Daston S, Rardin D., 1982], so overeating due to stress could be considered a form of binge eating. A study conducted by Tsenkova in 2013 stated that being overwhelmed by stress can affect the normal eating habits because eating diverts our attention away from the thoughts we want to avoid. This may provide temporary distraction and comfort, but it doesn’t solve the underlying stress-causing problems. Studies have shown that stress levels do not decrease after overeating, and binging on junk food can actually cause more anxiety [Tsenkova, V., Boylan, J. M., & Ryff, C., 2013].

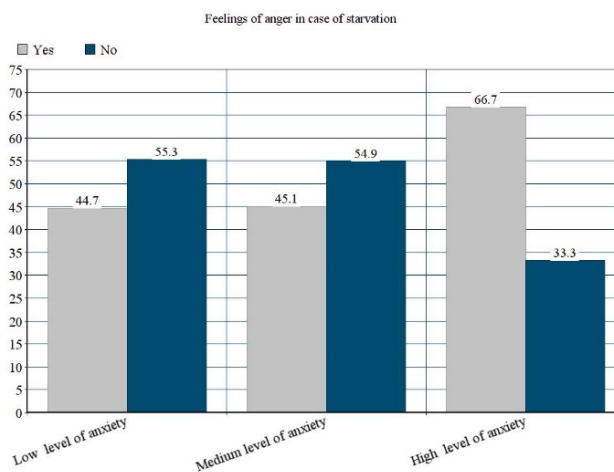
7. Feelings of anger in case of Starvation

According to the results we can see:

high levels of anxiety contributes to more intense feelings of anger in case of starvation.

We can assume that the compensatory behaviors are usually an attempt to relieve the negative emotions by eating. So, those who feel anxious and compensate for lack of confidence,

daily challenges, stressful situations with food, become much more irritated than when they have not adjusted their status homeostasis, because these people develop an association between physical homeostasis and satisfaction primary needs. In fact, anxious people avoid resolving their problems in a due time, but rather choose to keep their internal equilibrium through coping mechanisms such as food. Thus, being deprived of food, they face a situation outside their control and so become angry, impulsive, and aggressive.



5. Conclusions

The main objective of the current series of investigations was fulfilled. Consistent with our hypotheses, our findings suggest strong relationships between anxiety and eating behavior patterns. In a nutshell, it is vital we become conscious of the fact that anxiety can interfere with your quality of life: while perhaps most recognized for behavioral changes, anxiety can also have serious consequences on your physical health. When you're anxious, your body responds. Anxiety triggers emotional and psychological changes in your body to help you deal with the pressure. These changes often affect the stomach and digestive tract and can make you lose your appetite. It is recommended we solve our emotional problems, develop strategies that facilitate being more attentive to our own sensations, and so understand the true value of food, without exaggerating, but also without omitting its importance for a lifetime physical and psycho-emotional health. Future longitudinal studies should examine a larger population to firmly establish whether anxiety and eating patterns are a risk factor for obesity, mental and physical health. Our interpretation of the research results are hypothetical and open up possibilities to expand and enlarge studies on eating behavior.

Appendix 1

The questionnaire assessing the level of anxiety

Please rate the following symptoms on a scale of 1 to 5.

1. Increased concern and fear about the future
2. Fast beating of the heart, tachycardia, palpitations
3. Feelings of tension or agitation
4. General fear, frequent worry or convictions that something bad will happen
5. Breathing difficulty

Appendix 2

The questionnaire assessing the dietary patterns and eating habits

1. My *dietary pattern* is:
 - a) stable and at the same hours, regardless of whether or not I am hungry
 - b) variable and I only eat when I have available time
 - c) I only eat when I am hungry
2. Do you frequently have periods when you have a permanent appetite?
 - a) yes
 - b) no
3. Are you used to getting a reward after accomplishing hard work?
 - a) yes
 - b) no
4. Do you experience a sense of guilt after consuming several products?
 - a) yes
 - b) sometimes
 - c) no
5. Do you usually eat more when you are worried or stressed?
 - a) yes
 - b) no
6. After a long time of starvation (long-time hunger), do you feel a desire to "explode" with anger?
 - a) yes
 - b) no
7. Do you experience a sense of guilt after consuming unhealthy products or junk food?
 - a) yes
 - b) no

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