

Anxiety Sensitivity Dimensions and Generalized Anxiety Severity: The Mediating Role of Experiential Avoidance and Repetitive Negative Thinking

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Objective: Generalized anxiety disorder is one of the most common anxiety disorders in the general population. Several studies suggest that anxiety sensitivity is a vulnerability factor in generalized anxiety severity. However, some other studies suggest that negative repetitive thinking and experiential avoidance as response factors can explain this relationship. Therefore, this study aimed to investigate the mediating role of experiential avoidance and negative repetitive thinking in the relationship between anxiety sensitivity and generalized anxiety severity.

Method: This was a cross-sectional and correlational study. A sample of 475 university students was selected through stratified sampling method. The participants completed Anxiety Sensitivity Inventory-3, Acceptance and Action Questionnaire-II, Perseverative Thinking Questionnaire, and Generalized Anxiety Disorder 7-item Scale. Data were analyzed by Pearson correlation, multiple regression analysis and path analysis.

Results: The results revealed a positive relationship between anxiety sensitivity, particularly cognitive anxiety sensitivity, experiential avoidance, repetitive thinking and generalized anxiety severity. In addition, findings showed that repetitive thinking, but not experiential avoidance, fully mediated the relationship between cognitive anxiety sensitivity and generalized anxiety severity. α Level was $p < 0.005$.

Conclusion: Consistent with the trans-diagnostic hypothesis, anxiety sensitivity predicts generalized anxiety severity, but its effect is due to the generating repetitive negative thought.

Key words: Anxiety Sensitivity, Experiential Avoidance, Generalized Anxiety Disorder, Repetitive Thinking, Trans-Diagnostic Mechanisms

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Generalized anxiety disorder (GAD) is one of the most common disorders found in clinical centers and the general population (1). The 12-month and lifetime prevalence of this disorder has been estimated to be 3.6% to 4% and 9%, respectively. In the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), generalized anxiety disorder is defined as "excessive worry and anxiety about different events and activities, along with physical and cognitive symptoms that impair function (2). Based on the taximetrics study, generalized anxiety disorder is better represented as a dimensional construct rather than a categorical construct. Contrary to the categorical model of DSM-5, some evidences do not support dichotomizing individuals into disordered versus non-disordered groups and some suggest that any diagnostic thresholds to identify GAD group are likely to be arbitrary. This allows the investigators to study GAD as a continuum disorder whose severity varies in the general population (3).

Many cross-sectional and longitudinal studies have been conducted on the risk factors of this disorder and its severity. One of the factors found to play a role in

generalized anxiety severity is anxiety sensitivity (4, 5), meaning a fear of sensations and consequences is associated with anxiety (6).

Some studies have shown that levels of anxiety sensitivity are correlated with generalized anxiety severity (5, 7), and that anxiety sensitivity is significantly higher in people with generalized anxiety disorder than the controls, specially its cognitive factor which involves items assessing one's worries about mental capacity and performance such as focusing and cognitive control (8, 9). Narimani et al. (2015) found that generalized anxiety symptoms decrease by reducing anxiety sensitivity through applied relaxation and cognitive-behavioral therapy, (10).

Although several studies have shown the role of anxiety sensitivity in generalized anxiety severity, the next step is to identify the mechanism, which relates the two constructs. Some studies indicate that the cognitive factor of anxiety sensitivity relative to other subscales has the strongest relationship with generalized anxiety. To explain this, DSM-V stated that fear of lack of cognitive control is consistent with

a cognitive processing problem observed in generalized anxiety as uncontrollable and excessive worry is the main cognitive characteristic of anxiety (1). On the other hand, several studies have found that anxiety sensitivity predicts levels of worry in healthy and anxious people (11). Therefore, it seems that considering worry as uncontrollable may lead to an increase in fear and sensitivity to anxiety symptoms, followed by an increase in anxiety (12). Consistent with this, Cox et al. (2001) found the mediating role of rumination in the relationship between anxiety sensitivity and depression (13). Recent studies indicate that worry and rumination are regarded – as cognitive processes governing generalized anxiety and depression, and as parts of the latent variable, repetitive thinking – and this may explain the comorbidity and common aspects between the two disorders with respect to anxiety sensitivity. Therefore, anxiety sensitivity through repetitive thinking may lead to severity of symptoms in generalized anxiety.

Another factor related to generalized anxiety severity is experiential avoidance. Experiential avoidance is a process including negative and excessive evaluations of sensations, feelings, and unwanted private thoughts and a lack of interest in experiencing these private events and voluntary efforts to control them or escape from them. This factor as an evident aspect of most mental disorders, involves a general pattern of intentional actions to eliminate undesirable mental states, which limits the functioning of the person (14). Experiential avoidance and repetitive thinking, as trans-diagnostic response factors, can explain the relationship between anxiety sensitivity and generalized anxiety. Recently, some studies have shown that the relationship between anxiety sensitivity and some disorders is through experiential avoidance (15). That is, some mechanisms are used to regulate the emotions related to anxiety symptoms to minimize dealing with undesirable experiences. The main reason that explains the relationship between experiential avoidance and generalized anxiety is that people with severe generalized anxiety are sensitive to their physical symptoms and internal emotions and are hyper-vigilant toward real or imaginary unpredictable dangers. Therefore, they use avoidance or control mechanisms (instead of acceptance) to manage their emotions (16). Moreover, several studies confirm the relationship between vulnerability factors and response factors that predict generalized anxiety severity. No study has integrated these relationships in a model. Therefore, this study aimed to examine the mediating role of experiential avoidance and repetitive thinking in the relationship between anxiety sensitivity and generalized anxiety severity.

Materials and Method

Participants

The study population included all students of two major universities in Tehran, who were selected using stratified random sampling method (based on gender).

After omitting outliers and inappropriate questionnaires, a sample of 475 university students was selected. The inclusion criterion was being above 18 years of age, and the exclusion criterion was a report of drug use.

Instruments

Brief Measure of Generalized Anxiety Disorder (GAD-7): This is a 7-item scale for screening and assessing the severity of generalized anxiety, which was developed by spritzer et al. (2006). The psychometric characteristics of its main edition are as follows: Its internal consistency, using the Cronbach's alpha coefficient, and its two-week test-retest reliability coefficient was reported as 0.91 and 0.83, respectively. The convergent validity of the scale, assessed by an examination of its correlations with the Beck Depression Inventory (BDI) and the anxiety subscale of the SCL-90, was calculated as 0.72 and 0.74, respectively (17). In Iran, Naeinian et al. (2012) found good internal consistency (0.85). The convergent validity of the GAD-7, assessed by measuring its correlations with Symptom Checklist 90 Revised (SCL-90-R) and state-trait anxiety inventory (STAI), was calculated as 0.63 and 0.71 in student and clinical samples (18).

The Anxiety Sensitivity Index-3 (ASI-3): Taylor et al. (2007) generated, and for the first time, examined the psychometric properties of the third version of anxiety sensitivity inventory. This version is an 18-item self-report questionnaire, assessing psychological, cognitive and social aspects of anxiety sensitivity. It has three subscales including cognitive, physical, and social. The psychometric characteristics of this scale have been reported to be good (19). Allan et al. (2014), using the Cronbach's alpha coefficient, reported the internal consistency of the scale as 0.92. The scale has a good discriminant validity as well (20). In Iran, Kami et al. calculated its internal consistency, using the Cronbach's alpha coefficient (0.85), and convergent validity, using calculating of its correlation with acceptance and action questionnaire-II (AAQ-II), (0.5) (article in press).

The Acceptance and Action Questionnaire - II (AAQ-II): Bond et al. developed this questionnaire (2011). It assesses diversity, acceptance, experiential avoidance, and psychological inflexibility. The psychometric characteristics of the main edition are as follows: The mean alpha coefficient was .84, and the 3- and 12-month test-retest reliability was calculated as .81 and .79, respectively. The scale has a good discriminant validity (21). In Iran, Abbasi et al. (2013) reported the psychometric characteristics of this questionnaire; an exploratory factor analysis revealed two factors: Avoiding emotional experiences and control over life. The internal consistency and split-half coefficient of the scale were good (0.89-0.71) (22).

The Preservative Thinking Questionnaire (PTQ): Ehring et al. developed this questionnaire (2011) as an instrument for assessing repetitive thinking, independent from contents (23). In a series of factor

analyses, a model with a higher level factor consisting of repetitive negative thoughts (RNT) and three lower level factors including the main characteristics of RNT (repetitive, intruding, difficult to detach) perceiving the uselessness of these thoughts and occupying the mental capacity of the person showed a good fitting. The psychometric characteristics of its main edition are as follows: The internal consistency, using a two-week test-retest reliability coefficient was reported as 0.69. The convergent validity of the scale, assessed by an examination of its correlations with Penn State Worry Questionnaire (PSWQ) and the rumination scale of the Response Style Questionnaire (RSQ), was calculated as 0.70 and 0.63, respectively. In Iran, Kami et al. calculated its reliability, using test-retest examination (0.72), and convergent validity, using calculating of its correlation with difficulty in emotion regulation scale (DERS), 0.65 (article in press).

Procedure

After obtaining informed consent and explaining the aim and importance of the study to the participants, the inclusion/exclusion criteria were examined. Then, participants completed the printed sets of the questionnaires (including GAD-7, ASI-3, AAQ-2, and PTQ). They asked questions about unclear items, and could write e-mails to receive the study results. Then, questionnaires were examined to find incomplete or incorrect answers. Five hundred fifty sets of questionnaires were distributed, and after removing incomplete questionnaires and outliers, 475

sets of questionnaires were entered into the statistical analysis.

Statistical Analysis

Statistical analysis was conducted using SPSS version 22. Pearson correlation coefficient and multiple regression were used to examine the study hypotheses (α level<0.05).

Results

Descriptive Statistics

The demographics of the sample are as follows: 256 men (53.9%) and 229 women (45.7%), with an average age of 22.53 and 3.13, respectively. Two of the participants did not reveal their gender, and three did not mention their age.

The correlations, means and standard deviations of the study variables are displayed in Table 1. Participants had a moderate level of generalized anxiety (M = 29.6). As it was hypothesized, among the three factors of anxiety sensitivity, generalized anxiety had the strangest correlation with the cognitive factor ($r = 0.46$, $p < 0.001$). Generalized anxiety had moderate to high correlations with repetitive thinking and experiential avoidance ($r = 0.54$, $p < 0.001$, $r = 0.52$, $p < 0.001$, respectively). Repetitive thinking and experiential avoidance are most correlated with the cognitive factor of anxiety sensitivity ($r = 0.47$, $p < 0.001$, $r = 0.54$, $p < 0.001$, respectively).

Table1. Means, Standard Deviations of Anxiety Sensitivity Dimensions, Repetitive Thinking, Experiential Avoidance and Generalized Anxiety Severity, and Correlations Among Them($p < 0.001$)

	1	2	3	4	5	6	7	M	SD
1 Anxiety sensitivity- Total	1	0.88	0.85	0.83	0.49	0.53	0.46	20.54	12.8
2 Anxiety sensitivity- Cognitive		1	0.71	0.59	0.47	0.54	0.46	5.12	4.8
3 Anxiety sensitivity- Physical			1	0.52	0.37	0.42	0.43	6.13	4.8
4 Anxiety sensitivity- Social				1	0.41	0.41	0.31	9.28	5.2
5 Repetitive thinking					1	0.63	0.54	25.42	11.81
6 Experiential avoidance						1	0.52	32.9	10.01
7 Generalized anxiety severity							1	6.69	3.96

Table2. Summary of Regression Analysis for the Three Factors of Anxiety Sensitivity on Repetitive Thinking

	B	Std. Error	Beta	R	R2	Adjusted R2	T	Sig
1 Constant	15.83	0.95					16.52	0.0001
Anxiety sensitivity- Physical	0.06	0.14	0.02				0.426	0.67
Anxiety sensitivity- Cognitive	0.83	0.14	0.34				5.65	0.0001
Anxiety sensitivity- Social	0.44	0.11	0.2	0.5	0.25	0.25	3.99	0.0001

Table3. Summary of Regression Analysis for the Three Factors of Anxiety Sensitivity on Experiential Avoidance

	B	Std. Error	Beta	R	R2	Adjusted R2	T	Sig
1 Constant	24.46	0.78					31.36	0.0001
Anxiety sensitivity- Physical	0.08	0.11	0.04				0.74	0.45
Anxiety sensitivity- Cognitive	0.9	0.12	0.43				7.49	0.0001
Anxiety sensitivity- Social	0.26	0.09	0.14	0.56	0.31	0.31	2.91	0.004

Table4. Summary of Regression Analysis for the Three Factors of Anxiety Sensitivity on Generalized Anxiety Severity

	B	Std. Error	Beta	R	R2	Adjusted R2	T	Sig
1 Constant	4.13	0.32					12.71	0.0001
Anxiety sensitivity- Physical	0.17	0.04	0.21				3.64	0.0001
Anxiety sensitivity- Cognitive	0.24	0.05	0.3				4.92	0.0001
Anxiety sensitivity- Social	0.01	0.03	0.02	0.49	0.24	0.23	0.44	0.65

Table5. Summary of regression analysis for the 3 factors of anxiety sensitivity, experiential avoidance, and repetitive thinking on generalized anxiety severity

	B	Std. Error	Beta	R	R2	Adjusted R2	T	Sig
1 Constant	0.22	0.5					0.45	0.65
Anxiety sensitivity- Physical	0.16	0.04	0.19				3.76	0.0001
Anxiety sensitivity- Cognitive	0.07	0.04	0.09				1.59	0.11
Anxiety sensitivity- Social	-0.05	0.03	-0.07				-1.62	0.1
Repetitive thinking	0.1	0.01	0.32				6.97	0.0001
Experiential avoidance	0.08	0.01	0.22	0.63	0.4	0.39	4.6	0.0001

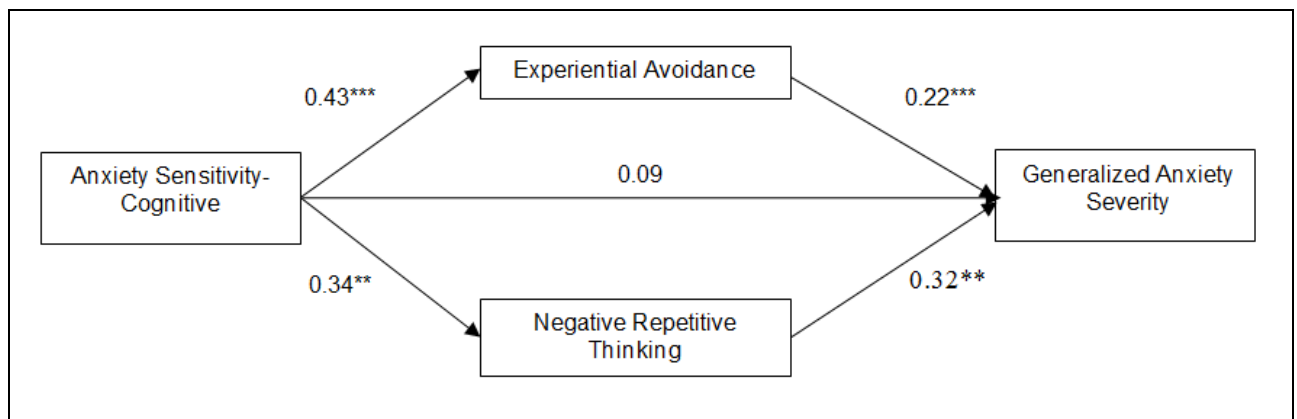


Figure1. Path analysis model for mediating role of experiential avoidance and repetitive thinking in the relationship between anxiety sensitivity and generalized anxiety severity

** $p < 0.001$
 *** $p < 0.0001$

Path Analysis

The trans-diagnostic variables were associated with the severity of generalized anxiety. In the next step of the path analysis, a multivariate regression analysis was used to determine how much of the relationship between anxiety sensitivity and generalized anxiety was explained by repetitive thinking and experiential avoidance. At first, the three subscales of anxiety sensitivity served as predictive variables, and experiential avoidance and repetitive thinking served as criterion variables in two distinct regression analyses (Tables 2 and 3). As displayed in the tables, only the cognitive and social factors were entered into the model for experiential avoidance and repetitive thinking. The cognitive and social factors explain 0.25% of the variance of repetitive thinking, with Beta coefficients of 0.34 and 0.2, respectively. Moreover, they explain 0.31% of the variance of experiential avoidance, with Beta coefficients of 0.12 and 0.09, respectively. The role of physical factor was not significant in repetitive thinking and experiential avoidance.

In the next step, the role of the three anxiety sensitivity factors in the severity of generalized anxiety was examined. The social factor did not significantly explain the severity of generalized anxiety, but the physical and cognitive dimensions explained 0.23% of the variance of generalized anxiety, with Beta coefficients of 0.21 and 0.3, respectively (Table 4).

In the next step, to test the mediating role of experiential avoidance and repetitive thinking in the relationship between anxiety sensitivity and generalized anxiety, all variables were entered into the regression equation. By entering experiential avoidance and repetitive thinking with anxiety sensitivity factors simultaneously, the cognitive factor of anxiety sensitivity did not significantly explain generalized anxiety anymore, but repetitive thinking ($\beta = 0.32$) and experiential avoidance ($\beta = 0.22$), significantly explained this variable (Table 5). Based on this finding, we can infer that repetitive thinking and experiential avoidance completely mediate the relationship between the cognitive factor of anxiety sensitivity and generalized anxiety (Figure 1).

Discussion

The aim of this study was to examine the role of mediating variables in the relationship between anxiety sensitivity and generalized anxiety. In this study, a model was examined in which anxiety sensitivity was a high-level factor, and experiential avoidance and repetitive thinking were second level factors, and generalized anxiety the outcome variable. The study findings could integrate and extend previous findings by presenting a consistent pattern. The first hypothesis was that anxiety sensitivity predicts experiential avoidance and repetitive thinking. This finding puts this study among the studies emphasizing anxiety sensitivity as a fundamental element in anxiety disorders. Anxiety sensitivity is a variable that

affects the cognitive evaluation system; and therefore, causes the person to lose his sense of control over situations and to consider life events as potentially harmful (11, 24). Many studies indicate that in addition to anxiety sensitivity, worry plays an important role in the pathology of anxiety disorders. Therefore, in this study we aimed to take a wider perspective and instead of limiting worry to contents, consider it as a trans-diagnostic factor. Thus, instead of using worry or rumination scales, we used the Perseverative Thinking Questionnaire (PTQ), which assesses the repetitive thinking process instead of contents. According to the results of correlations and multiple regression analysis, it seems that anxiety sensitivity predicts this process, except for the dimension of worry about physical symptoms. The dimension of social worries is also associated with repetitive thinking, a finding consistent with the previous studies on social anxiety (19, 25 and 26). However, more studies are needed to examine the mediating role of repetitive thinking in the relationship between the dimension of social worries and social anxiety. Nevertheless, in line with previous studies and theories (13), the dimension of social worries is most correlated with repetitive thinking. It seems that when people with generalized anxiety face anxiety symptoms and negative predictions of events, they use rumination and worry to maintain control over their cognitive processes, and even though they relatively have positive beliefs about this, if they feel a lack of control over their cognitive processes, it makes them vulnerable to generalized anxiety (27).

Moreover, consistent with the previous studies, a relationship was found between the total score and anxiety sensitivity factors with experiential avoidance (28). However, in contrast to the findings of this study, many previous studies, like Pickett et al (2012) have shown that experiential avoidance predicts anxiety sensitivity (29), but according to the model described by Frank and Davidson (2014), it appears that anxiety sensitivity acts as a predisposing trans-diagnostic factor, and experiential avoidance as a reactive trans-diagnostic factor (30). In addition, according to the cognitive behavioral model of emotional disorders, thoughts and beliefs lead to using behavioral strategies (e.g., avoidance, reassurance seeking, checking, etc.) (31). Therefore, because people with generalized anxiety believe that anxiety leads to negative physical and cognitive consequences, they try to avoid anxiety-provoking situations. According to the Borkovec's avoidance model of worry and anxiety (32), In addition to behavioral and assurance seeking, worry is a cognitive avoidance mechanism that prevents people from facing mental, physical, and emotional aspects of anxiety. The intolerance of uncertainty model (33) maintains that worry as an effort to avoid uncertainty is negatively reinforced, and prevents a change in a person's beliefs about threat. Therefore, repetitive thinking as an

avoidance mechanism and an impaired cognitive process, which can result from anxiety sensitivity, intolerance of uncertainty, and maladaptive metacognitions leads to maintenance and intensification of anxiety symptoms. This study was the first to simultaneously examine anxiety sensitivity, experiential avoidance and repetitive thinking as a trans-diagnostic model of generalized anxiety. Due to the fact that often co-morbidities exist between generalized anxiety disorder and other emotional disorders such as major depression, panic, OCD, etc.(2), the present model helps to explain co-morbidity and design a therapeutic protocol based on trans-diagnostic factors. It also helps to compare the importance of variables in predicting generalized anxiety severity, while previous studies have not examined it.

Limitations

The first limitation of this study was using a student, nonclinical sample; thus, generalizing the findings to clinical or non-student groups should be done with caution. It is also important to note that this study was conducted simultaneously with another study, so the high number of questioners may have made the participants tired and less motivated to answer the questions. Therefore, it is suggested that this study be replicated in general and clinical populations, using survey and experimental methods to make possible the generalizability of the data and to understand casual relationships.

Conclusion

In summary, it seems that in unlike anxiety sensitivity, specially sensitivity to cognitive impairment, people with GAD use worry to avoid this anxiety disadvantage, but this makes the symptoms more severe, meaning that reducing anxiety sensitivity and improving cognitive control may progress GAD treatment. Future studies can examine the relationship between anxiety sensitivity and impaired cognitive control as well as targeting anxiety sensitivity and impaired cognitive control to reduce GAD symptoms.

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Conflict of Interest

The authors declare no conflict of interest.

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