

*Full Length Research Paper*

# **The perception of self-esteem and self-efficacy as transforming factors in the sources of role stress and job satisfaction relationship of employees: A trial of a staged model based on the artificial neural network method**

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**This study aims to investigate the relationship between sources of role stress (role conflict-role ambiguity) and job satisfaction, and to determine what role the self-esteem and self-efficacy perceptions of employees can assume in trying to make this relationship positive. Within the scope of the study, a questionnaire with proven validity and reliability was applied to 309 nurses employed in Kirikkale Provincial Center (Turkey). The artificial neural network method was used for the analysis of the data. The findings obtained showed a negative and strong effect on job satisfaction by role conflict and role uncertainty, which are two dimensions of role stress. It was also determined that the perception of self-esteem and self-efficacy by employees has the ability to transform the negative effect of role stress on the job satisfaction into a positive effect when both variables are used together.**

**Key words:** Role stress, role conflict, role ambiguity, job satisfaction, self esteem, self efficacy, artificial neural networks.

## **INTRODUCTION**

Today's organizations and their employees who are the organizations most important resource are now acting in a social and organizational climate that is more dynamic, more open to competition and encircled with problems. For this reason, all organizations, whether small or large, have to demonstrate a proactive management understanding aimed at increasing the job satisfaction, productivity and performance of their employees, and to keep them free of behavioral effects such as stress, exhaustion and alienation (Slaughter and Zickar, 2006). Because changes of circumstances in jobs, new duties and responsibilities for employees improve sources that feed job stress in the organizations (Kalleberg, 2001), every year, job stress brings about important costs at a national level and it threatens the functions of employees and the lives of individuals and organizations (Jex, 1998).

The main sources of role stress are role conflict and

role ambiguity. Role conflict and role ambiguity, which were first recognized in the studies of Gross et al. (1958) and Kahn et al. (1964) in organizational life (Rizzo et al., 1970), are among the subjects mostly cited in the literature (Fisher and Gitelson, 1983). Role conflict and role ambiguity slow down activities of employees within the organization, prevent focusing on the job and cause job complexity. This in turn prevents the achievement of the required performance levels by the employees (Tuten and Neidermeyer, 2004).

Many studies have been carried out on role conflict and role ambiguity, which are the main components of role stress. The effects of role conflict and role ambiguity on variables including workplace satisfaction, performance, organizational commitment, intent to quit, etc., were analyzed in an important portion of these studies (Kahn et al., 1964; Van sell et al., 1981; Rizzo et al., 1970; Fisher

and Gitelson, 1983; Hammer and Tosi, 1974; Schuler et al., 1979; Stout and Posner, 1984; Siegall, 2000; Karatepe et al., 2006; Dowden and Tellier, 2004). It is seen particularly that the relationship between role conflict, role ambiguity and job satisfaction (Chassie and Bhagat, 1980; Keller, 1975; Quah and Campbell, 1994; Johnson and Stinson 1975; Yousef, 2000; Lambert et al., 2007; Nayab, 2011) are among the important subjects of studies. Mostly, the self esteem and self-efficacy perceptions of employees are used as the intermediary factors in this relationship. However, there are no studies analyzing these two variables within the relationship of role conflict, role ambiguity and job satisfaction (Abel, 1996; Brown and Dutton, 1995; LeRoge et al., 2006; Jex and Gudanowski, 1992; Renn and Prien, 1995; Judge and Bono, 2001; Gaskill and Murpy, 2004; Chebat and Collias, 2000; Zellars et al., 2001; Karatepe et al., 2006; Grau et al., 2001; Edwards et al., 2010).

However, self-esteem and self-efficacy are separate concepts and sometimes they may not mean anything on their own. Self-efficacy can be influential on self-esteem; or when the self-esteem of the individual is groundless or unrealistic, self-efficacy can be required for permanent success. Therefore, the employees can need both in their organizational life (Stanley et al., 1997; Gardner and Pierce, 1998; Davelaar et al., 2008). Analyzing the effects of the said concepts on various variables or their positions as intermediaries separately and jointly can provide the organizational management with more practical and proactive solutions.

The aim of this study was to determine the effects of role conflict and role ambiguity on job satisfaction and the intermediary role of self esteem and self-efficacy on this effect both jointly and individually.

## THEORETICAL BACKGROUND AND HYPOTHESES

It is understood from the literature review that factors related to the organizational stress or the work stress of employees have been investigated by numerous researchers, and studies focusing on the stress sources and particularly role stress of nurses are increasing gradually (Gray-Toft and Anderson, 1981; Leatt and Schneck, 1985; Bacharach et al., 1991; Lambert and Lambert, 2001; Chang et al., 2007; Tzeng, 2002; Wang, 2002; Mrayyan, 2003; Glazer and Gyurak, 2008; Edwards et al., 2010). It can be said that an important portion of these studies has been analyzed by the disciplines in the areas of healthcare, education and medicine, while another portion has been analyzed within the scope of operational and particularly, organizational behaviors. This study seeks the answers to the following basic questions at an organizational level: 1) what kind of an impact do role stress sources have on the level of job satisfaction of employees? 2) Can self-esteem and self-efficacy perceptions assume a transforming role to render

this effect positive? 3) What kind of difference lies between the intermediary roles assumed by the perceptions of self-esteem and self-efficacy together and separately? 4) How do self-esteem and self-efficacy perceptions affect the levels of job satisfaction of employees?

### Job satisfaction

The majority of these studies involve an approach aimed at getting more success for and more productivity from employees (Schwepker, 2001). Job satisfaction is a variable that can reflect the general attitudes, reactions and feelings of employees towards the job itself, or it is a function of the elements (such as expectations, wishes and realized statuses) that reflect the happiness levels of employees within the organization (Mrayyan, 2005; Zainalipour et al., 2010).

Job satisfaction has a strong sphere of influence as regards the organizational consequences, and affects the organizational commitment, performance, and efficiency of employees (Watson et al., 2007). The nature of the work or working conditions in the workplace is no single determinant regarding job satisfaction. However, job satisfaction also includes physical and psychological factors that are caused by the workplace conditions and by the management and work approach in the enterprise. In addition, it can also be said that certain physical, individual, inter-personal and corporate characteristics in the workplace are also associated with the job satisfaction of employees (Spector, 1997).

In this sense, the needs hierarchy approach put forward by Maslow, which is the pioneering work among early studies on job satisfaction, and the internal and external factor approach by Herzberg (1968) draw attention to the attitudes and expectations of the working staff towards various situations and conditions in the workplace (Lu et al., 2005; Guleryuz et al., 2008). Glisson and Durick (1988) gather the variables affecting job satisfaction under three main headings. The first is the features of the organization (size of the working group, leadership aspect, year of foundation), the second is the attributes related with the job, and the third is the attributes related with the working staff (age, sex, training etc.) (Getahun et al., 2005).

When the literature is scanned, it can be seen that the sub-factors that determine job satisfaction are mostly gathered under various organizational factors such as communication, promotion, study, salary, justice, loyalty and manager's attitudes in the workplace (Kalliath and Morris, 2002; Ivencevich and Matteson, 2005). In the literature, sub factors determining job satisfaction focus on co-workers, pay, job conditions, supervision, nature of the work and benefits (Williams, 2004). In the studies on the job satisfaction of nurses, it is seen that these factors generally gather under the headings of work conditions,

salaries and other payments, relationships with managers and other staff, possibilities of advancement, autonomy and appreciation and reward (Lu et al., 2005, Nolan et al., 1995; Aiken et al., 2002; Price, 2002). Watson et al., (2007) list these factors under the headings of pay, promotion, supervision, fringe benefits, operating procedures, co-workers, nature of work, and communication, while Schwepker (2001) lists them under the headlines of job, promotion and advancement, pay, supervisor, company policy and support, customers, and fellow workers. In this study, the job satisfaction factors will be evaluated under the headings of "pay", "promotion", "co-workers", "supervision" and "job".

### Role stress

Role stress is accepted as the natural result of the job in today's conditions. The conflict between the tasks and responsibilities, and the disagreement between the targets and timing are among the marked sources of role stress (Kunaviktikul et al., 2002).

Role stress is generally associated with organizational conditions and with the place and position of the individual inside the organization. Role stress may appear in two forms, namely "role ambiguity" and "role conflict". Role conflict arises when any employee has disagreements with other employees or with other stakeholders in the organization (managers—partners—customers), with expectations and demands that are difficult to meet. As for role uncertainty, here, it may be possible to talk of a situation where the employees do not have sufficient information about their duties in the organization and when there is a lack of the necessary briefing (Jex and Gudanowski, 1992). Role conflict may occur in 3 different types. In the first one, the conflict occurs between the individual's ability and experience and the role expected of that individual; in the second one, different expectations conflict with one single role; and in the third one, the individual's standards of judgment conflict with the role expected of that individual (Hennington et al., 2011; Mohr and Muck, 2006). Failure to remove role stress that occurs for continued periods may result in dissatisfaction in the workplace, adverse effects on organizational loyalty, physical tiredness, and exhaustion (LeRouge et al., 2006; Lambert et al., 2007).

There are various studies suggesting that there is a negative relationship which changes at various levels between role stress, which is among the main variables of the study, and job satisfaction (Lambert and Paoline, 2005; Lankau et al., 2006; Wu and Norman, 2006; Fisher and Gitelson, 1983, Yousef, 2000; Karatepe et al., 2006). However, some studies emphasize that a positive relationship can be established between role stress and job satisfaction. For example, Selye (1975) stated that a certain level of stress can contribute to motivation and continuous growth targets in the workplace. Similarly, the

empiric study conducted by LeRouge et al. (2006) indicates a positive relationship between the level of adaption to role stress and job satisfaction. Bhuian et al. (2005) suggest that there may be some trouble regarding performance issues during initial periods where the stress increases, and that a reasonable increase in the next stage may affect the performance positively.

There are also studies focusing on the relationship of role conflict and role ambiguity with self esteem and self-efficacy. In these studies, it has been found that there is negative correlation between the role stress sources and role conflict and role ambiguity (Zellars et al., 2001; LeRouge et al., 2006; Li and Bagger, 2008). The following hypotheses are established for the relationship between job satisfaction and role stress, and for the dimensions of role stress:

H<sub>1</sub>: Participants that have high levels of role conflict will have reduced levels of job satisfaction.

H<sub>2</sub>: Participants that have high levels of role ambiguity will have reduced levels of job satisfaction.

H<sub>3</sub>: There is a two - sided and positive relationship between role conflict and role ambiguity.

H<sub>4</sub>: There is a negative relationship between role conflict, and self-esteem and self-efficacy.

H<sub>5</sub>: There is a negative relationship between role ambiguity, and self-esteem and self-efficacy.

### Self-esteem, self-efficacy and intermediary factor transforming

During the last half-century, self-esteem and self-efficacy issues have especially been investigated by psychology science, and upon the developments in the field of management, these issues have also been studied with respect to organizations.

Self-esteem (respect to ego) is comprised of the self opinions of the working staff that they are valuable and taken seriously inside the organization. In other words, self-esteem is the degree of perception by the working staff that they feel important, capable and valued in the organization (Dickerson and Taylor, 2000).

Mossholder et al. (1982), in an applied study on nurses, showed that those nurses with high role stress and low self-esteem have a relatively lower level of job satisfaction. The study conducted by Renn and Prien (1995) claims that employees with low self-respect are more defenseless and more sensitive to role stress. However, the working staff with stronger self-respect are said to be more adept at managing and directing their feelings, thoughts and actions in the organization. Abel (1996) emphasizes that self-respect may assume a mediation task in the effect of role stress on the desire for success in the workplace. Working staff with high self-respect become less anxious towards adverse situations, and they increase the likelihood of success of the strategic

decisions taken by the organization in dealing with difficult conditions. Therefore, in an organization employing staff with high self-respect, the managers can act more flexibly in their attempts to cope with role stress (Brown and Dutton, 1995). In another study, it was determined that the self-respect level of nurses when they started nursing school was 95%, and that it reduced to the average level upon graduation from the school. Therefore, it can be claimed that nurses mostly have an average self-respect level in the organization in which they start to work (Randle, 2003).

Self-efficacy is a concept different from self - respect. Self-efficacy is the self-appraisal of the beliefs and attitudes of the working staff towards their abilities and their accumulated knowledge compared with what is expected of them (Bandura, 1995). However, self-efficacy is not an ability or motivation on its own. Self-efficacy is an effective factor that can increase motivation, and relates to the level of the feeling of success occurring in the individual depending on the experience and achievements gained during the course of time (Donald, 2003; Lee, 2005). Therefore, proper fulfillment of the tasks and responsibilities by an organization's staff and increases in their performance can be achieved with the perception of self-efficacy (Dickerson and Taylor, 2000; Gaskill and Murphy, 2004). Karatepe et al. (2006) indicate that a relationship was determined at certain levels between self-efficacy and role uncertainty and role conflict, which are the two elements of role stress, and it was found that staff with high self-efficacy will also have high job satisfaction levels. In addition, positive correlation has been found between job satisfaction and self-efficacy (Gardner and Pierce, 1998; Shih, 2004; Chen and Scannapieco, 2010; Moe et al., 2010) and self-esteem perception (Judge and Bono, 2001; Inkson, 1978). Hence, the following hypotheses are established on the self-esteem and self-efficacy subject in the study:

H<sub>6</sub>: Self-esteem is an intermediary variable between role stress and job satisfaction with a positive effect.

H<sub>7</sub>: Self-efficacy is an intermediary variable between role stress and job satisfaction with a positive effect.

H<sub>8</sub>: Self-esteem and self-efficacy combined have a stronger effect than their individual effects. H<sub>9</sub>: Self-esteem and self-efficacy have a positive effect on job satisfaction.

## METHODOLOGY

### Sample

The sample of the study consists of nurses selected by random sampling among the nurses working in Kirikkale Provincial Center (Turkey). The total number of nurses employed in Kirikkale City Center as of 2011 was 610. A total of 500 questionnaire forms were distributed and 309 survey forms were returned. Accordingly, the recollection ratio of the surveys was 62%. In order to ensure that the study sample represented nurses who were employed in

various units and at varied levels, the sample group was divided into two main sections, namely those working in the hospital center and those employed in the field because, the job performance manner and conditions for those working in hospitals and those employed in the field may actually show slight differences. Statistics on the demographic characteristics are shown in Table 2.

### Data collection tool

Surveying with a questionnaire form was used as the data collection tool in this study. The questionnaires prepared for this purpose were handed over to the subjects personally, through the Training Division of Kirikkale Provincial Health Directorate Office, and again, they were collected by hand, by division administrators.

A comprehensive literature survey was performed in preparing the questionnaire. The questionnaire contained 7 sections containing questions aiming to identify demographic variables, and 45 statements that were determined in order to measure other variables. The terms required for the variables of the study, namely, job satisfaction (Spector, 1997; Schwepker, 2001; Watson et al., 2007), role conflict-role ambiguity (Bhuiyan et al., 2005), self-esteem (Le Rouge et al., 2006; Tafarodi and Swan, 2001; Edwards et al., 2010) and self-efficacy (Karatepe et al., 2006) were adapted from various sources. The 5 - score Likert scale was utilized to assess the variables in the questionnaire, which ranges as follows : 1= "I totally disagree", 2 = "I agree to a certain extent", 3 = "I have no idea", 4 = "I agree to a large extent", and 5 = "I totally agree".

### The method

Statistical analytical methods (correlation and regression) are used most commonly in empirical studies targeting the relationships and affective measurements in the area of management and organization. Because of their nature, these analyses can only give linear results. It is difficult to solve the nonlinear behaviors or problems mathematically. It must be possible that the data based on the perceptions of the employees and the complex measurements focusing on behavioral variables also include the nonlinear results. More dynamic methods are needed in studies where multiple and intermediary variables are used. The artificial neural network is a method of analysis that can be considered as new and original in social sciences and management. This method has some advantageous aspects as compared to the statistical analysis methods (Wray, 1994; Russell and Norvig, 1995; Rolston, 1988).

The networks used in the artificial neural networks are not linear. Therefore, they can solve complex problems more accurately as compared to classical methods; and can conclude problems that are difficult to solve with classical methods in a quick and reliable way (Zurada, 1992).

Many comparisons of the artificial neural networks and regression methods can be found in various disciplines (Ainscough and Aronson, 1999; Paliwal and Kumar, 2009; Verlinden et al., 2008; Leung et al., 2001). In these studies, it has been found that artificial neural networks (ANN) provide more reliable and consistent results even when working with lost data, where assumptions are not met, or when worked with data not complying with normal distribution.

Artificial neural networks are formed by simulation of the human brain. The artificial neuron illustrated in Figure 1 produces output as a result of the connection of simple processors, which are the artificial reciprocals of the neurons in the brain, to each other in different levels of impact. Here, activation is made when the weighted values obtained from entries with data that can be variable exceed the stage called the threshold, and the output is thus obtained (Nabiyev, 2010).

For these reasons, the data related to this study was processed

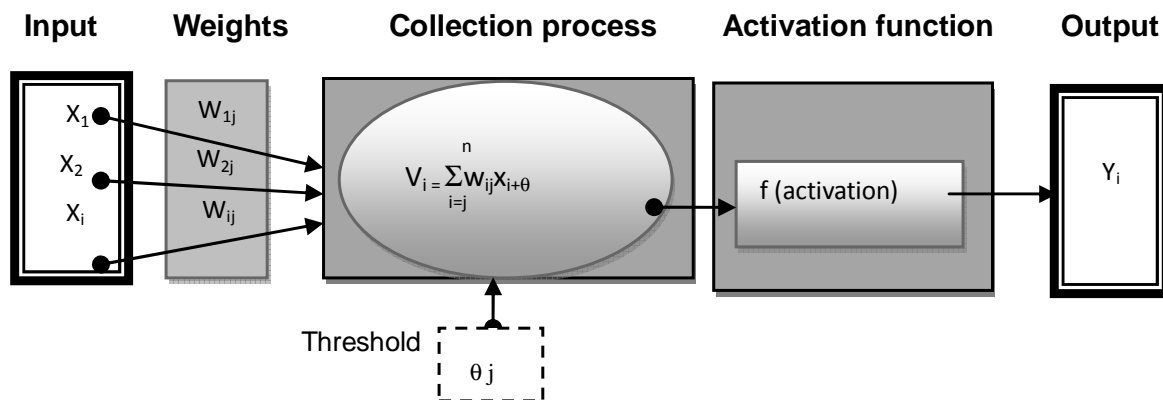


Figure 1. An artificial neural as a process component (Elmas, 2007: 31).

Table 1. Validity and reliability of analysis results.

Scale items	Factor loadings
<b>Job satisfaction (<math>\alpha= 0.863</math>)</b>	
<b>Pay (<math>\alpha= 0.876</math>)</b>	
My workplace pays a better salary than rival organizations.	0.692
My salary is sufficient compared to the responsibilities I have.	0.871
My salary is satisfactory compared to the work I do.	0.887
My additional fees are sufficient.	0.871
<b>Co-workers (<math>\alpha= 0.851</math>)</b>	
My workmates support me sufficiently.	0.770
When I ask for something to be done by my workmates, it is done.	0.813
I like working with the workmates in my organization.	0.833
I work with people who have an improved sense of responsibility in my organization.	0.741
<b>Supervision (<math>\alpha= 0.896</math>)</b>	
My senior managers give me great support.	0.846
All of my senior managers have competence in their jobs.	0.861
My senior managers generally pay attention to what I say.	0.837
<b>Promotion (<math>\alpha=0.704</math>)</b>	
Promotions occur in a well - timed manner.	0.728
I believe that I will be promoted if I work hard.	0.766
I am pleased with my progress speed in my job.	0.752
<b>Job (<math>\alpha=0.634</math>)</b>	
The feeling of success I have by doing my job is at a sufficient level.	0.579
The job I do is interesting in several aspects.	0.643
I find the extent of responsibility in my job sufficient.	0.691
<b>Role stress (<math>\alpha=0.752</math>), role conflict (<math>\alpha=0.776</math>)</b>	
I have received conflicting demands from two or more people concerning the job I do.	0.713
I sometimes do things in my workplace, which is accepted by one workmate but not accepted by another workmate.	0.789

Table 1 Contd.

When I take my skills into consideration, I think I work on unnecessary tasks.	0.863
I occasionally become obliged to object to the rules or policies in order to fulfill my duty.	0.656
The job I do during my duty actually needs to be done using different methods.	0.710
<b>Role ambiguity (<math>\alpha= 0.841</math>)</b>	
I definitely don't know what is expected of me in this workplace.	0.610
I can't allocate my time appropriately in this workplace.	0.644
I don't have clear, planned goals and targets relevant to my job in this workplace.	0.824
Information and documents about what has to be done are not very clear in this workplace.	0.810
I don't know exactly how much and what powers I have in this workplace.	0.790
I don't know what my responsibilities are in this workplace.	0.787
<b>Self-efficacy (<math>\alpha=0.839</math>)</b>	
I believe that my present abilities are good and sufficient as far as my job is concerned.	0.740
I am sure that my skills and abilities are equal to or superior to those of my workmates.	0.795
My experiences and achievements increase my confidence that I will be successful in this workplace.	0.788
I can easily do any job which is harder than my current job.	0.688
I am generally satisfied with myself in this workplace.	0.622
<b>Self-esteem (<math>\alpha= 0.865</math>)</b>	
I can work as well as the majority of other employees in my workplace.	0.634
I think I am at least as valuable a person as my other workmates.	0.656
I think I have prestige in this workplace.	0.864
I feel I am taken seriously in this workplace.	0.870
I am one of the most effective employees in this workplace.	0.711
I am a person in whom a great reliance is placed in this workplace.	0.707

with a multi-layer feed-forward backprop Artificial Neural Network (Feed-Forward Backprop). These procedures were performed with the artificial neural network of the MATLAB program. Fifteen percent of the data were used for the tests, and the iteration number was determined as 300. The correlation coefficient (multiple-predictive value) of the model was found to be 91% in the training phase, and 63% in the testing phase. Although this value is lower than that of the training phase, when the criteria suggested by Smith (1986) related to the performance of the correlation level are considered, it can be said that the performance of the network in the testing phase or the generalization capacity are good. However, it is also possible that this capacity can increase even more by arrangement on the network. The mean square error of the model at the end of training was found as 0.0019.

#### Interpretation of the data obtained in artificial neural networks

The data obtained in relational or multilayered studies in which the artificial neural network method is used, allow the relative or comparative comparison of the various variables. Especially in multi-variable models, it is necessary to compare the value of a variable with the values of other variables in the same context, and to demonstrate their significance levels. However, the values obtained with the artificial neural network range between (0) and (1) or (0) and (-1). Thus, taking into account the graduation of the scales included in the questionnaire, the values rising from 0 to 1

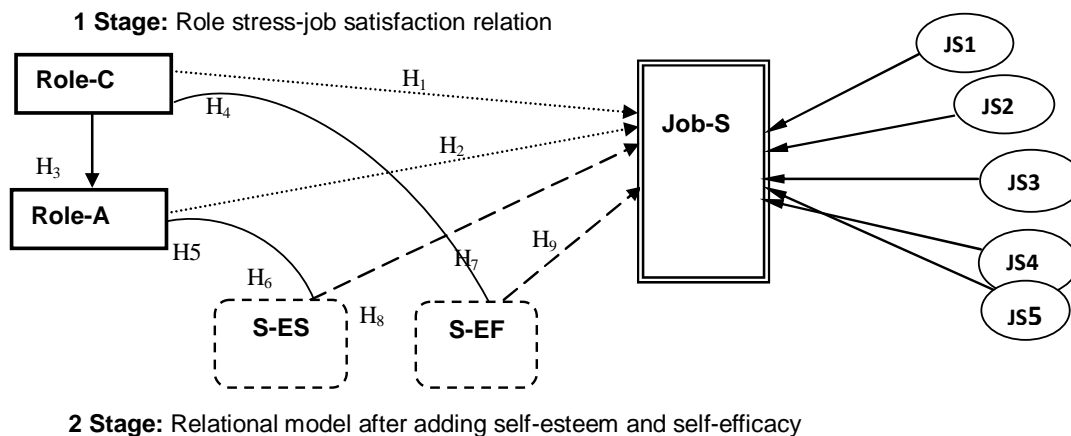
can be interpreted as a rise or an increase in the averages or as a positive effect while the values receding from 0 to -1 can be interpreted as a recession, decrease or as a negative effect.

#### Validity and reliability tests

Factor analysis was performed in order to test the validity and reliability of the questionnaire, and Cronbach alpha coefficients were determined. The three responding statements that were included in the job satisfaction section and that had a low correlation were excluded from the questionnaire. Table 1 provides the factorial distribution of all the responses according to the factor analysis performed, together with the Cronbach alpha coefficients of each factor. Accordingly, it is possible to say that the questionnaire is valid and reliable as a whole.

#### The study model

A two-stage analysis was adopted within the scope of the aims and hypotheses of the study. During the first stage, the total job satisfaction relationship of role conflict and role ambiguity, as well as their resultant effects were investigated; in the second stage, self-esteem and self-efficacy were included in the model, both together and separately, along with the dimensions of role stress, which was used as the input (independent variable). This way, it



**Figure 2.** The research proposed 2-stage model. Role-C: role conflict, Role-A: role ambiguity; JOB-S: Job satisfaction; S-ES: self-esteem; S-EF: self efficacy; JS<sub>1</sub>: pay; JS<sub>2</sub>: co-workers; JS<sub>3</sub>: supervision; JS<sub>4</sub>: promotion; JS<sub>5</sub>: job.

was possible to determine the relationship between role stress and job satisfaction, and in addition, to find out the changes and effects that self-respect and self-efficacy perceptions induce on other variables. Besides these, the weighted values of the factors determining job satisfaction during the creation of the model suggested in the study, and reciprocal statuses of role conflict and role ambiguity, which are two dimensions of role stress, were also examined. In this context, the study model is shown in Figure 2.

**RESULTS**

**Demographic characteristics**

Twelve percent (12%) of the participant subjects were male and 88% were female while 83.5% were married, 11.7% were single and 4.9% of the participants were divorced. It was observed that a certain portion of the subjects were male nurses in accordance with the resolution taken by The Ministry of Health of The Republic of Turkey, entitled "Permission to Allow Certain Health Officers to Work as a Nurse". Also, 49.5% of the subjects were in the 25 to 34 years age group and 40.1% were in the 35 to 44 years age group. With respect to service terms, staff with 16 years of service or over, were in the first rank. Regarding the education levels, 65.4% of the subjects had an associate degree (two - year graduate) and 21.4% had a graduation degree from a vocational school of health. When the departments where the subjects work were considered, staff working in health clinics were in the majority with 39.8%, followed by polyclinics and administrative departments. With regard to employment status, the ratio of the state clerks was 81.9% and the ratio of the contractual staff was 18.1%. In this scope, 70.9% of the staff worked at hospitals centers while 18.9% worked in the field.

**Testing the model and the hypotheses**

A two-stage process was performed in order to test the models and hypotheses proposed in the study. During the first stage, the effect of role conflict and role ambiguity on total job satisfaction was measured. As shown in Figure 3, role conflict (-0.4474) and role ambiguity (-0.5526) have a negative and powerful effect upon job satisfaction at this stage (H<sub>1</sub>, H<sub>2</sub> accepted). When the relationship of role conflict and role ambiguity with each other is measured, mutual positive values are found (0.5135 and 0.6097) (H<sub>3</sub> accepted).

At the second stage of the model (Figure 4), self-esteem and self-efficacy were also used as input layers (independent variables) along with role ambiguity and role conflict. In this context, self-esteem and self-efficacy were included into the system, both together and separately in an attempt to reveal their effect levels. When self-esteem was included in the model alone, the effect of role uncertainty on job satisfaction decreased to the level of (-0.2967) and the effect of role conflict decreased to the level of (-0.2825). When self-efficacy was included in the model alone, the effect of role ambiguity remained at the level of (-0.4943) and the effect of role conflict decreased to the level of (-0.4566) (H<sub>7</sub> accepted). On the other hand, when the weighted values in total job satisfaction of sub - factors associated with job satisfaction are considered, it was observed that the "Salary and Promotion" factor had the highest weight with the value of (0.597), and the "Cooperation and Solidarity" factor had the lowest weight with the value of (0.344).

When the self-esteem and self-efficacy variables were included in the model together, the effect of role ambiguity on job satisfaction reached the level of (0.4449),

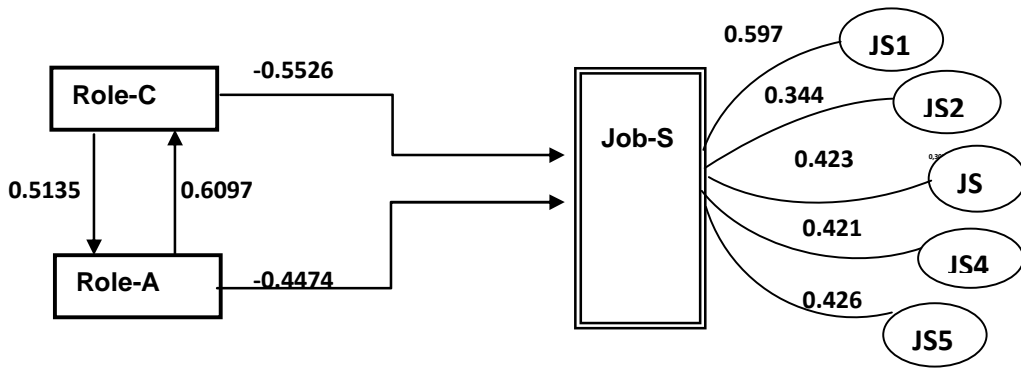


Figure 3. First phase of the model.

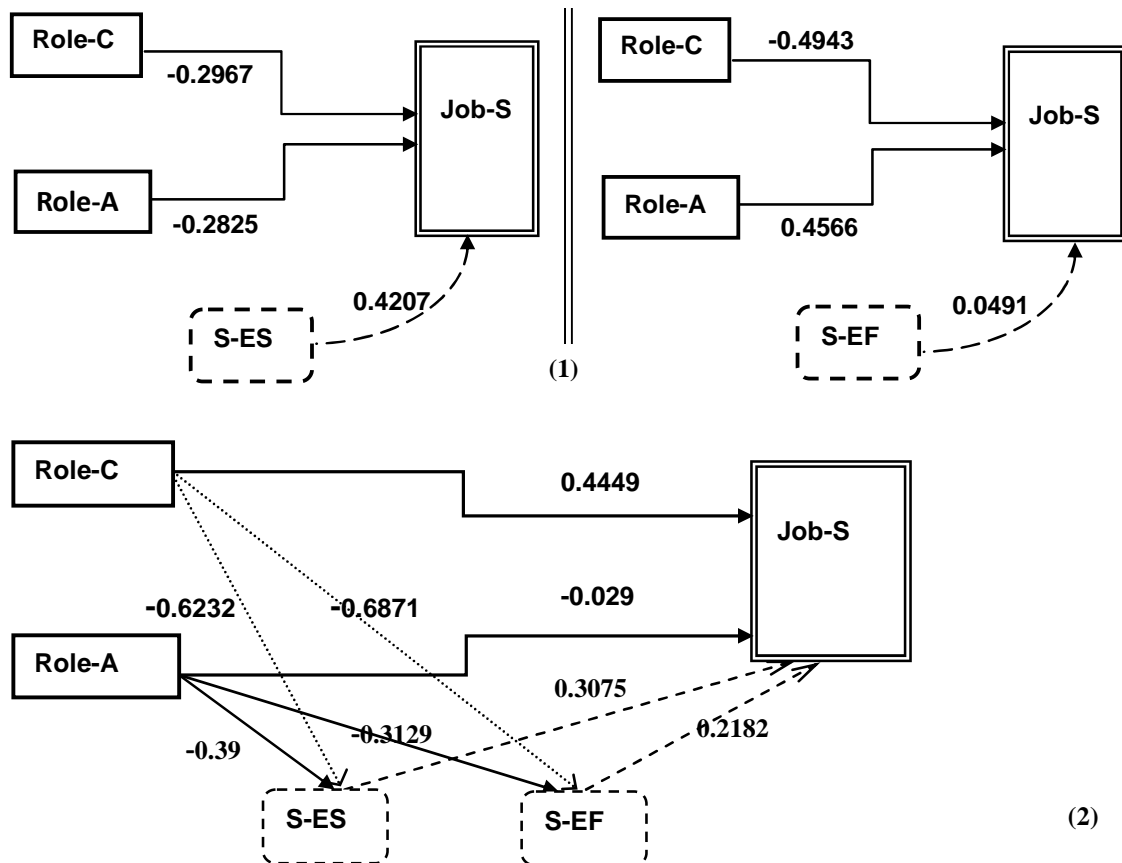


Figure 4. Under the second model effects of self-esteem and self-efficacy separately. Role-C: role conflict; Role-A: role ambiguity; JOB-S: job satisfaction; S-ES: self-esteem; S-EF: self efficacy.

and the effect of role conflict reached the level of (-0.029) ( $H_8$ , accepted). In addition, when self-efficacy and self-esteem were included in the model, both together and separately, the effect of each variable on job satisfaction was defined. Accordingly, when each variable was included in the model separately, the effect of self-esteem

on total job satisfaction was (0.4207), and the effect of self-efficacy was (0.0491). When they were included in the model together, these values reached (0.3075) for self-esteem and to (0.2182) for self-efficacy respectively ( $H_9$ , accepted). Apart from this, the direct effects of role conflict and role stress on the perception of self-esteem



**Table 2.** Descriptive statistics relating to demographic characteristics.

Factor	Frequency	Percent
<b>Gender</b>		
Male	37	12
Female	272	88
<b>Age</b>		
Up to 25	12	3.9
25 - 34	153	49.5
35 - 44	124	40.1
45 - 54	17	5.5
55 +	3	1
<b>Education</b>		
Vocational school of health	66	21.4
Associate degree	202	65.4
Bachelor's degree	38	12.3
Postgraduate	3	1
<b>Employment status</b>		
State clerk	253	81.9
Contractual staff	56	18.1
Total	309	100
<b>Marital status</b>		
Married	258	83.5
Single	36	11.7
Divorced – Widowed	15	4.9
<b>Length of service</b>		
Less than 5 years	20	14.1
6 - 10 years	67	21.8
11 - 15 years	104	19.9
Over 16 years	118	35.9
<b>Department</b>		
Clinic	121	39.8
Policlinic	73	23
Administrative dept.	52	16.8
Operating room	26	8.4
Intensive care	25	8.1
Laboratory	12	3.9
<b>Working location</b>		
In the Field	90	29.1
At hospital - center	219	70.9
Total	309	100

and self-efficacy were also determined at the second stage of the model. Role conflict had a negative and

quite powerful effect on self-esteem with the level of (-0.6232) and on self-efficacy with the level of (-0.6871), ( $H_4$ , accepted). Role ambiguity had an effect on self-esteem with the level of (-0.39) and on self-efficacy with the level of (-0.3129), ( $H_5$ , accepted). According to the results from the model/study, all hypotheses are found valid).

## DISCUSSION

Stress is not only a socio-psychological concept as far as organizations are concerned, but it is also a trigger for certain managerial and organizational problems. It is therefore very clear that corporate managers should generate urgent and practical solutions for stress and for other stress-associated problems. Thus, the main issue to be concerned about is eliminating stress sources, which can vary depending on the role and statuses of the employees in the organization. Role stress and its two dependent elements, namely, role conflict, and role ambiguity, become prominent among these sources. Job satisfaction or dissatisfaction emerging from role stress can be shown to be among the chronic threats imposed on organization members.

In this study, an attempt was made to determine the direction of the relationship between role conflict and role ambiguity and job satisfaction, and to demonstrate what function the perception of self-respect and self-efficacy can fulfill as a mediating factors. Nurses were selected as the target group in the study. A survey in the questionnaire form was applied to collect data, and the artificial neural network method, which is considered rather new in the management and organization field, was used during the analysis process. A two-stage model was created within the scope of the analysis, and self-esteem and self-efficacy were included in the model at the second stage.

According to the findings obtained in the study, job satisfaction was assessed within the scope of 5 factors, and among these factors, "salary and promotion" was determined to have the highest importance while "cooperation and solidarity" had the lowest importance. The significance levels of the factors "job performed", "perception of the manager", and "justice" were close to each other.

As a result of the study, it is understood that role stress has a negative and strong effect on job satisfaction. However, role conflict has a higher negative effect on job satisfaction than role ambiguity does. While it is observed that role conflict and role ambiguity have a positive and two-sided relationship between themselves, role ambiguity has a higher weight in the total role stress.

In the second stage of the model, self-esteem and self-efficacy perceptions were included in the model as input layers (independent variable), first separately and then together. At this stage, it was determined that self-

esteem induced an effect that can transform role stress dimensions to the positive. Self-efficacy on its own cannot induce a significant and important effect.

As a result of the analysis, it was found that role conflict and role ambiguity also had a negative effect on self-esteem and self-efficacy, apart from their effect on job satisfaction. In this context, role conflict has a two-fold negative effect on the two dependent variables compared with role ambiguity. This result shows that the beliefs and evaluations of the employees about themselves are at risk of being affected by stress.

In the second stage of the model, the self esteem and self-efficacy perceptions were included in the model separately at first, and then together as introduction layers (independent variable). It has been understood that when self-esteem and self-efficacy are included together in the model, they have higher levels of positive effect than that of their effect alone. Thus, in the process of transforming the negative impacts, self-esteem has a more powerful transforming effect on role conflict, while the transforming effect of self-efficacy on role ambiguity is more powerful. Self-esteem is more effective by itself in turning the negative impact of role conflict, and a more powerful transformation is realized by adding in self-esteem when self-efficacy is insufficient by itself.

The results of the study provide organizational management with up-to-date and practical solutions. In the first place, if managers want employees to reach high levels of satisfaction, they must apply decisions and practices sufficient to strengthen self-efficacy against role ambiguity and self-esteem against role conflict. In this scope, more rapid results can be obtained by giving prominence to the remuneration received by employees and their perceptions of job satisfaction in such decisions and practices. However, it is very clear that role conflict and role ambiguity feed each other; and they are problems that must be solved simultaneously. It must be considered that self-efficacy can be ineffective in organizations where role conflicts are experienced intensely and strengthening of self-esteem must be ensured by all means. Increasing the value, confidence and esteem of the members of the organization for themselves and developing their skills can be accepted as quick and effective solutions for reducing or eliminating the role stress of managers. Hereby, things once taken as conflict and ambiguity can turn into an environment of distinctness and democracy after a while. In conclusion, in consideration of the method used and the originality of the model, it can be said that the results obtained in the study will provide some important contributions to the literature.

## LIMITATIONS

The most important limitation in the study is the fact that the findings and results mainly reflect the perceptions and assessments of nurses, and for this reason, it is difficult

to make absolute generalizations. Another limitation of the study is that no other studies have been performed yet on the subject using the artificial neural network method.

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