MODEL OF SOCIAL ANXIETY DISORDER: A STRUCTURAL EQUATION MODELING OF COGNITIVE, META-COGNITIVE, BEHAVIORAL ASPECTS

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Social anxiety is one of the most common anxiety disorders which negatively affect all aspects of people’s lives. The research method of this study was descriptive-correlational of the structural equation model. Statistical population included all the clients of public and private counseling centers in the city of Kermanshah (Iran). At first, 300 eligible people were selected. The selected constructs included self-efficacy, fear of negative evaluation, assumptions (cognitive), ability of cognition, negative meta-beliefs, mind control (meta-cognitive), behavioral avoidance and safety behavior (behavior). AMOS-23 software was used to analyze the data. The results showed that cognitive, meta-cognitive and behavioral factors have a direct impact on social anxiety. Also, social anxiety disorder is impacted by cognition dimensions through mediators of meta-cognitive and behavioral factors. Nevertheless, meta-cognition did not have a meaningful effect on social anxiety through behavior. The results of structural equation model showed that the cognitive, meta-cognitive, behavioral model that coordinate with the present research can predict social anxiety disorder. Structural analysis results showed that the designed model gave an adequate fit to the sample data of the present study. The developed model can improve researches associated with social anxiety disorder and facilitate clinical treatment of this disorder.

Key words: social anxiety, cognition, behavior, meta cognition

INTRODUCTION

Social anxiety disorder is a chronic anxiety disorder which is characterized by an intense fear of functional and social situations, and in which people feel that they are judged by their actions and behaviors and consequently avoid these situations (Buckner, Heimberg, Ecker, & Vinci, 2013; Shannon, 2012). This disorder is the third most common psychiatric disorder with a prevalence of 13 percent and it is the most widespread mental disorder (Starcevic, 2005). As human is a totality of biological, psychological, and social consequences; the way these areas impact the disorder has always been considered by researchers (Acarturk, Smit, De Graaf, Van Straten, Ten Have, & Cuijpers, 2009). This has led to the consideration of numerous models to examine the range of factors and correlations of social anxiety disorder. According to cognitive theories, knowledge have a key role in
the etiology and persistence of emotional states (Williams, Watts, MacLeod, & Mathews, 1988), numerous cognitive models were developed regarding social anxiety. Such as: models of Rapee and Heimberg (1997), Clark and Wells (1995), and Wells (1997) which serve as a basis for further researches.

Cognitive patterns and models include many aspects; moreover, the core of social anxiety in behavioral-cognitive models, fear of negative evaluation has been introduced (Rapee & Heimberg, 1997). Cederlund and Öst (2013) believe that this particular fear of social failure affects individual’s and others’ beliefs about themselves in social situations. Neenan and Dryden (2004) believe that emotional disorders are associated in terms of evaluating the levels of negative automatic thoughts, rules/underlying assumptions and the core beliefs. Negative automatic thoughts are involuntarily thoughts which are based on specific situations and in times of stress or emotional tension fetching to the individual’s mind (Beck, 1995). Underlying assumptions are tools that people use, hoping to avoid deadly negative core beliefs of themselves. The validity of these assumptions has never been questioned, therefore, they serve to maintain and strengthen main beliefs (Neenan & Dryden, 2004). Core beliefs are deep themes and patterns that are taken from memories, emotions, cognitions, and physical emotions (Roelofs, Onckels, & Muris, 2013) and fall in schema category (Neenan & Dryden, 2004).

Another theoretical model that explains the causes of social anxiety is cognitive-social model of Bandura (1997). The main construct of this model of explaining social anxiety is self-efficiency. This construct refers to the perceived ability of the individual to perform a desired action. In his view, when people consider themselves without the necessary authority to deal with potentially hazardous and life-threatening events, they feel very stressed. Gaudiano and Herbert (2003) believe that if an event is beyond the ability of self-perception, implied inability of confronting can create anxiety.

Another model in the field of social anxiety disorder is meta-cognition model. It can be considered as an aspect of public knowledge that plays a role in all cognitive activities. Some of the specific aspects of meta-cognition are associated with psychological disorders (Wells, 2003). Meta-cognition is aspect part of information processing systems that is responsible for: Monitoring, interpreting, evaluating the content, and self-organizing processes of the information processor system (Young, Klosko, & Weishaar, 2003). The study of this type of meta-cognition processes in psychological disorders is relevant to a theory which was basically mentioned by Wells and Mathews (Beck, Rush, Shaw, & Emery, 1979). The central notion of this theory is that achieving and maintaining emotional disorders, is the result of a wide range of information processing actions which in cognitive treatment it is referred to as schema activation and it includes attention processes, situations of self-regulation target processes, meta-cognition processes, and styles of processing (Beck, 1976).

Researchers such as Wells have focused on identifying the meta-cognitive beliefs involved in the formation of social anxiety (Turner, Rose, & Cooper, 2005; Beck, 1976). He has referred to cognitive-attention syndrome in people who have problem controlling their repetitive thoughts, which will appear in the form of anxiety, mental rumination, and self-reviewing behavior. Activity and stability of this syndrome in response to stress
depends on incompatible meta-cognitive beliefs regarding the use of anxiety, he also found that patients use worry as a coping mean; it means that some people have positive meta-cognitions in uncontrollability and possibility of negative effects and some have negative meta-cognitions (Saariaho, Saariaho, Karila, & Joukamaa, 2009). In the meta-cognitive model developed by Wells, it is proposed that most of the negative general assessments, or conventional beliefs are influenced and controlled by meta-cognitive processes (Wells, 2000). Furthermore, according to the researches and theoretical models, it could also be said that beliefs (cognitions) are associated with emotional disorders through meta-cognition, it is associated with these disorders directly, As Clark and Fairburn (1997) believe, some cognitions are antecedents of emotional reactions. Cognitions themselves are highly influenced by emotional states and it seems that they are antecedents of emotional states. Finally, another issue in the field of anxiety disorders concerns behavioral dimensions which were studied by Wells (1995). He has been studying safety behaviors and acknowledged the role of these behaviors (Wells, 2009). Agha Mohammadian and Hosseini (2005) believe that various behavioral effects can be observed in patients with social anxiety; some of these effects are:

1. safety behaviors: There are methods to help people survive situations easier and these behaviors are automatic.
2. Avoidance behavior: they Are behaviors that the individual uses to avoid a situation or avoid an intended behavior when they are exposed to that situation.
3. Unhealthy behaviors: since these individuals are mostly alone and do not have intimate relationships, they may exhibit unhealthy behaviors such as: addiction, alcoholism, and making virtual relationships.

Sporadic research have been done in the field of social anxiety models, such as: Masoudnia’s study (2008) that showed the reliability and ability of Bandura’s cognitive-social model (1997) as a theoretical model to explain and predict students’ social phobia. The result of Moree’s study (2010) shows that negative self-talk, fear of evaluation, delays in decision making, and also cognitive and behavioral avoidance are the strongest predictors of social anxiety. Rapee and Heimberg’s cognitive-behavioral model (1997) considered biased cognitive processes as an important factor in maintaining social anxiety disorder. Beyrami, Movahedi, and Minashiri (2013) study reported a significant correlation between peoples’ scores for meta-cognitive beliefs and the symptoms of social anxiety disorder. Study of Hassanvand Amouzadeh, Hassanvand Amouzadeh, and Ghadampour (2014) showed a relationship between meta-cognitive beliefs and social anxiety symptoms. Golmohammadi, Mantashloo, and Tavana (2016) reported significant relationship between some components of meta-cognitive beliefs and social anxiety.

The model presented in this study has considered all three aspects of cognitive, meta-cognitive, and behavioral etiology of social anxiety disorder. This research seeks new multidimensional treatments and models which are common among social anxiety disorder. Behavioral aspect, mental aspect (cognitive aspect), process of thinking, and thoughts process method (meta-cognitive aspect) have been included in the model and used in developing a treatment. This model is formed in order to bridge the radical theoretical gap that explains the disorders only from one aspect. Introducing and developing new
approaches in the field of pathology and treatment of psychological disorders extends the frontiers of knowledge in this domain and provide practical solutions for the treatment of psychological disorders. This clinical approach would help deepen the treatment and help clinical specialists to educate patients so they can change several aspects of their behavior, meta-cognition, and cognition, therefore, they can take an important step in this field.

Considering the high prevalence of this disorder, and the damages it have on the individual, family, the society (Wong, Sarver, & Beidel, 2012; Demir, Karacetin, Eralp Demir, & Uysal, 2013) and life quality (Wong et al., 2012; Weidman et al., 2012; Romm, Melle, Thoresen, Andreassen, & Rossberg, 2012) and also the lack of comprehensive research to identity common psychological factors to explain and cure social anxiety disorder, the aim of this study was to achieve a behavioral and cognitive, meta-cognitive model to explain social anxiety disorder. This proposed model is based on the theoretical foundations of cognitive-behavioral (Neenan & Dryden, 2004; Leahy, 2003; Beck, 1976), meta-cognitive (Wells, 2009), and cognitive-social (Bandura, 1997) approaches. As a matter of fact, in this study, the researcher is looking for an answer to this question that whether or not, the assumed structural model of social anxiety disorder is approved according to the cognitive, meta-cognitive, and behavioral approaches? (Fig. 1).

**METHODS**

The statistical population of this study included all the patients with social anxiety disorder, who were referred to private and public consultancy centers in the city of Kermanshah in 2015. The patients were

![Fig. 1. Conceptual model of structural relationship among variables](image)
selected by convenience sampling. The reason of the researchers for selecting patients who were referred to private and public consultancy centers was that previous studies and models surveyed nonclinical populations and didn’t study constructs in a clinical society, thus, one of the aim of this study was to design patterns and treatment protocols according to constructs that fit the model for clinical population. In the present study, first 300 individuals were selected from the clients of private and public consultancy centers in Kermanshah. Through a structured interview (SCID-IV), these people took a score of 19 in social anxiety disorder and received the criteria for being selected. After the selection they answered to the questionnaires. That number of individuals were chosen according to the theory of Stevens (1996), who believed that 15 cases are sufficient for a prediction variable in regression modeling, and because modeling is in many aspects related to multiple regression, 15 cases for a measured variable in modeling is not unreasonable, therefore, the sample size was chosen more than the amount that had been mentioned. Although the primary sample size was supposed to include 400 individuals, after omitting incomplete questionnaires, 300 complete questionnaires were left.

The inclusion criteria for the study included: the social anxiety scale score of 19 and above, getting a diagnosis of social anxiety according to structured clinical interview, having an age between 15–60 years old, and taking no psychiatric drug. The exclusion criteria for the study included: Unwillingness to participate in the research, physical illnesses, other mental disorders such as panic disorder, personality disorder, schizophrenia disorder, depression disorder, … (we attempted to make sure that the criteria of mentioned disorders such as hallucination, delusion, lack of interest for life, and lack of interest in social activities, . . . are not present in the patients).

Short Form for Fear of Negative Evaluation (Brief version of Short form for Fear of Negative Evaluation; BFNE-S)

Short form for fear of negative evaluation has 12 items of five-options in Likert range (Leary, 1983). Evaluation of a group of undergraduate students with the help of this scale indicated that this tool has a high correlation ($r = 0.96$) with the main form of this scale. It also became clear that BFNE-S has internal consistency (Cronbach’s alpha = 0.90). Checking the reliability with re-test method and with an interval of four weeks showed an index of 0.75 (Miller, 1995). Moreover, the Cronbach’s alpha, Spearman-Brown coefficient and test-retest of Social Phobia Inventory (SPIN) was 0.97, 0.97 and 0.82 respectively (Hassanvand Amouzadeh, 2016). In the present study, reliability index was obtained by Cronbach alpha as 0.92.

Self-Efficacy questionnaire (GSE-10)

The scale of general efficacy has been developed by Schwarzer and Jerusalem (1995). This scale has 20 points that measure the general and social efficacy that falls into a ten-point scale and all of them measurement general self-efficacy. Rostami, Shahmohamadi, Ghaedi, Besharat, and Akbari (2010) obtained a Cronbach’s alpha coefficient of 0.88. In the present study, reliability index obtained through Cronbach alpha was 0.95.

Meta-cognitive social anxiety questionnaire

This scale consists of 30 questions in Likert a range that has been developed by Mahmoodi, Goodarzi, and Soltani (2014). This scale consists of three parts: mind control, negative meta-beliefs and cognitive ability. The reliability of this scale has been examined by using internal consistency coefficient and Cronbach’s alpha so that internal consistency co efficiency for the whole scale was calculated to be 0.93, and for the subscales this ranged from 0.70 to 0.92. The reliability was obtained as 0.84 by re-running the test (Mahmoodi et al., 2014). In the present study, the reliability index was obtained through Cronbach alpha as 0.97.

Social Anxiety Questionnaire

This questionnaire has been developed by Connor et al. (2000) for assessing social anxiety. This scale consists of 17 items and 3 subscales: Fear (6 items), Avoidance (7 items) and Physiology symptoms (4 items). In this scale, all the questions are based on five-degree Likert scale (0 = not at all to 4 = extremely agree). The creators of this scale calculated its test-retest reliability after two weeks, and obtained 0.78. Also, they calculated internal consistency (Cronbach’s alpha) for the items of this scale totally as 0.94 (Parviz & Salehi Fadardi, 2015). In the present study reliability index was obtained as 0.92 through Cronbach alpha.

Dysfunctional Attitude Scale (DAS)

One of the scales related to dysfunctional attitudes is the Dysfunctional Attitude Scale which is a tool designed by Beck, Kovaecs, and Weissman (1979) to measure and evaluate assumptions and underlying beliefs that determine the cognitive content on the basis of Beck’s theory. This form of Dysfunctional Attitude Scale
contains 10 questions that are in the 5-degree Likert’s spectrum from strongly agree to strongly disagree. This scale has a high reliability of (0.90) and stability of (0.73) for a more than six weeks (Weissman, Livingston Bruce, Leaf, Florio, & Holzer, 1991). In the present study, reliability index was obtained through Cronbach alpha as 0.91.

Cognitive-Behavioral Avoidance Scale (CBAS)

This scale has 31 items on a scale of 5 degree Likert scale which was set from (1 = not true at all) to (5 = completely true). This scale has 4 subscales of social cognitive avoidance, nonsocial cognitive avoidance, social behavioral avoidance, and nonsocial behavior avoidance. In this study, social behavioral avoidance, which has 8 questions, was used. Among cognitive-behavioral avoidance subscales, there is a moderate internal consistency of 0.39 to 0.57 (Ottenbreit & Dobson, 2004). Total internal consistency and nonsocial, nonsocial behavioral, social behavioral, and cognitive behavioral cognitive subscales were reported to be 0.91, 0.80, 0.75, 0.86, 0.78 (Moulds, Kandris, Starr, & Wong, 2007). Retest reliability respectively was obtained as 0.64 and 0.65 (Ataie, 2013). In the present study reliability index was obtained through Cronbach alpha as 0.93.

Safety behavior questionnaire

This scale has led to the development of a questionnaire that is used to assess safety behaviors according to the theoretical principles which were made and used in this field. This scale has 4 questions which are adjusted as never = 1, sometimes = 2, always = 3. The validity of this tool was approved by researchers and specialists of psychology. Reliability of this scale with retest after four weeks has been examined on 30 patients with social anxiety disorder, and the correlation coefficient was 0.71. In the present study, reliability index was obtained through Cronbach alpha as 0.90.

This study carried out in Kermanshah city and lasted from November, 2015 to February, 2016. The research method was descriptive-correlation of the structural equation model. This research was conducted to investigate the structural relationship between cognition, meta-cognition, and behavior among patients with social anxiety in Kermanshah city. The Number of participants in this study was 300 patients with an average age of 29.38 ± 12, and 69% of the samples were female, 31% were male, 24% were in high school, 69% undergraduates, and 7% had M.A. degree. Regarding moral considerations in this study, it was explained to the participants that they are participating in a research which plans to make and study a new model on social anxiety symptoms. They were also assured that their personal information will be kept confidential, and we also obtained their consent to participate in the research. Researchers used the mother tongue version of a questionnaire (they translated basic scales and then examined face and content validity by specialists and experts). Path analysis was used to evaluate the relationship hypothesis and general indicators of fitting were used to assess the fitting of the proposed and designed model. Data analysis was performed by AMOS software version 23.

**Results**

In this study, skewness and kurtosis indicators used to evaluate normality for observable variables. It means that cognition, meta-cognition, behavior, and social anxiety variables by skewness were (0.06, 0.752, –0.140, 0.321) and kurtosis were (–0.630, 0.051, –0.912, –0.313) which were in normal range of –2 to +2.

According to the results of Fig. 2, all of the estimates between latent variable and dimension of them are significant, and that for all latent variables, the parameters are high and good. Also, we can say that all the dimensions for measurement latent variable, that is cognition, meta-cognition, behavior and social anxiety disorder have been chosen well, and validity and reliability of them are approved.

According to Fig. 3, the fit index showed that in the statistical model of this study, the value of $\frac{X^2}{df} = 1.03$, RMSEA = 0.01, GFI = 0.97, CFI = 0.99, and PMR = 0.03, and that
Based on the results of Table 1, the direct effects of coefficient cognition ($\beta = 0.35$), meta-cognition (0.49), and behavior (0.33) on social anxiety disorder were significant in
level of $P < 0.05$. Indirect relationships using bootstrap method cognition through meta-cognition on social anxiety disorder was significant ($\beta = 0.11, P < 0.05$). Indirect relationships using bootstrap method cognition through behavior on social anxiety disorder was significant ($\beta = 0.04, P < 0.05$). Indirect relationships using bootstrap method meta-cognition through behavior on social anxiety disorder was significant ($\beta = 0.06, P < 0.05$). Cognition, meta-cognition and behavior, were also influential factors on social anxiety disorder.

The results of indicators of descriptive variables are reported in Table 2. Also examining the correlation between study variables showed that all variables have a significantly positive relationship in $P < 0.05$ level (Table 2).

**DISCUSSION**

The aim of this study was to develop and validate cognitive, meta-cognitive, and behavioral model for explaining social anxiety disorder. To develop the model based on theoretical and research background (Neenan & Dryden, 2004; Bandura, 1997; Beck, 1976; Wells, 2009; Leahy, 2003), the model was developed and examined in terms of structural validity and reliability of the data. In this model, cognitive (self-efficacy, underlying assumptions, and fear of negative evaluation), meta-cognitive (mental control, negative meta-beliefs, cognitive abilities), and behavioral (safety behavior and behavioral
avoidance) aspects are included in the explanation of social anxiety disorder, and the results showed an adequate fit model with the data. Considering that the previously conducted researches has not presented all of these variables together in one model, and neither has this study, so it is not possible to compare this model to those from other conducted researches. However, we can suggest that the findings of this study are in line with the results of studies conducted by Moree (2010), Gaudiano and Herbert (2003), Rapee and Heimberg (1997), Clark and Wells (1995), and Masoudnia (2008).

People with social anxiety disorder, have severe underlying assumptions, perfectionism, negative and irrational causes that are the natural processes of the mind are associated with cognitive distortions and errors, and increased negative thoughts, fear of evaluation by others, and low self-efficacy in them.

On the one hand, cognitive interaction with negative beliefs in a higher level of cognitive processes for encountering new situations is associated with mental confusion. In behavior aspect, avoidance from frightening situations in anxiety disorders would end in defeat in cases that aren’t dangerous. Immune and protective behaviors in these patients leads to a vicious negative social reaction, since many of these strategies (avoidance behavior and safety behavior) are non-controversial, therefore barriers to deal with horrible social situations, as a result can hinder the efficient processing of emotional information. The coefficient cognition direct impact on social anxiety disorder is significant. The findings of the study are consistent with the theory and studies of Clark and Wells (1995), Rapee and Heimberg (1997). Dysfunctional attitudes or assumptions activate the cognitive processes that have elements of vulnerability and perfectionism; therefore they cause more social anxiety. Fear of negative evaluation in the cognitive structure involves expectations, negative social judgments and shameful behavior, when associated with logical errors and cognitive distortions such as perfectionism, they cause abnormal anxiety. The Other structure in the cognition is self-efficacy. People who have low self-efficacy, do not have an internal source of power and strength, thus they look to other people for approval, and this consequently leads to social anxiety among them.

Direct impact of coefficient meta-cognition on social anxiety disorder is significant. Our findings is consistent with studies by Hassanvand Amouzadeh et al. (2014), Golmohammadi et al. (2016). People with social anxiety disorder have an impaired meta-cognition; as a result, they use ineffective strategies in cognitive processing and emotional information processing. This makes them more likely to face incomplete schema, and this vicious cycle makes anxiety repeat among patients.

Direct impact of coefficient behavior on social anxiety disorder is significant. The results of this study is consistent with the study by Moree (2010). Avoidance behavior and immune responses in patients with social anxiety disorder, causes problems in the recognition and acceptance of the emotions, so they cannot clearly recognize their emotions and their feelings, and feel incapable of taking appropriate strategies, and this prolongs social anxiety among them.

Indirect impact of coefficient cognition on social anxiety disorder through meta-cognition is significant. The results of the present study is consistent with studies by Hassanvand Amouzadeh et al. (2016), Beyrami et al. (2013). The Thoughts and underlying
cognitive assumptions of people with social anxiety make them vulnerable to misinterpretations about external and internal events. This misinterpretation can also affect meta cognitive and emotional processing of the information received and bring a sense of social anxiety in people.

The indirect impact of coefficient cognition on social anxiety disorder through behavior is significant. Our findings are consistent with the study by Moree (2010), as a set of strategies that can be applied before or during social situations, avoidance and safety behavior are related to the nature of fear of horrible social consequences. These are means designed to reduce the likelihood of negative evaluation by others. Moreover, the anticipated negative assessment from others about performance, brings about more anxiety, because avoidance and safety behavior are not able to eliminate the possibility of negative evaluation by others, therefore the individual is affected by his/her subjective perception of appearance or observed behavior by others and this anxiety cycle is repeated again.

The indirect impact of coefficient meta-cognition through behavior on social anxiety disorder is significant. Our findings are consistent with the study by Moree (2010). Meta-cognitive beliefs of anxious individuals are uncontrollability related to the danger of thought and cognitive experiences. This type of meta belief due to the inability to control negative thoughts and events and negative interpretations of mental events can be a major factor in causing fear and avoidance in people to social anxiety in entrance social situations, that it caused produce safety and avoidance behavior in patients.

We can say that a combination of cognitive, meta-cognitive, and behavioral aspects together can cause a comprehensive approach that draws one’s attention to processive aspects and also meta-worry, negative meta-beliefs and behavioral aspects. When people cannot control their thoughts, meta-worry, and this lack of mental control will be formed in them which finally leads patients to reduce their anxiety and stress by avoidance and safe behaviors and if these behaviors are not avoidance and useful, social anxiety will increase among patients.

One of the important limitations of this study is cross-sectional design rather than longitudinal or experimental design. One of the limitations of this study which can be noted in these cases, is related to the developed model in which only cognitive, meta-cognitive, and behavioral aspects are mentioned. This happens while other aspects, like biological, emotional, social, etc. are not mentioned. This model has been conducted only for social anxiety patients in Kermanshah city (Iran), so we must be cautious about the generalization of it. A lack of unwanted control variables like personality variables, and mental state (memory, intelligence, talent, motivation and willingness) in patients with social anxiety is another limitation of this study.

Finally the developed model can help facilitating researches associated with social anxiety disorder and ease the clinical treatment of this disorder. The developed model can be used to improve similar research and clinical treatment about social anxiety. Therefore, therapists and counselors should understand the important role of variables of cognition, meta-cognition, and behavior in maintaining social anxiety, and training of this concept is recommended. It is suggested that researchers can apply the theoretical foundations of this research, and do similar researches in this field and add to the knowledge about this area of
study. Furthermore, it is recommended that future research investigate the role of other cognitive, meta-cognitive and behavioral variables in maintaining social anxiety.

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