

Personality-Cognitive Correlates of Social Phobia: Mediator Role of Intolerance of Uncertainty

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ABSTRACT

Objective: Social phobia is considered as one of the most common anxiety disorders. The researchers have been looking for the basic mechanism behind it, since determining these factors can be influential in prevention and treatment. In recent years, some of the most important personality and cognitive correlates of social phobia including neuroticism, fear of negative evaluation, anxiety sensitivity and intolerance of uncertainty have been discovered. This study aims to examine the nature of the relationship between these variables and how they are related to social phobia.

Methods: 550 students studying in different faculties of Semnan University completed Social Phobia Inventory (SPIN) voluntarily. Those who scored above cutoff (156 people) were given the neuroticism subscale of Eysenck questionnaire, Fear of Negative Evaluation (BFNE), and Anxiety Sensitivity (ASI) and Intolerance of Uncertainty (IUS) questionnaires.

Results: The results resulted from path analysis demonstrated that intolerance of uncertainty and fear of negative evaluation were the mediating factors in the relationship between neuroticism and symptoms related to social phobia, while anxiety sensitivity did not play this mediating role.

Conclusion: Since this disorder is widespread and has a negative effect on people's lives, particularly their professional lives, determining the role of intolerance of uncertainty and other correlates of social phobia in predicting this disorder can give us a better understanding of the contributing factors. Therefore, the potential use of these results is of great importance to therapists in treating the aforementioned social anxiety disorder.

1. Introduction

Social anxiety disorder is an excessive and unreasonable fear of situations in which an individual's behavior or performance may be examined or evaluated (Wild, Clark, Ehlers, & Mcmanus, 2008). Generally, young people with this disorder, in comparison to their peers, have weaker social relations and adaptation ability, and have more problems when they face the expectations of adulthood. This disorder is also related to large reduction in life quality (Gerlach, Willielm, & Roth, 2003). Studies suggest that such individuals show lower economic efficiency in the workplace in comparison to

the individuals without this disorder (Dalrymple et al., 2011). Social anxiety disorder is the third most common psychiatric disorder after major depression and alcoholism (Bögels et al., 2010). Prevalence of this disorder is reported 10.1 in Iran (Talepasand & Nokani, 2010). Therefore, considering the high prevalence and serious interference with individual's personal and professional life, this issue is of interest to researchers (Hofmann & Barlow, 2002). In the past two decades, a progressive increase occurred in clinical researches with the aim of examining the underlying mechanisms of social phobia (Lee & Telch, 2008). Neuroticism is considered as a common higher-order factor for all anxiety disorders that is resulted from genetic and primary childhood learn-

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ing (Sexton, Norton, Walker, & Norton, 2003) and many researchers have admitted its relation with social phobia (McEvoy & Mahoney, 2012; Boelen & Reijntjes, 2009). Cognitive pathology is also one of the areas that basically deal with cognitive behavioral aspects of social phobia. Although some of the first behavioral criteria of social phobia focused on lack of social skills in individuals with phobia, recently cognitive criteria are focused on the central role of certain intellectual distortion (Taherifar, Fata, & Gharaei, 2010).

In fact contemporary theories about social anxiety and its clinical manifestations, social anxiety disorder, focus on the role of cognitive processes in the continuity of this disorder (Hofmann, 2007). Fear of negative evaluation is one of the cognitive components that are introduced in explanation of social phobia. It is believed that fear of negative evaluation as a latent construct leads to promotion, growth, and expression of more general fears, anxiety and psychological trauma (Reiss & McNally, 1985). Some cognitive models and also previous studies suggest that social anxiety, to some extent, is resulted from fear of negative evaluation (Clark & Wells, 1995; Rapee & Heimberg, 1997). Indeed, individuals with social phobia believe that other people are fundamentally critical and evaluate them negatively (Rapee & Heimberg, 1997).

Researchers also showed that social anxiety disorder is heightened by the fear of knowing that others can identify symptoms of anxiety (such as blush). Such fears are categorized in a concept called anxiety sensitivity (Rector, Szacun-Shimizu, & Leybman, 2007). Anxiety sensitivity is a cognitive structure through which the individual is scared of the physical symptoms that are related to the anxiety arousal (palpitations, sweating, shortness of breath), and basically results from this idea that these symptoms will lead to social, cognitive and body damaging potential consequences (Deacon, Jonathan, Carol, & David, 2003).

Researchers have shown that anxiety sensitivity, as an intermediate variable, has an important and decisive role in developing and continuity of psychological disorders especially anxiety disorders (Cox, Enss, Freeman, & Walker, 2001) and specifically social anxiety disorder (Anderson & Hope, 2009). Another cognitive concept that researchers recently found that can anticipate the changes in the level of social anxiety is intolerance of uncertainty (IU) that is defined as a cognitive bias that influences the way of perception, interpretation, and individual's responses to vague situations in cognitive, emotional and behavioral levels (Dugas, Schwartz, & Francis, 2004). Individuals, who cannot tolerate uncertain situations, consider vagueness as a stressful, disappointing and anxiety-provoking situation and believe that an individual should avoid such situations. They tend to overestimate the

probability of occurrence of negative or unpredictable events and have threatening interpretation of such information.

So, individuals who cannot tolerate doubtful situations are more vulnerable to dysfunction and negative mood (Yuk, Kim, Suh, & Lee, 2004). Intolerance of uncertainty model was first proposed in relation to the generalized anxiety disorder (Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994), which is characterized by excessive and uncontrollable worry (American Psychiatric Association, 1994). But recently it has been argued that this variable (IU) as a meta-treatment mechanism may also be effective in maintaining the symptoms of other anxiety disorders and depression (Boelen & Reijntjes, 2009; Carleton, Collimore, & Asmundson, 2010; McEvoy & Mahoney, 2011).

To date, many studies have assessed IU in disorders such as generalized anxiety, obsessive-compulsive disorder and even depression (Gentes & Ruscio, 2011), but its association and role in creating social anxiety disorder is less paid (Boelen & Reijntjes, 2009; Carleton et al., 2010). Theoretically, uncertainty has a major role in social anxiety disorder. It is said that in Individuals with this disorder, uncertainty is associated with social anxiety before social encounter (probability of a catastrophic event), during the encounter (ambiguous stimuli is catastrophic) or after it (probability of catastrophic consequences) (Antony & Rowa, 2008).

Mahoney and McEvoy (2012) also showed in their study that increasing tolerance of uncertainty has a major role in the optimal management of social phobia. The first study that examined the relationship between intolerance of uncertainty and social phobia with considering other personality (neuroticism) and cognitive (fear of negative evaluation, anxiety sensitivity, self-esteem and perfectionism) variables was conducted on a sample of 126 Dutch participants. The results of the study showed that in spite of controlling neuroticism as a personality variable and other cognitive variables such as fear of negative evaluation, anxiety sensitivity, self-esteem and perfectionism that are the correlates of social phobia, there is a particular relationship between social phobia and intolerance of uncertainty.

Also, intolerance of uncertainty, fear of negative evaluation and anxiety sensitivity are known as the most important correlates of social phobia among other cognitive variables in this study (Boelen & Reijntjes, 2009).

Carleton et al. (2010), also showed this relation in a similar study with this difference that they considered IU subscales (inhibitory anxiety and prospective anxiety) and the role of positive and negative emotion instead of neuroticism. They showed in their study the degree to which the individual be-

comes disabled in facing with uncertainty (anxiety inhibitory dimension) has strong, unique and considerable relationship with symptoms of social phobia. Considering the importance of knowing fundamental mechanisms of social phobia in preventing and treating of this disorder, the main aim of this study is to identify whether intolerance of uncertainty is considered as a mediator variable between neuroticism and social phobia or not. This study is also conducted to clarify the nature of relationship between the most important correlates of social phobia (neuroticism, fear of negative evaluation, anxiety sensitivity and intolerance of uncertainty) more.

2. Methods

The population of the study consisted of all female undergraduate students of Semnan University of the academic year of 2012-2013. 550 participants were selected by voluntary sampling method among students of Semnan university departments and completed social phobia questionnaire. Then, the individuals whose scores were above the cut score of the questionnaire (156 individuals) were given other questionnaires such as intolerance of uncertainty, tolerance of ambiguity, fear of negative evaluation, anxiety sensitivity and neuroticism subscale of the Eysenck questionnaire, (156 individuals were selected using the G Power software).

Tools

Social phobia scale

This scale was developed to assess social phobia and is a 17-item self-assessing scale. Each unit or question is scored based on 5 response options (0=never to 4=very much). Retest reliability of the questionnaire in groups diagnosed with social anxiety disorder was 0.78 to 0.89 and the inner consistency with alpha coefficient in a group of normal individuals for the whole scale was reported 0.94 (Connor et al., 2000). Hasanvand et al. (2010) reported the alpha coefficient of this questionnaire in Iranian non-clinical sample was 0.82 in the first half and 0.76 in the second half. They also reported 0.84 for the correlation of two halves of the test and 0.91 for Spearman correlation coefficient.

Uncertainty intolerance Scale (short form)

IUS-12 is a short form of the main scale of intolerance of uncertainty with 27 items that is proposed by Freeston et al. (1994) to assess reactions to doubtful and ambiguous situations in the future. This 12-item scale has two subscales of future anxiety and inhibitory anxiety. Each unit is scored based on a 5-grade scale from one (completely false) to five (completely true). The correlation of this 12-item scale with the original scale is very strong ($r=0.96$) (Carleton, Norton,

& Asmundson, 2007). In this study the reliability of this scale was calculated using Cronbach's alpha coefficient on a sample of 50 individuals and Cronbach's alpha coefficient was 0.82.

Short scale of fear of negative evaluation

The scale was made in 1983 by Leary (Leary & Kowalski, 1995). To assess the anxiety resulted from social evaluation and on the basis of fear of negative evaluation scale by Watson & Friend (1969). The scale has 12 statements and is used to measure fear of negative evaluation by others, and is as a criterion for the diagnosis of social phobia and other disorders. It is also applied for examining other social behaviors. Participants should determine the extent of their agreement or disagreement with each statement in a 5-degree Likert range (from "not at all" to "very much"). The psychometric features of the scale were examined in Iran. Cronbach's alpha coefficient for examining internal consistency for scored questions was positive (0.87). Correlation of each question and the whole questionnaire was between 0.50 to 0.66 and omission of none of the questions resulted in increase in reliability (Shokri, Geravand, Naghsh, & Tarkhan, 2008).

Anxiety sensitivity scale

Anxiety sensitivity questionnaire is a self-reporting questionnaire with 16 items on a five-degree Likert scale (0=very low to 4=very high). The degree of experience of fear of anxiety symptoms is determined with higher scores. Scores range from 0 to 64 (Floyd, Garfield, & Marcus, 2005). Retest reliability was 75% after 2 weeks and 71% for three years, which shows that ASI is a stable personality structure (Reiss, Peterson, Gursky, & McNally, 1986). Its validity in Iranian sample was calculated based on internal consistency, test-retest and descriptive methods and reliability coefficients that were calculated for the whole scale were 93%, 95% and 97%, respectively. Concurrent validity was done through simultaneous implementation of «SCI-90» questionnaire and the correlation coefficient of 56% was obtained. Correlation coefficients with the total score were satisfactory and ranged between 74% to 88% (Moradimanesh, MirJafari, Goudarzi, & Mohammad, 2007).

Neuroticism subscale of Eysenck questionnaire

Neuroticism was assessed by using the neuroticism subscale of Eysenck personality questionnaire. This questionnaire aims to assess the main dimensions of personality and has six subscales such as extraversion-Introversion, psychosis, neuroticism, tendency to commit crime, tendency to addiction and tendency to distort (Kaviani, Purnaseh, & Mousavi, 2005). In the present study, only the neuroticism

scale was used. Internal consistency (Cronbach's alpha) for each of the scales were 79% for extraversion-introversion, 76% for psychosis, 86% for neuroticism, 74% for tendency to addiction, 75% for tendency to commit crime and 71% for tendency to distort, respectively, in Iran. The test-retest coefficient for each of the scales were 88% for extraversion-introversion, 76% for psychosis, 88% for neuroticism, 93% for tendency to addiction, 93% for tendency to commit crime and 95% for tendency to distort.

To examine the validity of sextet scales, scales score correlation and the mean of quantitative assessment of raters (interview) were calculated. Correlation coefficient of extraversion-introversion was 84%, psychosis was 75%, neuroticism was 73%, tendency to addiction was 70 %, tendency to commit crime was 68% and a tendency to distort was 73% (Kaviani et al., 2005). Cronbach's alpha for the Eysenck neuroticism scale was obtained 84% in a study that was conducted in Iran and it indicated that an acceptable reliability was gained (Davoudi, Zargar, Mozafaripour, Nargesi, & Molah, 2012).

3. Results

The study sample consisted of 156 Semnan University female students who completed Social Phobia Inventory (SPIN) and their scores were above the cut score of the questionnaire (19). All the individuals were in the age group of 19 to 24 and were undergraduate students in the academic year of 2012-2013. Mean and standard deviation of research variables (social phobia, neuroticism, fear of negative evaluation, anxiety sensitivity and intolerance of uncertainty and its subscales) and the corresponding matrix correlation are shown in Table 1. Path analysis was used to answer the research objectives.

Path analysis was used to test the designed model. Before using path analysis, first the presence of outlier data and the distribution of scores were evaluated using a box plot. The

results showed that there were no outlier data and the distribution of scores is similar. Assumption of data normality was evaluated using Kolmogorov-Smirnov test. The results showed that the data distribution is normal ($P>0.05$). Assumption of variances equality was determined by making a chart of the regression standardized residuals versus regression standard predicted values. Points were scattered randomly and it indicated that the variances were equal. Watson's statistics camera was used to examine the independence of errors.

The results showed that the assumption of independency is established (the outcome values were between 1.97 to 2.18). Assumption of multicollinearity was examined by using tolerance statistics and variance inflation (VIF). The results showed that the minimum tolerance equals to 0.73 and the maximum value of the variance inflation equals to 1.48, which shows that there is no multicollinearity among independent variables. After examining the assumptions of path analysis and assurance of the establishment of the assumptions, research prototype was tested as follows (Figure 1). Standardized coefficients for each of the depicted routes in the model are presented.

According to the suggestion of Thompson (Myers, Gamst, & Garynv, 2012), a subset of the overall fit indices including chi-square, normed fit index (NFI), comparative fit index (CFI) and root mean square error of approximation (RMSEA) are the most important fit indices. Therefore, the mentioned indices were calculated for the present study.

The results of chi-square test showed that the value of this statistics is 6.71 and significance of 0.01 was obtained with freedom degrees of 1 and it indicates that the model fit to the data is poor. Normed fit index (NFI) and comparative fit index (CFI) can be between zero and one. The values of 0/95 and higher are considered acceptable. NFI and CFI values in this study were 0.967 and 0.97, respectively. The values confirm this model on the basis of criterion of 95%

Table 1. Mean and standard deviation scores and correlation coefficient between research variable.

Variables	Mean	Standard deviation	1	2	3	4	5	6	7
1. Neuroticism	14.51	4.26	1						
2. Fear of negative evaluation	38.45	9.79	0.47**	1					
3. Anxiety sensitivity	30.08	10.06	0.27**	0.28**	1				
4. Intolerance of uncertainty	38.30	8.39	0.42**	0.32**	0.31**	1			
5. Prospective anxiety	22.47	5.03	0.32**	0.28**	0.17*	0.90**	1		
6. Inhibitory anxiety	15.82	4.43	0.43**	0.29**	0.39**	0.87**	0.56**	1	
7. Social phobia	28.49	9.01	0.55**	0.50**	0.39**	0.48**	0.35**	0.51**	1

* $P<0.05$ ** $P<0.01$.

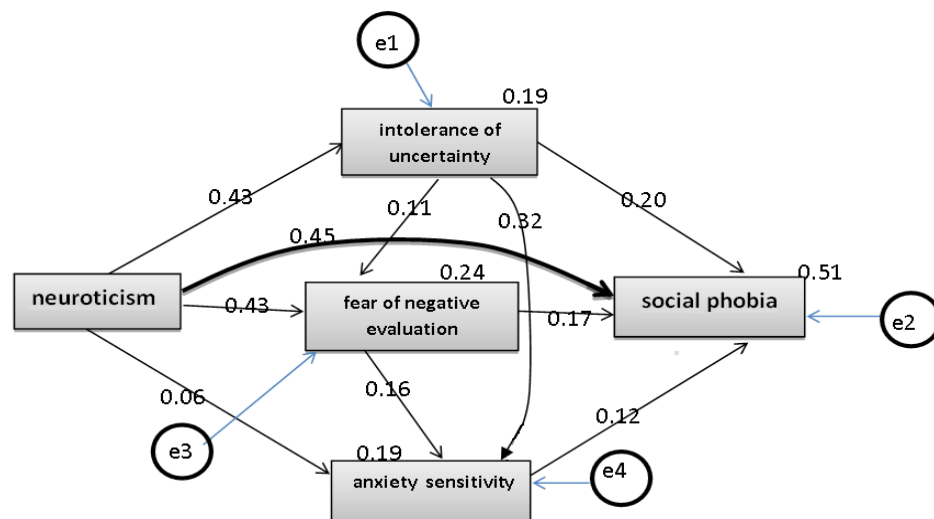


Figure 1. Initial model of the research and corresponding path coefficient.

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or higher. Root mean square error of approximation (RMSEA) shows the average residuals between observed correlation and covariance of the sample and expected model estimated of the population.

Lohlyn (Myers et al., 2012) believes that the values less than 0.08 represent a good fit, 0.08 to 0.10 represent an average fit and higher than 0.10 represent a poor fit. The RMSEA value for this study was 0.19 that indicates a poor fit of the model to the data. In addition, the results of significance of path coefficients showed that significance level related to neuroticism path to anxiety sensitivity and intolerance to uncertainty path to the fear of negative evaluation is not significant. Thus, by eliminating the routes mentioned above, the modified model was drawn and tested (Figure 2).

Standardized coefficients for each of the depicted routes in the model are presented. Results of chi-square test showed that the value of this statistics equals to 2/42 and its significance level is 0.297 with degrees of freedom of 2 and it indicates a good fit of the model to the data. NFI and CFI values in this study were 0.988 and 0.998, respectively. Considering the fact that the values higher than 0.95 are appropriate for mentioned indices, obtained values confirm the model. Root mean square error of approximation (RMSEA) for the modified model was 0.037 and it indicates a good fit of the model to the data. In addition, the results of path significance coefficients showed that all coefficients are significant. The highest path coefficient is related to the relationship between neuroticism and fear of negative evaluation ($\beta=0.48$) and the smallest path coefficient is related to the relationship between anxiety sensitivity and social anxiety ($\beta=0.14$).

The mentioned chart results also show that 46 % of the variable variance of social anxiety is explained by the variables in the model. In addition, 19% of the variable variance of intolerance of uncertainty and 23% of variable variance of fear of negative evaluation are explained by neuroticism variable. Also, 18% of the variable variance of anxiety sensitivity is explained by two variables of fear of negative evaluation and intolerance of uncertainty. In total, considering the obtained data, it can be concluded that the modified model is of a good fit to the data.

4. Discussion

The first finding of the present study showed that high levels of neuroticism predict intolerance of uncertainty and fear of negative evaluation in social phobia, both directly and indirectly through mediator variables. Neuroticism is considered as a common component of all anxiety disorders (Mineka, Watson, & Clark, 1998) and many researches admitted its role in developing social anxiety (Boelen & Reijntjes, 2009; Kashdan, 2002). In contrast, there are also some studies that know the relationship between neuroticism and negative affect with social anxiety, less prominent (Brown, Chorpita, & Barlow, 1998). However, one of the prominent features of neuroticism is the inability in realizing behaviors that need high energy, especially those that are influential in the outside world (Ganji, 2007) and individuals who score high in neuroticism are prone to irrational beliefs, are less able to control their impulses, and deal with stress much weaker than other people.

In fact, existence of these damaging factors can inhibit their adaptation (Eysenck & Eysenck, 1964) in their so-

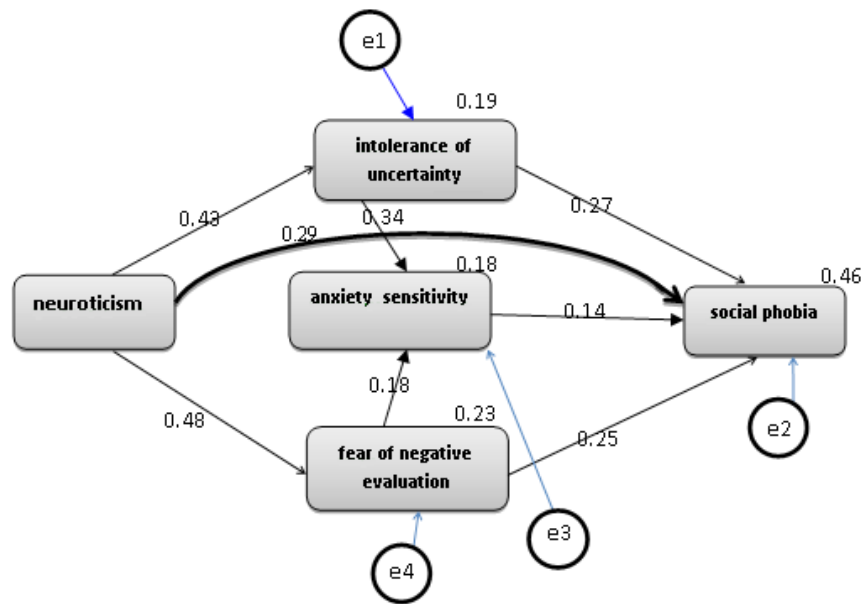


Figure 2. Modified model of the research and corresponding path coefficients.

cial relationships. The study also showed that neuroticism can predict social phobia through intolerance of uncertainty. This finding is consistent with the result of the study by McEvoy and Mahoney (2012). Their research was the first study that showed intolerance of uncertainty is a mediator of relationship between neuroticism and symptoms of social phobia and other anxiety disorders. Since inability in choosing, especially disturbance in deciding is one of the main characteristics of individuals with neuroticism (Ganji, 2007), it can be said that encountering with uncertainty is more debilitating for these individuals and since social phobia is related to lack of response and forbear of the relationship (McEvoy & Mahoney, 2012), it can be concluded that neuroticism can cause the develop of social anxiety through inability in tolerance of uncertainty.

This study also showed that neuroticism can also predict social phobia through fear of negative evaluation. In explanation of this finding it can also be said that due to the fact that individuals with neuroticism have weaker verbal and contact abilities (Chamorro-Premuzic, Furnham, & Petrides, 2006) and neuroticism is also associated with weaker social interactions (Gilbert & Connolly, 1991) so, their self-esteem and self-confidence may decline, and since they have no inner source to reinforce themselves, others' judgment and evaluation is of great importance for them and are afraid of rejection by others. So, social anxiety develops in these individuals (Mohammadi & Sadjadinezhad, 2010).

Therefore, it is not surprising that such individuals are afraid of negative evaluation by others and experience excessive embarrassment that is one of the main characteristics of social phobia, in their social relationships (Miller, 1995). In this regard, many studies admitted the relationship between fear of negative evaluation and social phobia (Mohammadi & Sadjadinezhad, 2010; Weeks et al., 2005; Deacon & Abramowitz, 2006). The second finding of the study is related to the existence of a significant relationship between anxiety sensitivity and social phobia. This finding is consistent with the results of some researches (Anderson & Hope, 2009; Beirami, Akbari, Ghasem Pour, & Azimi, 2012).

It seems that anxiety sensitivity develops biases in the retrieval and processing of information related to the anxiety call stimuli and it provides the grounds for the individuals to catch mental disorders such as social anxiety (Mccab, 1999). Thus, it can be considered as an important risk factor for anxiety problems (Zvolensky, Schmidt, Bernstein, & Keough, 2006). In individuals with social anxiety disorder, a defective cycle occurs between negative emotions, evaluations, negative interpretations and anxiety that constantly keep the individuals in a state of vigilance about physical symptoms of anxiety and causes increase in their anxiety sensitivity (Rector et al., 2007).

Furthermore, consider that anxiety sensitivity causes cognitive bias in relation to the threatening stimuli and increases the threatening level of perceived internal and external stimuli. Individuals with social anxiety

ety perceive more threatening stimuli and show more avoidance and coping behaviors, so the probability of increasing anxiety sensitivity is higher in them (Kashdan, Barrios, Forsyth, & Steger, 2006). In spite of the direct relationship between anxiety sensitivity and social phobia, in this study, the role of anxiety sensitivity as a mediator variable between neuroticism and social phobia was not confirmed. While in a study by Sekton et al. (2003), anxiety sensitivity mediated the relationship between neuroticism and the symptoms of panic, obsessive-compulsive disorder and health anxiety.

The third finding of the study showed that anxiety sensitivity is associated with intolerance of uncertainty. Anxiety sensitivity is characterized by uncertainty about the consequences resulted from feelings of arousal (for example, heart palpitations may be a symptom of a heart attack or not). Too much inability in tolerating uncertainty may be likely to lead to developing too much anxiety and catastrophic thoughts. While high tolerance ability, probably decreases anxiety and catastrophic thoughts (Carleton, Sharpe, & Asmundson, 2007). For individuals who have a high intolerance of uncertainty, involving in situations with uncertain outcomes, may cause high levels of anxiety (Dugas, Gosselin, & Ladouceur, 2001). These individuals are more likely to interpret ambiguous information as minatory (Heydayati, Dugas, Buhr, & Francis, 2003) and it heightens arousal (like heart palpitations and hypertension) (Greco & Roger, 2001) and facilitates the constant cycle of fear in them (Barlow, 2002).

And the last finding of this study referred to the relationship between fear of negative evaluation and sensitivity anxiety. This finding is consistent with a research by Kemper, Lutz, Bahr, Ruddel, & Hock (2012). They concluded that there is a significant correlation between anxiety sensitivity and fear of negative evaluation but this relationship is more prominent between one of the subscales of anxiety sensitivity -observable anxiety- and fear of negative evaluation. It is obvious that one of the reasons that symptoms of anxiety such as blush is considered catastrophic in individuals with high anxiety sensitivity, can be too much fear of others' negative judgment and evaluation.

This study, like most other studies, has some limitations that make it difficult to generalize the findings. Its limitations include: It is just conducted on Semnan female non-clinical university students and the role of gender is not examined; To collect data, self-reporting questionnaires were used so, it is possible that participants give distorted information; The variables used in

this research were of the ones that received the most empirical support; And Due to fatigue in participants, entering more variables in the study was not possible. Given that social phobia, as a disorder in the DSM-IV-TR, has diagnostic criteria, it is recommended that future researches focus on diagnostic interviews of clinical samples. Also, with regard to both male and female groups, consider the role of gender.

Considering high prevalence of social phobia disorder and its negative effect on individuals' lives, especially their professional lives, determining the role of intolerance of uncertainty and other correlates of social phobia in predicting this disorder can lead to a better understanding of underlying factors. So, potential applications of these findings are of high importance for clinicians in treating this social anxiety disorder.

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