

RELATIONSHIPS BETWEEN CHANGES IN ROLE STRESSORS AND INTENTION TO QUIT AMONG NOVICE NURSES

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ABSTRACT

The research investigated changes in role ambiguity, role conflict, and role overload across time as predictors of intention to quit among nurses. Retention of nursing staff has become a major challenge to employers. Intention to quit is a powerful predictor of turnover among nurses, as well as other professions. Past studies on the predictors of intention to quit have paid little attention to role stressors as they influence intention to quit, or on the extent to which changes across time in stressors are associated with intention to quit. We collected longitudinal data from 201 newly employed, novice nurses in 25 general hospitals. They completed questionnaires at two times (T1 and T2), about six months apart. After controlling for the T1 levels of the three stressors, only the T2 levels predicted intention to quit. The most potent predictor was the T1-T2 change in role ambiguity. We recommend that nursing managers introduce special workshops designed to teach novice nurses how to cope more effectively with role ambiguity and role conflict in their work environment.

Introduction

As a general shortage of nurses is a public health concern in many countries, retention of nursing staff has become a major challenge to employers. Intention to quit has been found to be one of the most powerful predictors of turnover (Steel & Ovalle, 1984), especially among nurses (Wagner, 2007; Hayes et al., 2006). As noted by a recent meta-analysis (Zimmerman, 2008), past studies on the predictors of intention to quit have focused on job attitudes such as satisfaction and have paid less attention to role stressors as they influence intention to quit. To our knowledge, no past study has investigated the extent to which changes across time in stressors are associated with intention to quit. The current study addresses this research question using a longitudinal design.

We investigated changes in role stressors as perceived during an employee's first months of work in an organization. There are several reasons for the focus on novice employees. First, high levels of perceived stress usually characterize the first few months at a new job because employees are required to learn new tasks and adapt to new demands, while maintaining acceptable levels of performance (Saks & Ashforth, 2000). Second, studying a cohort of new entrants in an organization controls for potential confounders, such as organizational tenure and hierarchical level. Tenure and rank are associated with coping resources, such as support systems, control, and predictability of stressful demands (Shirom, Shechter-Gilboa, Fried, & Cooper, 2008). The participants in this study were novice nurses in their initial months of work in hospitals. As newly employed nurses have been shown to report high levels of stress at work relative to veteran nurses (Gelsema, van der Doef, Maes, Akerboom, & Verhoeven, 2005), they provide a naturalistic setting for studying the effect of perceived changes in stressors that are likely to occur during the initial employment period, on intention to quit.

Work-related stress is often associated with threatening or harmful demands as perceived by employees (Beehr, 1998). In the current study, a stressor has been conceptualized in terms of role stressors, because people organize their daily activities in terms of role boundaries (Wheaton, 1997). The focus was on three types of stressors that were found in a recent meta-analysis to be most often used in studying the effects of stressors on role performance (Gilboa, Shirom, Fried, & Cooper, 2008): role ambiguity (lack of clear and predictable demands), role conflict (irreconcilable demands), and role overload (demands for too much work in too little time). These three role stressors are those most frequently used in studies of work-related stressors (Ortqvist & Wincent, 2006). Theoretical approaches in stress research such as the Meta-Model of Occupational Stress and the Cybernetic Theory of Stress (Beehr, 1998; Edwards, 1998), posit that role stressors evoke negative attitudinal reactions, including intention to leave (see also Hart & Cooper, 2002), and accumulated empirical evidence supports this linkage among nurses (Beehr & Glazer, 2005).

Theoretical Framework and Hypotheses of the Study

Following a classic model of turnover among hospital employees (Price & Mueller, 1986), we conceptualized nurses' decisions to leave their current place of employment as a dynamic process that unfolds over time. For example, high levels of role conflict for beginning nurses might lead them to seek alternative employment options and compare them with their current job. Following this comparison, which may take some time, they often decide either to leave or to stay at their current job (Price & Mueller, 1986). We argue that in order to understand the effects of role stressors on staff turnover, it is necessary to assess the levels and effect at more than one time point. In a review of the temporal issue in organizational behavior, Mitchell and James (2001) argued that most of the theory in this area does not consider the temporal dimension, including key questions such as when an effect is likely to occur and for what duration. Based on the above theoretical considerations, we argue that changes across time in the stressors, rather than their initial levels predict intention to quit as a negative attitudinal reaction to stressors. Accumulated evidence suggests that role stressors assessed during and after the entrance transition period are associated with intention to leave (Bauer, Bodner, Erdogan, Truxillo, & Tucker, 2007). Following this theoretical

rationale and empirical evidence, in the context of novice employees we expected that changes in the levels of stressors from baseline (T1) to follow-up (T2), rather than baseline levels, would predict follow-up intention to quit (Hypothesis 1).

The very first months of work in an organization are characterized by a phenomenon referred to as 'role shock' (Ashforth, Sluss, & Saks, 2007). Role shock refers to a well-documented finding that during this period, employees are required to learn new tasks, define their relationships with significant others in their work environment, and learn how to effectively perform their new role. Ashforth (2001) argued that after spending time in a new job, the inherent meaning of role stressors tends to change as the initial role shock subsides. A meta-analysis of the associations among role stressors and different types of job performance, found that role ambiguity had the highest meta-analytic correlations with job performance (Gilboa et al., 2008). An earlier study of nursing graduates followed from entry to about 10 months later, found that different combinations of role stressors predicted job satisfaction at each wave of measurement, thus providing indirect support to our hypothesis (Chang & Hancock, 2003). As noted, most past studies relating role stressors to intention to quit among nurses (for references to these studies, see: Glazer & Beehr, 2005) were based on a cross-sectional design (Zimmerman, 2008). A recurrent finding in these studies was that each of the stressors under study, role ambiguity, role conflict and role overload, was similarly associated with intention to quit (Glazer & Beehr, 2005). In contrast to the perspective of cross-sectional studies, based on the above theoretical considerations and empirical evidence, we expected changes in role ambiguity to be the most powerful predictor of intention to quit (Hypothesis 2).

A review of the early literature on role conflict and role ambiguity (Jackson & Schuler, 1985) suggested that these two role stressors might each exacerbate the other's negative effects on organizationally relevant outcomes such as job performance. The possibility that role stressors synergistically influence outcomes such as job satisfaction has been examined in several studies with nurses (Elloy & Smith, 2003; Gelsema et al., 2006). For example, a study on beginning nurses (Chang & Hancock, 2003) found that they tended to experience overload because of difficulties in prioritizing tasks and time management, and that this experienced overload compounded their levels of role ambiguity in the prediction of job satisfaction. We were unable to find any studies that examined the possibility that role stressors interact in predicting intention to quit among nurses. Following the above arguments, we hypothesized that the changes across time in the three role stressors may synergistically influence intention to quit even after we controlled for their main (or direct) effects (Hypothesis 3).

Method

Participants

The present study used a two-wave longitudinal design and included nurses who were employed in one of 25 general hospitals in Israel. The T1 questionnaire was sent to 324 nurses who appeared on the hospitals' employee rosters and who had joined the staff during the five months prior to the study. From this group, 234 questionnaires were returned, a response rate of 72%. T2 questionnaire was sent to all those who responded to the T1 questionnaire six months later; the 201 respondents made up study sample. This response rate, approximately 60%, is considered quite satisfactory (Baruch & Holtom, 2008). The nurses were employed primarily in the internal medicine (18%), surgical (17%), intensive care (17%) and pediatric (9%) wards, with minor concentrations in the orthopedic and gynecology wards. Some general hospitals rotate novice nurses among different departments during their first year of service.

In order to test for a systematic bias caused by the attrition of respondents from T1 to T2, analyses were conducted to examine the significance of the difference in intention to quit at T2 between subjects who responded to both T1 and T2 questionnaires and those who responded only at T1. No significant difference

was found between these two groups. In addition, an examination of the significance of the difference on approximately 20 socio-demographic variables between the two groups (age, marital status, number of children, country of origin, religious status, and other socio-demographic variables) did not show a significant difference.

The final (T2) sample participants comprised mostly women (90%) at a mean age of 27.4 years. About 5% of the participants were nurse practitioners, 57% were registered nurses, and 32% were registered nurses who also had an academic degree in nursing. Among the participants, 63% had no children, 75% were nurses new to the profession, and 54% were born in Israel, with the rest coming from countries worldwide (mostly the former Soviet Union and Eastern Europe). Most of those from the former Soviet Union had been in Israel for more than 8 years.

Measures

The intercorrelations, means, and standard deviations for each variable included in our model are presented in Table 1. A measure of internal consistency (Cronbach's alpha) was used to assess the reliability of the multi-item measures included in the current study.

Intention to Quit. A short, three-item scale based on the turnover literature that is often used in studies of intention to quit among nurses (Glazer & Beehr, 2005) was used here. The items included "What are the chances that you will leave the hospital in the coming year? (1 "very unlikely" to 5 "very likely"), "Are you planning to find work in another hospital?" (1 "definitely no" to 5 "definitely yes"); "what are the chances that you will continue to work in this hospital in the coming year"? (1 "very likely" to 5 "very unlikely"). The reliability (Cronbach's internal consistency reliability) of the measure was $\alpha = .80$.

Role Stressors. For measuring role conflict and ambiguity, we used the Rizzo et al. (Rizzo, House, & Lirtzman, 1970) scales frequently used in the stress literature in Israel as well as other countries. The role conflict scale included 6 items and the role ambiguity scale 5 items, with $\alpha = .70, .75$ at T1 and $.80, .83$ at T2, respectively. The role overload scale included 5 items based on the Nursing Stress Scale (Gray-Toft & Anderson, 1981), with $\alpha = .85, .83$ at T1 and T2, respectively. Respondents were asked to indicate to what extent each of these situations usually exists in their job, for example: "you have continuous difficulty working with one of the nurses in the ward" (role conflict); "you do not have enough time to finish all your duties at work" (role overload); and "you do not know your exact work responsibilities" (role ambiguity). All the items were scaled from 1 ("exists very little") to 5 ("exists a lot").

Control variables. Following the general recommendations in the turnover literature (Griffeth et al., 2000), we used three control variables: age, marital status, and percent of full-time employment. On an exploratory basis, we also tested the possibility that seniority on the new job (assessed in months) was a relevant control variable. We found it had no main or interactive effects on the results obtained. Therefore, seniority was not included as a control variable in the final analyses.

Procedure

The research was approved by the Institutional Ethics Committee. After receiving the roster of nurses who had started working during the previous five months from the participating hospitals, we mailed the T1 questionnaires to them. The importance of the study was explained, and full confidentiality was assured. The accompanying letter emphasized that the study was for research purposes and was not connected to their workplace, pledging that no one in the hospital would see the completed questionnaires. In addition, respondents who completed both questionnaires were paid the equivalent of \$20 in local currency. Providing payment is an efficient method of increasing survey response rates (Church, 1993). Two versions of the questionnaire were randomly sent to the participants at T1 and T2. The questions in each

version were arranged in a different order to prevent primacy or order effects. The T2 measurements were performed six months after T1 because past research suggested that beginning nurses found this period to be the most stressful in their professional nursing careers (Chang & Hancock, 2003).

Analytic Methods

We used ordinary least-square (OLS) regressions to test the hypotheses. Analyses were performed using the Statistical Package for the Social Sciences version 19 for Windows (SPSS Inc., Chicago, IL, USA). Prior to our analyses, we centered all T1 and T2 predictors to reduce multicollinearity among the predictors' main and interactive effects, as this transformation does not have any effect on the value of the regression coefficients and their estimated standard errors (Aiken & West, 1991). A rough guideline to detect collinearity in OLS regressions is the Tolerance Test. For all OLS regressions, at all steps of the regressions the tolerance values for all predictors exceeded .60, indicating relative independence of the predictors in these regressions.

To assess changes in the role stressors as predictors of intention to quit, we introduced the T1 measure of role stressors into the regression, after the T2 measure (Twisk, 2003). To test our second hypothesis, we used Dominance Analysis and the squared part correlation coefficients of our predictors, considered mathematically equivalent to the general dominance weights. Dominance analysis refers to determining the most powerful predictors of a criterion (see: Azen & Budescu, 2003). Squared part correlation coefficients, refer to the squared correlation coefficient of each of the Time 2 role stressors with intention to quit, after controlling for or partialing out the effects of other Time 2 and Time 1 role stressors and the controlled variables. All squared part correlation coefficients were calculated based on the data depicted in Table 1.

We then tested Hypotheses 3 by including in the analysis, if significant, first the quadratic terms of the changes in the levels of role ambiguity, role conflict, and role overload (Ganzach, 1997), and then their multiplicative terms. On an exploratory basis, we also tested the significance of the quadratic and interactive terms of the three role stressors at T1; none was significant.

Results

While no specific hypothesis was formulated in this regard, the T1 levels of the role stressors were not significantly different from their T2 levels. The means, standard deviations, and intercorrelations of the study variables among the T1 role stressors are presented in Table 1. Only role overload was found to be significantly correlated with intention to quit ($p < .05$). In contrast, all T2 role stressors were significantly correlated with intention to leave and the correlation coefficients were similar to those reported in other studies (Glazer & Beehr, 2005; Kovner et al., 2009). The stability coefficients (which measure the stability of responses from T1 to T2, or T1-T2 correlations) of the role stressors were on the average $r = .56$, consistent with stability coefficients reported for other work-related attitudinal states (Luthans, Avolio, Avey, & Norman, 2007).

Table 1
Means, Standard Deviation and Intercorrelations of All Study Measures

Measures	1	2	3	4	5	6	7	8	9	10	Mean	Standard Deviation
1. Intention to quit, T2	–	-.10	.11	.13*	.23*	.12*	.24*	.05	.05	.18*	1.97	.93
2. Age		–	.25*	.06	-.05	-.05	-.02	-.15*	.06	.05	27.50	5.75
3. Marital status			–	-.02	-.01	-.09	.03	-.01	.01	.02	57%	
4. Percent of full-timer				–	-.01	.09	.01	-.07	.15*	.03	92.11	18.67
5. T2 Role ambiguity					–	.37*	.20*	.50*	.20*	.18*	1.65	.58
6. T2 Role conflict						–	.29*	.31*	.59*	.25*	1.66	.66
7. T2 Role overload							–	.19*	.20*	.59*	2.66	.86
8. T1 Role ambiguity								–	.38*	.20*	1.69	.57
9. T1 Role conflict									–	.27*	1.53	.63
10. T1 Role overload										–	2.55	.87

Note. N = 200 after list-wise deletion of missing data. Marital status is a dichotomy, with 0 = not married and 1 = married. Percent of full-time represents the percent of a full-time job held by respondents *p < .05

The results of the OLS regressions are reported in Table 2. All three T2 role stressors, role ambiguity, role conflict, and role overload, significantly predicted intention to quit at T2 ($p < .05$), while none of the T1 role stressors was a significant predictor. These findings indicate that the changes from T1 to T2 in all three role stressors predicted intention to leave at T2, while their baseline levels at T1 were not significant predictors. Notably, there was a non-linear association between T2 role conflict (controlling for T1 role conflict) and intention to quit. The same set of results was obtained when we reversed the order of entrance, introducing after the control variables T1 role stressors, and only in the next step, T2 role stressors. Therefore, there is considerable support for the first hypothesis that changes in the levels of stressors from baseline to follow-up predict intention to quit.

Table 2

Summary of Multiple Regression of T2 Intention to Quit on Control Variables, T2 Role Stressors and T1 Role Stressors (N = 200)

Predictor	B	(95% CI)	β	ΔR^2
<u>Step 1: Control Variables</u>				.02*
Age	-.05*	(-.05 - -.10)	-.15	
Marital status	.22*	(.02 - .54)	.15	
Percent of full-timer	.01*	(.004 - .02)	.14	
<u>Step 2: T2 Role Stressors</u>				.09*
T2 Role ambiguity	.41*	(.13 - .64)	.13	
T2 Role conflict	-.15	(-.45 - .25)	.00	
T2 Role overload	.17*	(.12 - .30)	.16	
<u>Step 3: T1 Role Stressors</u>				.01
T1 Role ambiguity	-.21	(-.48 - .06)	.12	
T1 Role conflict	-.02	(-.28 - .25)	-.01	
T1 Role overload	.08	(-.10 - .26)	.07	
<u>Step 4: Non-linear terms</u>				
T2 Role conflict ²	.22*	(.10 - .43)	.14	
Total $R^2 = .16^*$				

Note. N=200 after list-wise deletion of missing data. All coefficients are taken from the last step. The symbols B and β represent the unstandardized and standardized partial regression coefficients, respectively, and 95% CI stands for the 95% confidence interval of the former coefficient. The symbol ΔR^2 stands for the incremental squared multiple correlation coefficient, adjusted for degrees of freedom, for the respective steps of the regression. See note to Table 1 for marital status and percent of full time.

To understand that nature of the unexpected non-linear effect of T2 role conflict (T1 controlled) on T2 intention to quit, we plotted the curve (Figure 1). As evident from Table 1, the mean of T2 role conflict was 1.66 and its standard deviation = .66. Therefore, role conflict in Figure 1 ranged from one to five. Figure 1 shows that for those beginning nurses whose T2 levels of role conflict exceeded the mean, increases across time in the level of role conflict have an accelerating effect on intention to quit.

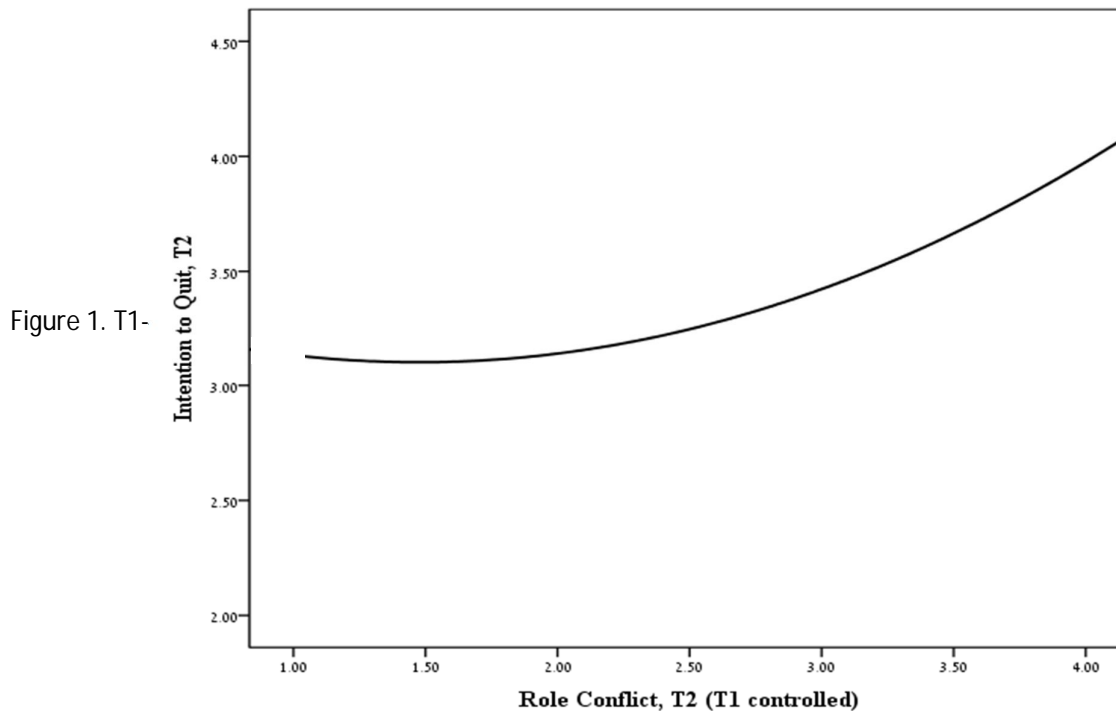


Figure 1. T1-T2 Change in Role Conflict as Predicting T2 Intention to Quit

Using dominance analysis, we found considerable support for our second hypothesis that changes in role ambiguity would be the most powerful predictor of intention to quit, in that the squared part correlation coefficients for role ambiguity, role conflict, and role overload were .05 ($p=.002$), .005 ($p=.29$), and .01 ($p=.04$), respectively (Table 2). All squared part correlation coefficients were calculated based on the data depicted in Table 1. There was no support for the third hypothesis that changes across time in the three role stressors might synergistically influence intention to quit, in that none of the interactive terms tested was found to be significant.

Discussion

As expected, we found that the role stressors that most powerfully predict intention to quit among nurses were those that reflected a change from T1 to T2. T1 levels of the role stressors assessed shortly after the nurses entered their hospital job did not significantly predict their T2 intention to quit. Organizational socialization literature (for example, Ashforth, Sluss, & Saks, 2007) indicates that new job entrants are usually bombarded with new environmental demands, are required to learn new tasks, establish work relationships with significant others at work, and adopt effective ways of coping with these demands. This study underscores the importance of adopting a process-based (longitudinal) approach to the assessment of role stressors. As our findings suggest, role stressors assessed very early in the entry process to a new job might be largely irrelevant to the prediction of subsequently assessed intention to quit. The role stressors assessed at T2 were all significant predictors of intention to quit even after controlling for their baseline levels.

This study makes a twofold contribution to the literature: it provides a temporal dimension to using role stressors to predict different aspects of the withdrawal process and it gives support to the importance of role ambiguity during the entry stage to a new nursing career, as a predictor of subsequently assessed intention to quit.

As expected, we found that the relative contributions of the three role stressors to the prediction of follow-up intention to quit differed markedly, with role ambiguity clearly the most powerful predictor of the criterion (Hypothesis 2). A recent review of role stressors among nurses (Chang, Hancock, Johnson, Daly, & Jackson, 2005) found that role overload is the major source of stress for nurses. Our findings suggest that for beginning nurses, role ambiguity rather than role overload explains most of the variance in intention to quit. Supporting our findings on the importance of changes in role ambiguity as predicting intention to quit, an earlier study of novice nurses found that role ambiguity was strongly related to subsequently assessed job satisfaction (Chang et al., 2005).

Our third hypothesis, expecting T2 role stressors to interact in predicting intention to quit, was not supported. Rather, we found that each of the three T2 role stressors independently predicted intention to quit. In our study, each of the role stressors occupied a stress domain that did not overlap the other two. A possible reason for our failure to confirm the third hypothesis could be that, as suggested in a recent meta-analysis (Zimmerman, 2008), these interactive effects become significant only for those low on the personality traits of agreeableness and conscientiousness.

Other attitudinal variables may moderate the linkages among role stressors and intention to quit. For example, a nurse who is experiencing role stressors continuously may decide to leave the organization only if she is dissatisfied with her job. We found an unexpected curvilinear association of T2 role conflict (T1 controlled) with T2 intention to quit. It could be that the flat part of the curve depicted in Figure 1, indicating no effect of T2 role conflict on the criterion, is due to the fact that during their first year of hospital work, novice nurses are in a relatively protective hospital environment, which allows mistakes and time to learn from them. In this type of learning environment, superiors often act as mentors and trainers for novice nurses and therefore, are less likely to be the source of within-role conflicts. The exponentially rising part of the curve in Figure 1 was predicted by our first hypothesis.

Strengths and limitations of the study

The present study has several strengths. First, the relatively high response rate compared with other longitudinal studies (Ployhart & Vandenberg, 2010) adds a degree of meaningful external validity to the specific population sampled. Second, the three types of role stressors were measured simultaneously and were examined at two separate times, using a longitudinal design. Third, this is the first study to examine longitudinally, the linkages between beginning nurses' role stressors and intention to quit. A recent review of the area of nurses' intentions to leave their profession (Flinkman, Leino-Kilpi & Salanterä, 2010) found six studies on work-family conflict, but no study including any of the stressors covered by the current study. Fourth, we attempted to enhance the study's internal validity by applying a variety of techniques. The longitudinal data were measured at meaningfully spaced intervals: T1 was the time the nurses entered their new, mostly first, hospital job and T2 was about six months later. Data were analyzed with each participant constituting a control of herself or himself, through the use of changes over time in the variables used to predict intention to quit. In such an analysis, various statistical artifacts, such as the unreliability of the measures, regression toward the mean, are substantially reduced (Edwards, 2001). The extent that the T1 levels of stressors were shaped by antecedents such as personality traits, socio-economic status, and early life events, was controlled for in our analyses.

The present study has a number of limitations. Our findings need to be replicated in samples representing other gender and age groups. The external validity of our findings needs to be established in additional occupational settings. Intention to quit is influenced by personality predispositions, job and organizational commitment, job opportunities in the relevant labor market, and other factors (Hayes et al., 2006). We used only role stressors to predict intention to quit. The study variables are based on self-reported data. In addition, critical job and life events that might affect intention to quit and turnover behavior (Morrell, 2005) were not measured here. However, our study had a consistent focus on the effects of three specific job-related variables across time.

In the USA, there have been major changes in the last few years, including mandated patients to nurse ratio, changes that have increased the importance of retaining beginning nurses (Lang et al., 2004). However, in Israel, the location of the current study, there is evidence indicating that only minor changes have occurred in nursing staff levels and the turnover rate for nurses has remained low and stable (Nirel et al., 2010). Still, because it is evident that role demands on nurses, such as those stemming from technological changes in nursing care have increased (Nichols, Davis & Richardson, 2010), we recommend that future research reassess changes in the levels of role stressors for novice nurses.

Conclusions and implications:

For beginning nurses, role ambiguity explains most of the variance in intention to quit. This study offers new directions for research in theory building and testing. It also has implications for both stress and organizational socialization theories. In the area of stress research, our findings suggest that future studies, especially of employees entering new roles, should consider the possibility that the meaning and salience of role stressors may change over time. Theories of organizational socialization often view the adoption of a new and unfamiliar role as a very stressful life experience (Ashforth, 2001, pp. 220-221). We suggest that there is a need to add a temporal dimension to the study of role stressors experienced when entering new roles. In terms of influencing important organizational outcomes such as turnover, role stressors experienced very early in the entry process might be less relevant than those experienced latter during the organizational socialization process might.

Our study has a few implications for human resources personnel responsible for nursing staff. They should be cautious in using survey data on levels of stress from nurses early in the entrance process, because these data might be irrelevant for predicting subsequently assessed intention to quit. Additionally, our findings suggest that beginning nurses should be offered training in ways to cope effectively with role ambiguity; for example, peer group support meetings to discuss stressful experiences. We suggest that increased department funding and personal bonuses should be used to encourage managers to provide stress reduction meetings and focus groups aimed at decreasing role ambiguity and overload among beginning nurses. In addition, occupational counselors in nursing schools, sometimes called upon to provide advice to graduate nurses, need to be aware of changes in role stressors experienced during entrance into hospital careers.

We hope that the present study will act as a catalyst to encourage researchers to conduct longitudinal investigations into the effects of stress on different aspects of employee withdrawal from the work place. It is generally posited in the nursing literature that reality shock is associated with work withdrawal attitudes and behavior (Cowin & Hengstberger-Sims, 2006). Our findings point to the need to qualify this perception, taking into consideration dynamic aspects of the stress process. This study provides another example of the theory that cross-sectional findings may differ from longitudinal results (Ployhart & Vandenberg, 2010). In the current study, we assessed the levels of role stressors twice. It is very difficult to model nonlinear forms of changes in role stressors (Ployhart & Vandenberg, 2010) with two waves of data collection. We expect future research to improve on our basic design by collecting data at three or more time points.

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