

Social Networks and Job Satisfaction of Nurses

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Abstract: - The research examines the relationship between propensity to connect with others, social networks and job satisfaction. Social networks serve as a social resource which affects job satisfaction through the provision of supportiveness. The characteristics of nursing are life-related and emotion-consumed job. It is argued that both advice and friendship networks are important in a work setting. The research team developed a questionnaire and administered during an on-job training of the nurses. To derive the participants' advice and friendship networks, they were asked to list the names whom they consulted when they needed to know something about work and whom they considered to be their friends. Job satisfaction and the propensity to connect with others were also measured. The results showed that propensity to make acquaintance and outdegree were correlated with job satisfaction. Most of all, the advice and friendship networks were partially overlapped. It was concluded that the human resource professional should care about both formal and informal relationships.

Key-Words: - social networks, nurses, propensity to connect with others, job satisfaction, advice network, friendship network

1 Introduction

In Taiwan, the organization of health delivery system is undergoing radical changes. In March 1995, the National Health Insurance program (NHI) was implemented and then during these 10 more years had been reformed, such as "fee-for-service", "case-payment", and the global budget payment scheme. But little attention has been paid to the impact of these changes on nurses. The turnover rate among novice nurses in Taiwan was 30% in 2005, compared with a turnover of just 10% ten years earlier [1]. Some studies showed that the turnover rate among nurses is as high as 32% during the first 3 months and 58% during the first year of service [2]. The global recession might decrease the turnover rate of nurses. However, the characteristics of nursing are life-related and emotion-consumed job. The turnover is still a problem for the profession. The National Union of Nurses' Associations [3] recognized the turnover rate as a crisis and implemented a project dealing with the recruitment and retention of staff.

In the Far Eastern Memorial Hospital, human resource professionals are becoming acquainted with social networks. The social networks have positive

role to play in managing employees. Adding social networking to management can increase job satisfaction, encourage cross-departmental cooperation, and reduce turnover.

Social networks within organizations can be understood as formal and informal relationships. The informal relationships are often perceived as private sector. As a HR professional, should she care about or manage the informal relationships? Should the HR professional focus the management only on the formal relationships? Moreover, should she consider the individual difference of the propensity to connect with others? In the study, the argument is that both advice and friendship networks are important in a work setting. The research aims are (1) depicting the overlapped formal and informal network, (2) identifying the predictors of job satisfaction.

2 Literature review

A significant body of literature has documented the value of social support networks for health [4]. Support in the form of emotional processing or instrumental assistance from family, friends, or

acquaintances. Numerous studies have found that these resources can mitigate poor working conditions, such as heavy demands [5]. In the nursing literature, social support is cited as both an important factor in managing job-related stress [6, 7] and as a source of dissatisfaction [8]. A number of studies have found that higher levels of social support are related to better health [9], less burnout [10], higher job satisfaction, and less turnover [11].

In the daily routine of hospitals, nurses' networks are constantly activated through the accomplishment of various tasks, including requesting for information or social support. In organizational settings, Hodson [12] convincingly argued, the social relations of the workplace may make a key contribution to employees' job satisfaction, productivity, and well-being. Ibarra [13] posited that instrumental relationships are related primarily to work situations, whereas expressive relationships address emotional matters. In understanding the advice network, one seeks to know "Who consults who on work related matters?" [14]. This allows for the identification of the individuals consulted when one faces specific problems related to ones' tasks. When studying friendship networks, scientists aim at identifying who considers whom a friend within the organization [15, 16].

Closed networks of identity-based solidarity ties improve an employee's satisfaction with social aspects of the job, like the general social climate at work and cooperation with management and colleagues. Conceptualizing support somewhat differently, one author found social integration to be predictive of job satisfaction [17], the other author [18] suggested that close ties were positively related to the satisfaction of compensation and opportunity for promotion, whereas another found job satisfaction to be highest among employees whose off-the-job social circles consisted mainly of coworkers [19].

Burt [20] constructs a theory that envisages which positions in a social network are most beneficial. Burt [20] hypothesizes that "structural holes" or brokerage positions, characterized by the absence of ties among one's network partners, are most advantageous. In other words, an actor creates a competitive advantage when there are no ties between his network partners. According to Burt, contacts that share ties among each other are likely to share the same information and are therefore redundant. We assume that actors deliberately manipulate ties to improve the opportunity structure created by their social relationships.

In contrast, Coleman [21] argues that, rather than structural holes, network closure should be

regarded as the most important source of social capital. According to Coleman, dense and cohesive networks reduce the costs of information searches, promote trust, and facilitate achieving norms. Closure network facilitates sanctions and coming to agreements, thereby promoting trust and norms.

Recently, Totterdell, Holman, and Hukin [22] examined individual differences in people's propensity to connect with others (PCO), and found that PCO may help individuals adjust and thrive in their social context. The daily routine of nursing is taking care of patients, extremely connecting with persons. It is supposed that the propensity to connect with others is an influencing factor of job satisfaction for nurses.

Based on the research objectives and the literature, the research framework is presented as figure 1.

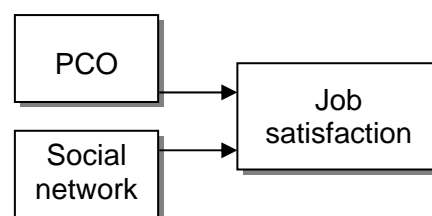


Figure 1. Research framework

3 Methods

3.1 Participants and procedure

According to the research framework, the questionnaire was developed and data was collected in a hospital. Participants were the nurses taking the on-job training. They gave written informed consent to participate in the study. After giving consent, they completed the questionnaire.

Ucinet 6 for windows [23], a social network analytic program, was used to calculate the outdegree, efficiency and constraint. Outdegree is a measure of number of connections from an individual to others. It is one's self-reported of acquaintance with others in the network. Efficiency and constraint are measures of structural hole. Efficiency is calculated as the effective size divided by the number of alters in ego's network. Constraint is a measure of the extent to which ego is invested in people who are invested in other of ego's alters, as shown in equation $(p_{ij} + \sum p_{iq}m_{jq})^2$. NetDraw [24] was applied to map the network graph.

3.2 Measures

The questionnaire included the scale of propensity to connect with others, social network nomination and Nurses' Job Satisfaction Scale (NJSS).

3.2.1 Propensity to connect with others (PCO)

The scale of PCO consisted of nine items developed by Totterdell, Holman and Hukin [22]. PCO was designed to measure three components of propensity to connect with others: making friendships, making acquaintances, and joining others. Each component had 3 items which measured the extent to which participants have such ties. All items were measured using a five-point Likert-type scale with anchors ranging from "strongly disagree" to "strongly agree". Regarding reliability, the measurement had strong internal consistency with all multiple-item constructs achieving Cronbach's alpha ranged between 0.86 and 0.89, exceeding the 0.7 threshold commonly suggested for exploratory research [25], as summarized in table 1.

Table 1. Reliability analysis of PCO scale

Construct & Item	Mean	SD	α
Propensity to make friends			.88
1. I have many friends.	3.83	0.81	
2. I make friends easily.	3.55	1.02	
3. I like to have many friends.	3.97	0.98	
Propensity to make acquaintances			.89
4. I have many acquaintances.	3.79	1.01	
5. I readily make connections with people I do not know.	3.28	1.03	
6. I like to know a lot of people.	3.69	0.89	
Propensity to join others			.86
7. I often put people in touch with the right person when they need something.	3.93	0.59	
8. I find it easy to bring individuals together.	3.45	0.99	
9. I like being able to connect people.	3.90	0.86	

In addition, principle components factor analysis was applied to evaluate the instrument's convergent/discriminate validity. As table 2, a total of 3 components were extracted, exactly matching the number of constructs specified by our model. The items for measuring a construct exhibited distinctly higher factor loadings on a single component than on other components. The observed loadings suggested our instrument had encompassed satisfactory convergent and discriminant validity. The validated

instrument used in this study was also used in [26,27].

Table 2. Examination of convergent/discriminant validity

	Factor 1	Factor 2	Factor 3
Propensity to make friends	0.94		
	0.96		
	0.67		
Propensity to make acquaintances		0.87	
		0.79	
		0.92	
Propensity to join others			0.96
			0.87
			0.77
Eigen value	6.38	0.90	0.55
% of variance	70.89	10.02	6.07
Cumulative % of variance	70.89	80.91	86.98

3.2.2 Social network nomination

To derive the participants' advice and friendship networks, they were asked to nominate up to 18 persons either in the same or different division. The advice network was measured as "I will acquire information from this person when it is needed to do my work". The friendship network was measured as "please name the people you consider to be personal friends".

3.2.3 Nurses' Job Satisfaction Scale (NJSS)

The NJSS was adopted from Lin, Wang, Li, & Huang [1]. It was applied to measure job satisfaction in 3 domains of human relationship (HR), feedback (FB), and benefit and promotion (BP). The questions were scored on a 5-point Likert scale ranging from 1 point (very dissatisfied) to 5 points (very satisfied). The measurement had strong internal consistency with all multiple-item constructs achieving Cronbach's alpha ranged between 0.82 and 0.95, exceeding the 0.7 threshold commonly suggested for exploratory research [25], as summarized in table 3.

Principle components factor analysis was also applied to validate the instrument NJSS. As table 4, a total of 3 components were extracted, exactly matching the number of constructs specified by our model. The items for measuring a construct exhibited distinctly higher factor loadings on a single component than on other components. The observed

loadings suggested our instrument had encompassed satisfactory convergent and discriminant validity.

Table 3. Reliability analysis of job satisfaction scale

Construct & Item	Mean	SD	α
Benefit and promotion			.95
1.The welfare system	3.03	0.87	
2.The promotion system	2.97	0.82	
3.the equity of the promotion system	3.10	0.72	
4.The pursuing personal development	3.03	0.82	
5.The equity of the pursuing Personal development	3.07	0.84	
Human relationship			.85
6.The group cooperation	3.45	0.87	
7.Cooperation with other units	3.43	0.79	
8.getting along with my direct manager	3.76	0.87	
9.The working climate	3.66	0.86	
Feedback			.82
10.The work devotion of my colleagues	3.28	0.96	
11.The affirmation of nursing role from other professionals' viewpoint	3.21	0.77	
12.The patients viewpoint of nursing	3.17	0.93	

Table 4. Examination of convergent/discriminant validity

	Factor 1	Factor 2	Factor 3
Benefit and promotion	0.79		
	0.92		
	0.83		
	0.70		
	0.85		
Human relationship		0.78	
		0.66	
		0.59	
		0.86	
Feed back			0.65
			0.86
			0.79
Eigen value	6.92	1.49	1.18
% of variance	57.66	12.37	9.84
Cumulative % of variance	57.66	70.03	79.87

4 Results

All of the participants were females. The descriptive results were shown as table 5. The average tenure was 8.59 years. Of these participants, 55.2% were married. The average satisfaction of BP, HR, and FB were 18.52, 14.25, and 9.66 respectively. The average of out-degree was 1.07 and 1.17 for advice and friendship networks, while the constraint was 0.50 for both networks. The means of PCO components were 11.34, 10.76, and 11.28 for making friend, acquaintances, and joining others.

Table 5. Description of subjects

Variables	Mean	S.D.
Tenure	8.59	5.01
Job satisfaction		
Benefit and promotion	18.52	4.20
Human relationship	14.25	2.85
Feedback	9.66	2.29
Advice network		
Outdegree	1.07	1.10
Efficiency	0.50	0.40
Constraint	0.50	0.44
Friendship network		
Outdegree	1.17	1.28
Efficiency	0.52	0.42
Constraint	0.50	0.44
Propensity of connect with others		
Friendship	11.34	2.54
Acquaintance	10.76	2.65
Joining others	11.28	2.20
<u>Marriage</u>	<u>N</u>	<u>%</u>
Yes	16	55.2
No	13	44.8

4.1 The overlapped advice and friendship networks

Comparing the advice and friendship networks, 52.4% of the observed links was overlapped. The network graphs were as figure 2 and 3. There were 10 isolates in both networks. The advice network divided into 3 components. The friendship network had 2 components while the dyad in advice network attached to the other component. A triad existed in both networks.

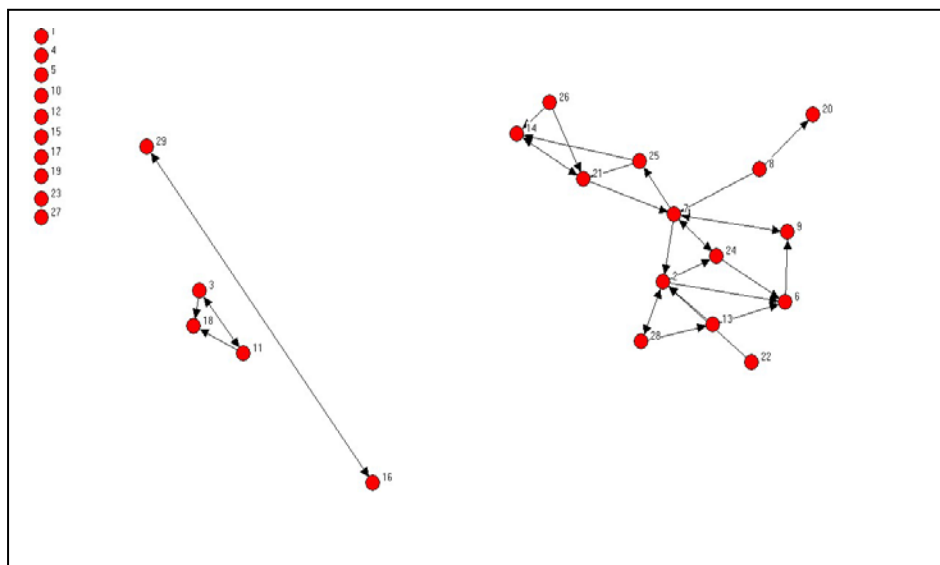


Figure 2. Advice network graph

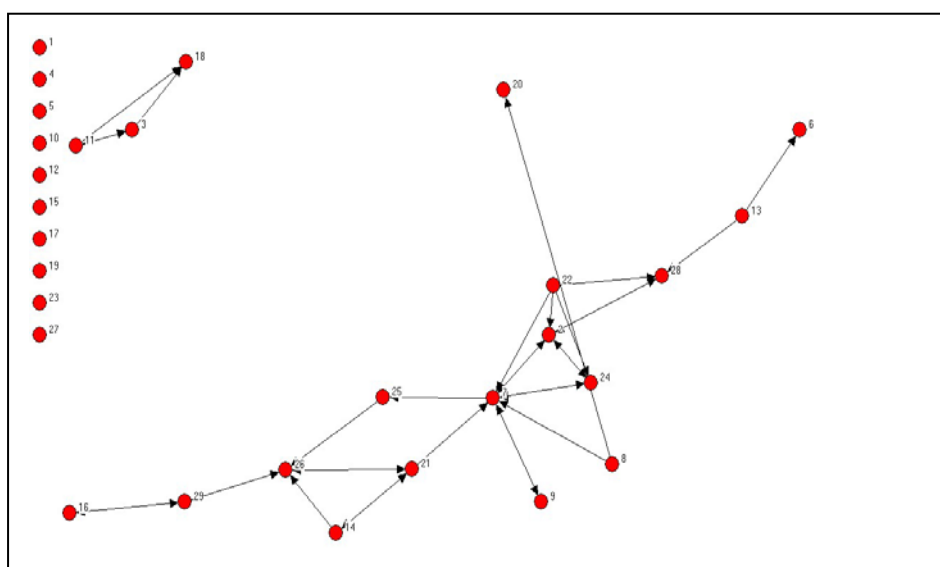


Figure 3. Friendship network graph

4.2 The predictors of job satisfaction

To explore the predictors of job satisfaction, regression analysis was conducted. Regression analysis is a statistical tool for evaluating the relationship of one or more independent variables to a single, continuous dependent variable [28]. It is often used when the independent variables cannot be controlled, as when collected in a sample survey or other observational study [28]. This analytical method had been used to fit a predictive model to an observed data set [29-31]. In the regression model, job satisfaction was the dependent variable, marriage and tenure were control variables, and propensity to

make friend, acquaintance, and joining others, and social network outdegree, efficiency, and constraint entered as predictor variables.

For advice network, the result was presented as table 6. Tenure was a good predictor for satisfaction of feedback. The propensity to make acquaintances was significantly correlated with satisfaction of human relationship and feedback, while the outdegree of advice network was significantly correlated with satisfaction of benefit and promotion.

The result of friendship network was shown as table 7. Tenure was also a good predictor for satisfaction of feedback. The married was more

satisfied with benefit and promotion than the unmarried. The propensity to make acquaintances was significantly correlated with satisfaction of human relationship and feedback, but not benefit and promotion. Friendship network outdegree was significantly correlated with all the 3 dimensions of job satisfaction.

For both advice and friendship networks, the variables of efficiency and constraint did not have any effect on job satisfaction. Among the 3 dimensions of propensity to connect with others, friend and joining were not correlated with job satisfaction.

Table 6. Regression coefficients of job satisfaction for advice network

Variables	<u>Human relationship</u>	<u>Feedback</u>	<u>Benefit and Promotion</u>
	B (S.E.)	B (S.E.)	B (S.E.)
Constant	10.85(2.90)	3.87(1.85)	10.37(4.25)
Marriage	-0.18(1.18)	0.69(0.73)	1.58(1.67)
Tenure	0.12(0.11)	0.19(0.07)*	-0.01(0.17)
PCO			
friend	-0.25(0.49)	-0.38(0.32)	0.01(0.73)
acquaintance	1.06(0.48)*	0.82(0.30)*	0.73(0.69)
joining	-0.64(0.44)	-0.04(0.27)	-0.23(0.61)
Advice network			
outdegree	0.53(0.70)	0.63(0.43)	2.33(0.97)*
efficiency	0.15(2.37)	0.001(1.50)	-2.04(3.44)
constraint	1.02(1.87)	-1.71(1.18)	1.03(2.70)
R square	0.42	0.62	0.40

*p<.05

Table 7. Regression coefficients of job satisfaction for friendship network

Variables	<u>Human relationship</u>	<u>Feedback</u>	<u>Benefit and Promotion</u>
	B (S.E.)	B (S.E.)	B (S.E.)
Constant	10.30(2.71)	3.57(1.67)	9.35(3.78)
Marriage	0.92(1.24)	1.42(0.75)	3.70(1.70)*
Tenure	0.11(0.13)	0.25(0.08)**	0.03(0.18)
PCO			
friend	-0.20(0.51)	-0.40(0.31)	0.10(0.71)
acquaintance	1.18(0.44)*	0.87(0.26)**	0.65(0.59)
joining	-0.80(0.45)	-0.10(0.25)	-0.25(0.57)
Advice network			
outdegree	1.35(0.62)*	1.02(0.33)**	2.92(0.75)**
efficiency	-2.33(2.29)	-1.67(1.23)	-4.42(3.78)
constraint	1.88(2.42)	-1.46(1.38)	1.16(3.13)
R square	0.49	0.70	0.54

*p<.05, **p<.01

5 Discussion and Conclusion

Research on job satisfaction has mostly focused only on the social structure. The study focused both on the propensity to connect with others and social networks. The results indicate that this propensity is a good predictor of job satisfaction, as well as social networks.

5.1 General findings

5.1.1 Advice and friendship networks are coexist

In the findings, people have multiplex relationships and the advice and friendship relationships are not mutually exclusive. Scientists have observed networks [32-35]. Informal networks are described in contrast or opposition to formal organizational structures. They draw apart from or collide with each other oftentimes. Yet empirical evidence suggests that in many organizations they overlap to a considerable extent [36, 37]. At the very least they

coexist, and at the most they are constantly influencing each other. Each, therefore, can be better understood in the context of the other. In fact, several researchers have emphasized the interdependence of formal and informal structures [38-42]. Especially for Chinese employees, Bozionelov & Wang [43] posited that that mentoring is an integral part of the Chinese culture and with the view that network ties or Guanxi in the Chinese society cannot exist in a purely instrumental form.

Recognizing the interdependence of advice and friendship networks, the HR professional should care about both formal and informal networks. Besides, the incomplete overlapping of advice and friendship networks demonstrated that some of the coworker relations may involve both affective support and instrumental support, and prove to be a source of satisfaction, but some of the relations may play different roles. It will be illustrated as below.

5.1.2 Propensity to make acquaintances is correlated with nurses' job satisfaction

Propensity to connect with others has three dimensions. Getting along with friends or joining with others is a natural and comfortable experience. But, making connection with people you do not know needs some social skills.

Job Characteristics Model was constructed by Hackman and Oldham [44]. They use five specific descriptors to describe jobs that are likely to be satisfying: skill variety, task significance, task identity, autonomy, and feedback. However, these five characteristics are objective, not intrinsic factors. Since nurses have to get along with patients and their families, the propensity to connect with others is important for them other than the five objective job characteristics. Further, nearly all of the patients are strangers, the propensity to connect with acquaintances become the most significant influencing factor for nurses to satisfy with job.

Propensity to make acquaintances was correlated with satisfaction of human relationship and feedback, but not with benefit and promotion. It is reasonable. The system of welfare and promotion, extrinsic aspects, is established by the organization and can not be controlled by individuals. The human relationship can be created by cooperating with others, getting along with colleagues. And the cooperative human relationship would form harmonic working climate. All of these intrinsic aspects would reinforce the satisfaction of feedback.

Based on the finding, the HR professional should keep the equity of the promotion and welfare system, in order to increase the employees' job satisfaction. Since the propensity to make

acquaintances had effect on job satisfaction for advice and friendship network, the HR professional has to keep observation on networks, and use coaching, incentives, and interpersonal skills training to burnish the employees' social skills.

5.1.3 Friendship network outdegree is a good predictor of job satisfaction

Outdegree is a measure of quantifying the connections from an individual to others. The results suggested that the more connections, the more job satisfaction. However, advice and friendship networks had different effects on job satisfaction. The friendship network outdegree was positive associated with job satisfaction in three dimensions, but the advice network outdegree was only correlated with the dimension of benefit and promotion.

Social networks bears directly on individuals' integration into social settings, and in the workplace, we might expect social networks to bear not only personal affiliations but also the functional interdependence of members. Obviously, the larger network size offers more expressive and instrumental relationships, and more adjustment and satisfaction.

The findings suggest that the HR professional should have strategy to enlarge the employees' networks and the strategy may focus more on the informal relationship.

5.1.4 The effects of efficiency and constraint were not tested

Efficiency is calculated as the effective size divided by the number of alters in ego's network, as mentioned. It is measuring the nonredundancy of contacts. Constraint is a measure of the extent to which ego is invested in people who are invested in other of ego's alters. According to Burt's structural holes theorem [20], the redundancy measure is based on connection, while the constraint measure is based on dependence.

The effects of efficiency and constraint were not tested in the study. But the concept of connection and dependence would have some implications on HR management.

5.1.5 Different effects of advice and friendship networks

The authors of social networks often distinguish the content of relationships as instrumental or expressive. In organizational settings, instrumental relationships are related primarily to work situations, whereas expressive relationships address emotional matters [35]. Among the relational content exploration in organizational studies, advice and friendship networks have been measured as instrumental and

expressive networks. Most of the studies had the same findings that there existed significant overlapping between different types of networks and different situations call for different relationships.

Saint-Charles, Mongeau [45] seek to find the influence of particular situations on the activation of one's advice and friendship networks. In their study, it was found that advice networks are called upon in situations of information uncertainty and friendship networks in situations of ambiguity. Furthermore, Krackhardt and Stern [46] posited that the pattern of friendship ties with an organization will be critical to an organizations ability to deal with crises. Through a set of organizational simulations, they demonstrated that an organization characterized by friendship ties that cut across departmental boundaries is better suited to adapting to environmental changes and uncertainty.

As to the job satisfaction, Schyns and Croon [47] indicated that the social structure was positively related to job satisfaction, and had an impact on different facets of job satisfaction. Flap and Völker [48] posited that work-related ties promote an employee's satisfaction with instrumental aspects of the job, like income, security, and career opportunities, and closed networks of identity-based solidarity ties improve an employee's satisfaction with social aspects of the job.

It is suggested that the application of networking strategies had better to consider the difference of the instrumental and emotional relationships. In addition, networking is increasingly perceived as a means to reach personal goals, it is natural to assume that actors try to arrange their ties strategically to optimize their outcomes [39]. The HR professional should pay attention to the efficiency and equality for everyone.

5.2 Practical implications

Using network analysis, HR professionals can translate a myriad of relationship ties into maps that show how the informal organization gets work done. They can get a good overall picture by diagramming the advice and friendship relationship networks.

Social networks are best suited to delivering social and emotional resources and for doing so within organizations strategy for producing social relations should be designed.

For professionals of human resource, the current findings signal that a potential benefit may accrue from helping workers to strategically reinforce their social networks. Aspects of organizational and job design, including the use of team task assignments instead of individual ones, the scheduling of

employee shifts may increase the abilities to cultivate close and work-focused relationships. Thus, such aspects may improve their level of satisfaction.

5.3 Future research

The Far Eastern Memorial Hospital is a medical center. There are more than 2000 nurses in the nursing department. Based on this pilot study, further research can be applied on the whole population in the nursing department.

Social networks evolve over time. Much of network dynamics are the result of the interaction between formal and informal process. Longitudinal data is needed to explore the evolution of the interaction between advice and friendship networks. If a high quality, large-scale network data is collected, empirical observation will be the foundation for modeling network evolution.

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