

# Social Anxiety and Emotion Control Strategies: Can eating disorder symptoms be predicted?

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## Abstract

**Objective:** The purpose of this study is to investigate the potential roles of emotion control strategies and social anxiety in explaining and predicting eating disorder symptoms.

**Method:** The statistical population included all students of the Mohaghegh Ardabili University, studying in the 2015/2016 academic year. Data on social anxiety, emotion control, and eating disorder symptoms were collected from 190 students of Mohaghegh Ardebili University, using the Social Phobia Inventory (SPIN), Eating Attitude Test - 26 (EAT-26), and Emotion Control Questionnaire - 2 (ECQ-2). Pearson's correlation coefficient statistical method and stepwise regression were applied.

**Results:** Rehearsal and benign control (subscales of emotion control questionnaire) positively correlated with all three subscales of social anxiety (fear, avoidance, and physiological arousal). Among different subscales of social anxiety, only avoidance could predict dieting and oral control. Among different subscales of eating disorder test, benign control was the only subscale of emotion control questionnaire that could predict bulimia and food preoccupation.

**Conclusion:** This study suggests that social anxiety and emotion control are, to some extent, related and can partially predict eating disorder symptoms.

**Keywords:** Social anxiety, Emotion control, Eating disorder, Eating disorder symptoms, Anxiety disorders.

## Introduction

Eating disorders are characterized by a persistent disturbance of eating or eating-related behaviors that result in the altered consumption or absorption of food and that significantly impairs the physical health or psychosocial functioning (DSM-5, 2015). There are many common features among eating disorders and patients may move from one eating disorder diagnosis to another over the course of their illness (Fairburn, 2008).

Clinical and epidemiological studies have consistently shown that the majority of people with anorexia nervosa or bulimia nervosa experience one

or more anxiety disorders (Kaye, Bulik, Thornton, Barbarich, & Masters, 2004), and frequency of bingeing and purging behaviors is correlated with the severity of anxiety (Piran, Kenny, Gafinkel, & Owens, 1985).

Actually bingeing and purging episodes are seen as methods of regulating negative affect, these cycles might enable a lowering of consciousness to painful mental and cognitive states (Gilboa-Schechtman, Avnon, Zubery & Jeczmiem, 2006; Pakizeh & Behzadfar, 2018). Actually emotion regulation deficits are associated with eating disorder symptoms, regardless of eating disorder diagnosis (Brown, Cusack, Berner, Anderson et al., 2019).

Although bingeing-purging behavioral cycle does not exist in restrictive subtype of anorexia, some studies suggest that excessive exercising in anorexics may be an alternative mechanism replacing

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the bingeing-purging behavioral cycle typical of bulimia, and might serve as a strategy for emotional regulation in anorexia (Gilboa-Schechtman et al., 2006).

It is also believed that having difficulties in identifying and describing emotions is significantly correlated with a higher risk for eating disorders and patients may engage in body checking behaviors as a consequence of misinterpreting emotional cues (Radix, Rinck, Becker, & Legenbauer, 2019).

As with many psychiatric disorders, one defining characteristic of eating disorders is difficulty in emotion regulation, and greater degree of emotion dysregulation is associated with more severe eating disorder symptomatology in both anorexia nervosa and bulimia nervosa (Racin & Wildes, 2013).

A recent review shows that individuals with anorexia nervosa and bulimia nervosa have demonstrated similar levels of impairment in global emotion dysregulation, including a limited repertoire of emotion regulation skills, a tendency to utilize more maladaptive skills, reduced capacity for tolerating emotional distress, and heightened tendency to avoid emotion-eliciting situations (Lavender et al., 2015, Anderson, Claudat, Cusack, Brown, et al., 2018).

Several studies suggested that among different anxiety disorders, social anxiety may be a more common co-morbid condition with eating disorders (e.g., Brewerton, Stelfox, Hibbs, Hodges, & Cochrane, 1995; Godart, Flament, Lecrubier, & Jeammet, 2000; Halmi, Eckert, Marchi, Sampugnaro et al., 1991; Hinrichson, Wright, Waller, & Meyer, 2003; Iwasaki, Matsunaga, Kiriike, Tanaka, & Matsui, 2000; Kaye, Bulik, Thornton, Barbarich, & Masters, 2004; Laessle, Kittl, Fichter, Wittchen, & Pirke, 1987, 1989; Lilenfeld, Kaye, Greeno, Merikangas et al., 1998; Piran, Kennedy, Garfinkel, & Owens, 1985; Powers, Coovert, Brightwell, & Stevens 1988; Schwalberg, Barlow, Alger, & Howard, 1992) and it has been reported by Becker, Deviva and Zayfert (2004) that 20% of individuals with social anxiety meet criteria for an eating disorder and because of the

overlap between social anxiety and eating pathology, false negative detection rates for eating disorders may be as high as 80% in clinics specializing in treatment of anxiety disorders. So there is a need for a better understanding of the underlying processes that are responsible for existed overlap between these two disorders.

DSM-5 defines social anxiety disorder as a state in which the affected individual is afraid of anxious about, or avoidance of social interactions and situations that involve with the possibility of being scrutinized.

Besides, some researchers have speculated that social anxiety may play a role in the etiology of eating disorders (Becker, Deviva & Zayfert, 2004). It is said that individuals with problematic eating concerns may view others as being organized in a hierarchy – similar to those with social anxiety – with attractive and physically fit people at the top, and ugly or fat people at the bottom (Bardone-Cone, Brownstone, Higgins, Fitzsimmons-Craft, & Harney, 2013), and also suffer from lower self-esteem (Obeid, Buchholz, Boerner, Henderson, & Norris, 2013).

An abundance of research has found that social anxiety disorder tends to precede eating pathology in the age of onset (Brewerton et al., 1995; Bulik, Sullivan, Fear, & Joyce, 1997; Kaye et al., 2004). It has also been proposed that it may reflect a genetic vulnerability to eating disorders (Kaye et al., 2004). On the other hand, it has been said that in the individuals who lack genetic predisposition (e.g., gene susceptibility for depression or anxiety), personality factors may be critical for mental health (Garcia, Schutz, Lindskar, Fernando et al., 2018-2019).

Barlow (2002) describes anxiety as a cognitive-affective process in which an individual has a sense of unpredictability and uncontrollability over potentially negative or harmful events and emotions. This sense of unpredictability and uncontrollability is thought to be associated with physiological arousal, anxious apprehension and uncertainty about

one's ability to manage the threats (Brown, White, Forsyth, & Barlow, 2005). In a similar fashion, many behaviors exhibited in eating disorders have been theorized to be maintained by problematic desires to control one's self and environment (Bluett, Lee, Simone, Lockhart et al., 2016).

Several maladaptive regulation strategies have been associated with eating disorder pathology, including rumination, avoidance, and emotion inhibition (Damiano, Reece, Reid, Atkins, & Patton, 2015). Emotional arousal has been associated with both increased and decreased food intake, and weight (Stone and Brownell, 1994; Willenbring, Levine, & Morley, 1986; Epel, Lapidus, McEwen, & Brownell, 2001).

Results of one study suggested that psychophysiological response to stress may influence subsequent eating behavior, and stress-induced cortisol may play a role in obesity (Epel, Lapidus, Mceven, Brownell et al., 2001) and stress-induced cortisol affects eating in humans (Epel et al., 2001).

As stress can trigger relapses of both obesity (Rand and Stunkard, 1978; Epel et al., 2001) and bulimic episodes (Lingswiler, Crowther, & Stephens, 1989, Epel et al., 2001), it is useful to know about the mechanisms that determine the direction of change.

Recognition of predictors of stress-induced eating can be of help in this case. Roger and Nesselhoever (1987) defined emotion control as the tendency to inhibit the expression of emotional responses, and hypothesized that emotional rumination and inhibition may predispose individuals to stress-related illness by delaying recovery from the physiological arousal associated with stress responses.

Eating disorders are complex serious psychiatric conditions but the understanding of how they develop and are maintained is unclear, while treatment outcomes are mixed. Many questions regarding the nature of the relation between comorbid eating disorders and anxiety disorders remain unanswered. To help refine treatments and improve outcomes, it is an opportunity to further identify and understand

the underlying psychological processes that may play a role in the development and maintenance of eating disorders pathology (e.g. Bluett et al., 2016; Lampard & Sharbanee, 2015).

Eating disorder symptoms do not correspond, in severity or specificity, to full-syndrome eating disorders. Instead, they encompass a broad array of dimensional maladaptive cognitions and behaviors in regard to eating and weight. These cognitions and behaviors are found across a range of full syndrome eating disorder diagnoses as well as in sub-syndromal variants (Evans, Adams, Basterfield, Le couteur et al., 2017).

It is shown that interventions that targeted a subgroup of the population whose risk of developing an emotional or behavioral problem is higher than average, have yielded better results (Calear & Cristensen, 2010; Hetrick, Cox, Merry, 2015; Stice, Shaw, Bohon, Marti et al., 2009) compared to delivering interventions in the whole population (Calear and Christesen, 2010; Stice, Burton, Bearman, & Rohde, 2007). Having targeted preventive approach for eating disorders, it is useful to know better the population whose risk of developing an emotional or behavioral problem is higher than the average.

Eating pathology is associated with onset of range of negative psychological outcomes (e.g., Bentley, Gratwick-Sarll, Harrison & Mond, 2015; Gotlib, Lewsinson, & Seely, 1998). As importance of providing emotion regulation skills for patients with eating disorder is highlighted in many studies (Ruscitti, Rufino, Goodwin & Wagner, 2016), knowing underlying causal processes of this disorder is crucial for designing more effective treatment plans and prevention strategies.

The current study sought to investigate the potential roles of emotion control strategies and social anxiety in explaining and predicting eating disorder symptoms in a population that is at risk of developing eating disorders.

## Method

### Participants and procedure

This research was a cross-sectional and descriptive - correlational one. The statistical population included all students of the Mohaghegh Ardabili University, studying in the 2015/2016 academic year (N=11000). The sample (M=99, F=91, total=190) were selected based on the multi-stage simple sampling method.

Among the departments of the university of Mohaghegh ardabili, 5 departments were selected by equal chance for every department. Finally, in each department about 45 students asked to answer the questionnaires.

The demographic questionnaire and the consent form were completed by all the participants. Besides descriptive statistics, Pearson's correlation coefficient statistical methods and stepwise regression were employed to analyze data. All statistical analysis was performed using a Windows SPSS19 software package.

Participants' ages ranged from 19 to 48 years (M = 24.33; SD = 6.43), among whom 52.1% were men. Also 16.8% of the participants were married. Educational level of 78.5% was college degree and the rest had advanced degree.

### Ethical consideration

For ethical consideration, the consent of participants was gained through a consent form. Despite the questionnaires were anonymous, all the participants were assured that their information would remain confidential and the gathered data would only be used for scientific purposes.

Students who were unwilling to cooperate were excluded. The general idea of the aim of the research, and the roles of participants in the research were explained to all the participants.

### Measures

1. *Social phobia inventory SPIN* (Connor et al. 2000): The 17-item scale is a report designed by Connor et al., (2000) to evaluate SAD symptoms.

The SPIN questionnaire has 3 subscales of fear (6 items), avoidance (7 items) and physiological arousal (4 items). Answers to it range from zero (not at all) to 4 (extremely). This tool can be used for screening and comparing the efficiency of different therapeutic interventions. In Iran, Rezaei Dogaheh (2013) reported the internal consistency of this tool on a clinical sample with SAD (n=30), with an alpha of 0.66, and sensitivity and specificity of 0.96 and 0.087, respectively.

2. *Eating Attitude Test-26 (EAT-26)* (Garner & Garfinkel, 1979): The EAT-26 is a 26-item self-reported questionnaire to identify abnormal eating attitudes. To complete the EAT-26, participants rate their responses on a 6-point scale: always, usually, often, sometimes, rarely, or never. The EAT-26 is divided into 3 subscales: dieting (13 items), bulimia and food preoccupation (6 items), and oral control (7 items). The higher the final score is, the more the person is preoccupied with food consumption. A score of 20 or more is considered as disordered eating attitude (Garner & Garfinkel, 1979). In the Persian version of this questionnaire, reports show an acceptable to high internal consistency of 0.76-0.92 (Ahmadi, Moloodi, Zarbakhsh, & Ghaderi, 2014).

*Emotion control questionnaire (ECQ-2)* (Roger & Najarian, 1989): The ECQ-2 is a 56-item self-reported questionnaire. This questionnaire has 4 factors (Rehearsal, Emotional inhibition, benign control, Aggression control) and each have 14 items. Each item is scored 0 or 1 (True or false), so one's score on each subscale would be 0 to 14, and the total score varies from 0 to 56. The higher final score means more control over emotions. In Persian version, the Chronbach's alpha of this questionnaire is reported 0.68 (Emotional inhibition= 0.70, Aggression control= 0.76, Rehearsal= 0.77 & Benign control= 0.58) (Rafieenia, 2002).

## Results

### 3.1. Relationships among study variables

Examining Pearson's correlation coefficients on

subscales of social anxiety, emotion control and eating disorder (Table 1) indicated that there were positive correlations among all three subscales of social anxiety (fear, avoidance, and physiological arousal), and rehearsal (subscale of emotion control questionnaire) ( $r=.294, .207, .275, p<.01$ ). There were also some positive correlations among all subscales of social anxiety and benign control (a subscale of emotion control questionnaire) ( $r= .321, .348, .409, p<.01$ ). Avoidance was the only subscale of social anxiety that had a positive correlation with subscales of eating disorders (dieting and oral control) ( $r= .14, .18, p<.05$ ). Among different subscales of emotion control, benign control had a significant negative correlation with eating preoccupation and bulimia ( $r=-.18, p<.01$ ).

### 3.2. Prediction of eating disorder symptoms

Stepwise regression method was utilized in order to consider which social anxiety subscales can predict symptoms of eating disorder. According to table 3, among different subscales of social anxiety, only

avoidance could predict dieting ( $t= 1.97, p<.05$ ) and oral control ( $t= 2.542, p<.05$ ).

Among different subscales of eating disorder test, benign control was the only subscale of emotion control questionnaire that could predict bulimia and food preoccupation ( $t= -2.6, P<.01$ ) (Table 4).

### Discussion and conclusion

The purpose of the present study was to assess the relationship between social anxiety and emotion control, and the role of each of them in predicting the eating disorder symptoms. Based on the results among different emotion control strategies, rehearsal and benign control were two strategies that social anxiety and eating disorders had both in common and it is also found that avoidance – as one of the subscales of social anxiety scale – could predict dieting and oral control, and that among different subscales of emotion control questionnaire, benign control could predict bulimia and food preoccupation.

In the emotion control questionnaire, rehearsal is supposed to measure the tendency to be preoccupied

**Table 1.** Correlation matrix among variables

Variables	1	2	3	4	5	6	7	8	9	10
1. Fear	1									
2. Avoidance	.58**	1								
3. Physiological arousal	.58**	.69**	1							
4. Rehearsal	.29**	.207**	.27**	1						
5. Emotional inhibition	-.09	-.12	-.101	.07	1					
6. Benign control	.32**	.34**	.4**	-.36	-.07	1				
7. Aggression control	.07	.01	-.01	-.24**	.25**	.29	1			
8. Dieting	.03	.14*	.07	-.05	-.07	.06	-.07	1		
9. Bulimia & food preoccupation	.07	.09	.08	-.07	.03	-.18**	.09	.37**	1	
10. Oral control	.07	.18*	.09	.02	-.02	.1	-.003	.46**	.32**	1

Note: \* $p<.05$ , \*\* $p<.01$ .

**Table 2.** Coefficients of predicting symptoms of eating disorder according to social anxiety subscales

Variables	R	B	Std.Error of b	Beta	t	Sig.
Avoidance Dieting	0.143	0.188	0.095	0.143	1.98	0.05
Avoidance Oral control	0.182	0.123	0.048	0.182	2.542	0.12

**Table 3.** Coefficients of predicting symptoms of eating disorder according to emotion control subscales

Variables	R	B	Std.Error of b	Beta	t	Sig.
Benign control Bulimia & food preoccupation	0.187	-0.159	0.061	-0.187	-2.607	0.01

with emotional upset. Studies showed that rehearsal was strongly related to physiological indices of adaptation – such as delayed heart-rate recovery (Roger & Jamieson, 1988) and prolonged elevations in urinary-free cortisol secretion following exposure to stress (Roger & Najarian, 1989).

Rehearsal also interacts significantly with negative life events to predict deteriorated status in undergraduate students during periods of adaptation (Roger, 1995), and inversely with positive affect/optimism to predict depression in similar samples (Olason, 2000).

It is said that the rehearsal used in ECQ is a kind of rumination that assesses it in the context of personality. Actually, it is a generic dysfunctional process in response to emotion that contributes to various aspects of mental health (Smith & alloy, 2009).

Some studies indicated that rumination is linked to avoidance of social situations and recall of negative self-related information (e.g. Mellings & Alden, 2000; Rachman, Grüter-Andrew & Shafran, 2000; Ranta, Tuomisto, Kaltiala-Heino, Rantanen & Marttunen, 2014). In another study, rumination scores could predict levels of social anxiety (Brozovich, Goldin, Lee, Jazaieri, Heimberg & Gross, 2015; Abbot, Rapee, 2004). Interestingly, one research found that both social comparisons and shame, which are key features of social anxiety, are significantly correlated with rumination (Cheung, Gilbert & Irons, 2004)

So in line with previous studies, rehearsal, as a construct that is related to neuroticism and rumination, is correlated positively with avoidance, and fear of social situations, and prolonged physical arousal that inevitably exacerbate fear and avoidance of social contexts.

It was confirmed in another study, in line with present findings, that emotion avoidance was present in patients with Anorexia Nervosa (Wildes, Ringham & Marcus, 2010).

Anorexia nervosa was characterized by low

novelty-seeking and high harm avoidance. Bulimia nervosa, on the other hand, was characterized by high novelty-seeking and high harm avoidance. Binge-purging anorectics showed a personality profile midway between anorectics and bulimics (Fassino, Abbat-Daga, Amianto, Leombruni et al., 2002).

It was also proposed in escape theory of binge eating, that binge eaters exhibited elevated avoidance coping (Heatherton & Baumeister, 1991). It was also closely linked to dietary control in most bulimic individuals, but this may be less typical of individuals showing marked impulsivity (Steiger, Lehoux & Gauvin, 1999). On the whole, it seemed like emotion avoidance was a vulnerability factor in eating disorders.

Rumination in anorexia nervosa is mostly about eating, weight and shape with a focus on thinking about control of eating, weight and shape (Park, Dunn & Barnard, 2011), and as Anorexic individuals tend to be avoidant of experience and have difficulty tolerating emotions (Hambrook, Oldershaw, Rimes, Schmidt, Tehanturia & et al., 2011), broader emotional meaning and bodily states associated with starvation won't be experienced (Park et al, 2011). Avoidance of experience has been shown to contribute to disordered eating pattern (Gratz & Tull, 2011).

In one study, low level of approach and high level of avoidance temperament contributed to fears of evaluation and social anxiety symptoms (Rodebaugh, Levinson, Langer, Weeks et al., 2017). On the whole, it was reported in one study that social anxiety correlated positively with neuroticism, and negatively with extraversion (Kaplan, Levinson, Rodebaugh, Menatti & Weeks, 2015).

This provided support for the idea that anorexic symptoms function, in part, to help individuals avoid aversive emotional states. Therefore, emotion avoidance significantly explained the relations of anxiety symptoms to eating disorder psychopathology.

Benign control forms part of the extraversion constellation (Guarino, 2003). Extraversion had been linked to the etiologies and course of anxiety disorders. It is most strongly associated with social anxiety, and there was seen an inverse relationship between extraversion and social anxiety (Naragon-Gainey, Rutter & Rrown, 2014).

Although most of research studies focused on extraversion and impulsivity and not benign control as a construct that correlated inversely with social anxiety, the findings of this study were consistent with previous studies. That is, greater use of benign control that is indicative of being less impulsive and extrovert was associated with fear and avoidance of social situations and experiencing physiological parameters of anxiety when perceiving audiences in social contexts.

Impulsivity and novelty-seeking are both related to extraversion, which is inversely associated with benign control. So lower benign control (more impulsivity and novelty-seeking), is related to less dieting and oral control, and more food-related impulsivity that leads to bulimia and food preoccupation.

Considering the fact that eating disorders can't be found easily, and this study was performed on a sample of the normal population, the sample might not truly represent the disorders; and this may distort the results of the present study. Not asking for the BMI (Body Mass Index) of participants, and not knowing whether they were on a diet or not, were other limitations of this study. It is recommended the study be conducted on participants who have eating disorders, in future studies, in order to achieve more accurate results. A study on a normal sample considering the BMI of participants, would also be useful.

In order to prevent maladaptive eating patterns and to help those suffering from eating disorders, it is useful to understand these disorders better and try to identify maladaptive emotion control strategies, and the try to replace them with more adaptive ones.

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