The Effect of Nurse-Physician Collaboration on Job Satisfaction, Team Commitment, and Turnover Intention in Nurses

Maura Galletta, Igor Portoghese, Mauro Giovanni Carta, Ernesto D’Aloja, Marcello Campagna

Abstract: Voluntary turnover in nursing can lead to nursing shortages that affect both individuals and the entire hospital unit. We investigated the relationship between group- and individual-level variables by examining the association of nurses’ job satisfaction and team commitment at the individual level, and nurse-physician collaboration at the group level, with individuals’ intention to leave the unit at the individual level. A self-report questionnaire was administered to 1,024 nurses on 72 units in 3 Italian hospitals. At the individual level, affective commitment partially mediated the relationship between job satisfaction and nursing turnover intention. Moreover, a cross-level interaction was found. Nurses with high levels of job satisfaction showed high levels of identification with their team, and this relationship was stronger when the group perception of nurse-physician collaboration was high. Results suggested that managerial strategies to promote nurse-physician collaboration may be important to increase nurses’ affective commitment to the team. At the individual level, job satisfaction and team affective commitment are important factors for retaining staff, and at the group level, good work collaboration with physicians is instrumental in developing nurses’ affective identification with the team. © 2016 Wiley Periodicals, Inc.

Keywords: job satisfaction; multilevel analysis; nurse-physician collaboration; organizational commitment; turnover intention

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Voluntary turnover is defined as employees’ choice to leave an organization (or unit, group work, department, etc.) of their own free will, for any reason. Voluntary turnover in nursing and the associated chronic shortages are issues of critical importance that affect both individuals and the entire work unit. A considerable body of evidence supports the notion that dysfunctional turnover within a work environment compromises both the quality of teamwork and the patient's health (Galletta, Portoghese, Battistelli, & Leiter, 2013; Lankshear, Sheldon, & Maynard, 2005; Shields & Ward, 2001). In a recent study, nursing turnover had an impact on the quality of workgroup learning, which was associated with the incidence of medication errors (Bae, Mark, & Fried, 2010). Turnover also generates substantial costs for healthcare organizations (e.g., O’Brien-Pallas et al., 2006). Thus, controlling nursing unit turnover is an important strategy to improve team efficacy.

Based on turnover theory (Mobley, 1977; Mobley, Horner, & Hollingsworth, 1978), workers’ desire to leave the organization begins within the work team, suggesting...
that the work unit has an important role in shaping individuals’ turnover decisions. The cognitive process leading to leaving the unit originates in an evaluation by the individual of his/her current situation, which leads to an intention to act and leave the work unit. Turnover intention is the main predictor of actual turnover (Richer, Blanchard, & Vallander, 2002; Sutherland & Jordaan, 2004).

In nursing, researchers have found that turnover intention is connected to the characteristics of the work environment, in terms of the quality of work relationships and collaboration with colleagues, nurse supervisors, and physicians, and satisfaction with work activities (Hayes et al., 2012; Lavoie-Tremblay, Paquet, Marchionni, & Drevniok, 2011). The quality of those environmental characteristics may significantly influence nurses’ attitudes about their current work setting and career choices. Although changing units or hospitals could at times promote professional development for nurses (Kirpal, Brown, & Dif, 2007), voluntary turnover may become a problem for organizations if the change is driven by undesirable characteristics of a work environment.

We used a multilevel approach with two levels to analyze the individual- (Level 1) and group-level (Level 2) factors related to nurses’ team affective commitment and turnover intention. The multi-level approach enables one to analyze the effect of predictors at the individual and group levels at the same time (Cho, 2003). This study was focused on one individual-level predictor, which was job satisfaction, and two individual-level outcome variables—turnover intention and affective commitment to the team—the latter also tested as a mediator between job satisfaction and turnover intention at the individual level. We also considered the effect of a unit-level predictor regarding quality of nurse-physician collaboration, as a possible moderator of the relationship between job satisfaction and team affective commitment at the individual level. We assumed that turnover intention and team affective commitment were a function of both nurses’ job satisfaction and their collaboration with physicians (see Fig. 1).

**Individual-Level Predictors**

**Job satisfaction.** Job satisfaction is the pleasurable or positive emotional state resulting from an appraisal of one’s work or work experience (Locke, 1976, p. 1304). Previous studies have considered job satisfaction as a positive facet of work-related well-being (e.g., Cooper-Hakim & Viswesvaran, 2005; Warr, 2002). Job satisfaction is a multidimensional construct that includes job requirements, autonomy, work relationships, and organizational conditions (Cortese, 2007, 2012; Spector, 1997). Job satisfaction may influence an individual’s bond with the organization, thus strengthening his/her affective commitment (e.g., Steel & Lounsbury, 2009).

**Team affective commitment.** Commitment (or organizational commitment) is the extent to which an individual identifies with and feels involved in his/her work or organization (Mowday, Porter, & Steers, 1982, p. 27). According to Meyer and Allen (1997), individuals can develop affiliations with different entities (i.e., organizations, goals, supervisors, groups, teams/work units, etc.). Because nurses are nested within the units where they work, we identified team/unit commitment as a target of an individual’s psychological attachment (George & Jones, 2008). Previous researchers have distinguished three mindsets of commitment: affective, continuance, and normative commitment (Meyer & Allen, 1991). Affective commitment represents the highest form of identification with the unit/team and its goals and has a strong negative relationship with turnover intention (Ayuninnisa & Saptoto, 2015; Meyer & Herscovitch, 2001; Wagner, 2007). For this reason, we focused on only the affective component of commitment.

**Figure 1.** Hypothesized model for cross-level moderation and low level mediation.
Job satisfaction and commitment are work attitudes that can change throughout an individual's work experience, depending on different units, coworkers, supervisors, and responsibilities (Cortese, Colombo, & Ghislieri, 2010). This highlights the importance of promoting cohesion among unit nurses, work-related achievement, and collaboration with physicians (e.g., Adams & Bond, 2000). However, there is extensive evidence that job satisfaction influences intention to leave through its effects on organizational commitment (Arnold & Feldman, 1982; Lum, Kervin, Clark, Reid, & Sirola, 1998; Mueller & Price, 1990). Because job satisfaction is a response to a specific job, and commitment is a more general response to an organization, Mueller and Price (1990) found that the effect of job satisfaction on turnover intention was less consistent over time than was the effect of organizational commitment. In fact, many researchers have successively treated job satisfaction as a predictor and organizational commitment as an outcome (e.g., Gaertner, 1999; Lok & Crawford, 2001). Based on these theoretical premises and evidence, in our study we considered job satisfaction as an antecedent variable and commitment as a dependent variable.

### Group-Level Predictor

**Nurse-physician collaboration.** Social exchange theory (Blau, 1964) has been applied in nursing studies as a model of relationships in organizations (e.g., Battistelli, Galletta, Portoghese, Pohl, & Odorardi 2013; Bielkiewicz, 2011; Hamrin, McCarthy, & Tyson, 2010). Positive interpersonal interactions are linked to feelings of duty, trust, and gratitude (Gill, Lyons, & Kolodner, 1994). Usually, these interactions are dependent on the actions of another person and promote high-quality relationships. In studies of Magnet hospitals, the quality of the nurse-physician collaboration has been a major characteristic of a high-performing and healthy work environment and increases nurse retention (Kramer & Schmalenberg, 2005).

Zangaro and Soeken (2007), in their meta-analysis, confirmed that nurse-physician collaboration was extremely important for improving working relationships and patient outcomes. Collaboration has been defined as working relationship exchanges between staff members (e.g., nurses and physicians) who synergistically work together in order to solve common problems, making decisions regarding clinical procedures for patient care, and coordinate the work (Boyle & Kochinda, 2004). In the healthcare context, teams have to face challenges such as high clinical demands, changes in patients, and work overload. Hence, interprofessional collaboration in multidisciplinary teams is very important to the quality of patient care (e.g., Fewster-Thuente & Velsor-Friedrich, 2008; Martin, Ummenhofer, Manser, & Spirig, 2010). Mutual trust and respect between physicians and nurses regarding each other’s expertise and competence, as well as reciprocal collaboration, can attract and retain nurses (AONE, 2003). The quality of these interactions affects workers’ attitudes at the unit level (Ilies, Nahrgang, & Morgeson, 2007), with consequences for employee outcomes, unit performance (Laschinger, Wilk, & Chonju, 2009), and patient health (e.g., Boev & Xia, 2015).

The majority of analyses reported to date have included the relationships between these variables in a single level of analysis, by considering nurse-physician collaboration simply as the sum or average of individual perceptions. However, individuals’ perceptions of collaboration between nurses and physicians can be somewhat shared among the members of a team and can differ from perceptions of other teams. When quality of collaboration is described by individual nurses working with the same physicians in the same unit, a shared perception of collaboration suggests that there is concordance among nurses within that team. For this reason, considering the work team as a unit of analysis at the group-level via a hierarchical linear modeling method would make a valuable addition to the literature in explaining work attitudes as a function of shared collaboration dynamics in the work setting.

### Aim and Hypotheses

Work context affects organizational attitudes and behaviors and can moderate work relationships at another level of analysis (Johns, 2001). Hence, we have postulated that nurses’ perceptions of positive nurse-physician collaboration are likely to interact with individual job satisfaction to influence affective commitment to the unit. The perception of positive nurse-physician collaboration at the group level may facilitate the process of identification with the nursing work environment, which in turn, affects one’s intention to leave the unit. The study hypotheses are summarized below:

**Hypothesis 1a.** Job satisfaction is negatively related to intention to leave the unit.

**Hypothesis 1b.** Job satisfaction is positively related to team affective commitment.

**Hypothesis 2.** Team affective commitment mediates the relationship between job satisfaction and intention to leave the unit.

**Hypothesis 3a.** Nurse-physician collaboration at the group-level is positively related to affective commitment.

**Hypothesis 3b.** Nurse-physician collaboration at the group-level is negatively related to intention to leave the unit.

**Hypothesis 4.** Nurse-physician collaboration at the group-level moderates the positive relationship between job satisfaction and team affective commitment, such that the association is stronger when nurse-physician collaboration is higher.
Methods

Design
This research was a cross-sectional study design with self-reported questionnaires. Hierarchical linear modeling (HLM; Raundenbush & Bryk, 2002) was used to analyze the multilevel data with reference to the association between individual- and group-level factors.

Participants
Nursing staff were recruited who were employed in three large (from 418 to 980 beds) urban hospitals from Italy. One of these was a university hospital and the other two were general hospitals. All of them were characterized to have different types of units and specialties. A paper questionnaire was administered to 1,215 nurses from 72 units in surgical, pediatric, medical, intensive care, and mixed service areas. In total, 1,024 questionnaires were entirely completed (84.3% response rate). The response rate for each unit ranged from 48.8% to 100%.

Measures
The questionnaire included a section for personal data such as age, gender, and organizational tenure, and another section including the measurement scales for the study variables. All the questionnaire items were on a five-point Likert scale ranging from 1 (Totally disagree) to 5 (Totally agree). The average score was calculated for each scale. For measures not previously validated in Italian, the translation-back-translation technique (Brislin, 1980) was employed by two bi-lingual experts and researchers in nursing, in order to translate those scales from English to Italian.

Job satisfaction. A 13-item short version of the Organizational Satisfaction Questionnaire validated in Italian by Cortese (2001) was used to measure the degree of nurses’ satisfaction with nursing activity (Cronbach α = .92). A sample item was "I am satisfied with the professional growth resulting from my job."

Team/unit affective commitment. We used the six-item subscale of Pierro, Tanucci, Cavalleri, and Ricca’s (1992) Italian validation of the Organizational Commitment Questionnaire (Allen & Meyer, 1990). We adapted the scale by changing the word “organization” to “team/unit.” A sample item was "I feel part of my team/unit."

Unit turnover intention (intent to leave the unit). One item adapted from Hom, Griffeth, and Sellaro (1984) was used to investigate nurses’ intention to leave the ward within 1 year. A sample item was "I am going to look for a job in another ward/team next year.” For this measure a translation-back-translation was carried out.

Nurse-physician collaboration. Three high-loading items (loadings from .60 – .79) were used from the Nursing Work Index-Revised (Aiken & Patrician, 2000). A sample item was “Physicians and nurses have good work relationships.” For this measure a translation-back-translation was carried out (α = .72).

Ethical Considerations
Consent to perform the study was obtained from the Board of Directors of each hospital involved in the study. Formal approval from a specific ethics committee is not required for studies like these in Italy. We followed procedures consistent with Italian national legislation. After formal approval by Unit Directors, nurses were contacted. We recruited the nurses from units that gave their full support for nurses to participate in the study. To guarantee ethical clarity, participants were advised about the study purpose. We assured them that participation was voluntary and anonymous to protect their privacy. Informed consent was implied by return of a completed questionnaire.

Data Collection
The survey was conducted from September through November 2010. Nurses completed the questionnaires during working hours, and the completed questionnaires were returned in a locked box.

Data Analysis
Measurement model. Listwise deletion was used to handle missing data because there was only a very small amount missing (3%). Given that all data came from the same source, we carried out several steps in order to ensure data validity and reliability. First, the factor structure of the measures (the measurement model) was examined via confirmatory factor analysis (CFA). The CFA was performed by structural equation modeling (SEM) based on fit indices of Tucker-Lewis index (TLI), incremental fit index (IFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). To indicate a good fit of the model, the TLI, IFI, and CFI critical values should be ≥ .90 and RMSEA < .08 (Kline, 2005).

We tested the factor validity in several ways. We compared a hypothesized four-factor model—in which the items of team affective commitment, job satisfaction, nurse-physician collaboration, and intention to leave were expected to load on their respective factors—with alternative models. First, we compared the four-factor model with a one-factor model in which all the items loaded on a common factor. Then, we tested discriminant validity by analyzing two nested models: a three-factor model in which turnover intention and affective commitment items were combined into one factor, and a three-factor model in which affective commitment and job satisfaction items were combined into one factor, were compared to the four-factor model. The reliability of the measures was estimated using Cronbach alpha coefficients with a cut-off value of ≥ .70 considered acceptable. However, both the CFA and
Within-group concordance was calculated by James, Glick, Schneider, White, and Paul (1985). Finally, the model including the job satisfaction of the independent variable in the equation at level 2. Second, we assessed the effect of the group mean of the independent variable in the level-2 intercept equation (centered within context with reintroduction of the subtracted means). We used Baron and Kenny’s framework (1986) to test a cross-level model, a hierarchical linear modeling (HLM) approach was used to test the hypotheses (Raundahl, 2002). Because nurse-physician collaboration was self-reported by individual nurses, to statistically support nurse-physician collaboration as a shared variable at the group level (with the nursing unit as the group), the scores of that variable were aggregated (averaged) at the unit level as a cluster variable. The aggregation was carried out by verifying both within-group agreement and between-group variability (Klein et al., 2000). The intracluster correlations ICC(1) and ICC(2) values were used to calculate between-group variability. ICC(1) refers to reliability of individual ratings within each group (Bliese, 2000). ICC(2) represents the reliability of the group mean (Bliese, 1998). According to Bliese (2000), the ICC(1) acceptable cut-off value is ≥.20. The cut-off value recommended for the ICC(2) coefficient is ≥.60 (Glick, 1985; Schneider, White, & Paul, 1998). Finally, the within-group concordance was calculated by James, Demaree, and Wolf’s (1984) r_{egpl} with critical values (Kozlowski & Hults, 1987).

Testing the hypotheses. First, we estimated null baseline models without the individual- or group-level predictors. We were able to analyze whether between-group variance in predicted variables was significant or not. These models offered information on the amount of variance connected to individuals within and between different teams. The random effects (r_{egpl}) in hierarchical linear models were calculated only for the intercepts.

Low-level mediation. In line with Zhang, Zyphur, and Preacher (2009), a low-level mediation analytical approach (i.e., 1-1-1 mediation design) was carried out by group-mean-centering the predictors for each model and including the mean in the level-2 intercept equation (centered within context with reintroduction of the subtracted means). We used Baron and Kenny’s (1986) framework for testing mediation. First, we tested the univariate single-level X (job satisfaction) → Y (turnover intention) association, including the group mean of the independent variable in the equation at level 2. Second, we assessed the effect of job satisfaction on M (team affective commitment) including the group mean of the independent variable in the equation at level 2. In a third step, we tested an overall model including the job satisfaction → team affective commitment → turnover intention relationship, adding the group means of the independent variable and the mediator to the equation at level 2.

We expected that after adding team affective commitment to the model at Level 1, the main effect of job satisfaction on turnover intention would be reduced in magnitude, whereas team affective commitment would be still a statistically significant predictor of turnover intention. To assure that job satisfaction and team affective commitment variables did not have also an influence on the group level, the two individual-level variables were assessed for a group effect. Then, to calculate the significance of the mediation effect, the Sobel (1982) test for the single-level mediational models (e.g., Krull & MacKinnon, 2001) was used. In addition, we also used MacKinnon, Lockwood, and Williams’s (2004) Monte Carlo Method for Assessing Mediation (MCMM) to estimate the 95% confidence interval (CI) of the mediation effects.

Cross-level interaction. Hoffmann et al.’s method (Hofmann & Gavin, 1998; Hofmann, Griffin, & Gavin, 2000) was used to test cross-level interaction. We investigated whether the nurse-physician collaboration (Level 2) moderation on the job satisfaction-affective commitment relationship at Level 1 represented a cross-level or between-group interaction. Specifically, we tested two models to explore the cross-level interaction. The initial model was created to analyze the relationship between job satisfaction and affective commitment at Level 1, as well as the effect of nurse-physician collaboration. This model would indicate the variability in the relationship between job satisfaction and affective commitment across teams. In a second model, we tested Hypothesis 4, namely the moderating role of nurse-physician collaboration on the job satisfaction-affective commitment relationship. In this manner, partitioning the total variance of job satisfaction into its within- and between-group components gave the opportunity to investigate which source of variance was interacting with nurse-physician collaboration.

Finally, the nature of the interaction was tested by following Aiken and West’s (1991) method. We plotted regression lines for the association between job satisfaction and affective commitment at low and high levels of nurse-physician collaboration. To test the cross-level effects, we group-mean-centered the person-level predictors. Using group-mean centering for the person level removed any between-groups variance.

Results

Most of the sample (79.5%) were women, educated at a diploma level (85.3%), and employed full-time (75.0%). The average age of the nurses was 37.4 years (SD = 8.00, range = 21–60 years), with 14.7 years of occupational experience (SD = 8.90, range = 1–38 years), and 8.1 years on the current team (SD = 7.06, range = 1–38 years). The average number of nurses responding from each of the 72 units was 14 nurses (SD = 7.85, range = 5–35 nurses). Table 1 shows the correlations, means, and standard deviations for the variables.

Measurement Model

The measurement model with four factors fitted the data well: χ² (df = 246, N = 1,024) = 1080.5, TLI = .92; IFI = .93; CFI = .93; RMSEA = .06. When we compared the one-
factor model to the four-factor model, a χ² difference test was significant: Δχ²(6) = 2464.9, p < .001. Finally, we compared the four-factor model with the two nested models. Also these models fitted the data significantly worse than the four-factor model: Δχ²(3) = 677.1, p < .001, and Δχ²(3) = 1387.7, p < .001, respectively (Table 2).

Intraclass Correlation

Scale scores showed significant reliability and high agreement. The ICC(1) value for nurse-physician collaboration was .22. The ICC(2) coefficient was .80. The average rwg(1) of nurse-physician collaboration across 72 units was .78 (median = .80), with a critical value = .42 (p = .05, group size mean = 14). The results suggested that it was statistically reasonable to consider nurse-physician collaboration as a group-level variable.

The results revealed a significant within-group variation for job satisfaction [τ̂oo = .04, χ²(71) = 181.55, p < .001, and ICC(1) = .10], showing that job satisfaction had 10% between-group variance. Similar findings were found for both affective commitment [τ̂oo = .06, χ²(71) = 185.76, p < .001; ICC(1) = .11], and turnover intention [τ̂oo = .09, χ²(71) = 190.85, p < .001; ICC(1) = .11], thereby showing that 11% of variance in both affective commitment and turnover intention was due to differences between the teams. These results indicated a nesting effect in the data and legitimized cross-level analyses.

Testing the Hypotheses

Hypothesis 1a and b assumed that, at the individual-level, job satisfaction was negatively related to intention to leave (1a) and positively related to affective commitment (1b). The results provided support for both Hypotheses 1a and b (β = −.39, p < .001; β = .58, p < .001, respectively).

Hypothesis 2 proposed that affective commitment mediated the association between job satisfaction and intention to leave at the individual level. Using the three-step technique, the effect at Level 2 of both job satisfaction and affective commitment was not significant (β = −.17, p > .05; β = −.30, p > .05, respectively), suggesting that the two variables did not have an influence at the group (nursing unit) level. Yet, at Level 1 (individual nurses), the direct effect of job satisfaction on turnover intention maintained its significance and magnitude (β = −.24, p < .001), thus indicating a partial mediation effect of affective commitment (Table 3). The Sobel test revealed a significant mediation effect (Sobel = 4.99, SE = .03, p < .001). With the MCMM approach, the 95% CI [0.06, 0.14] of the mediation effect excluded zero, so Hypothesis 2 was partially supported.

Hypothesis 3a and b assumed that nurse-physician collaboration was positively related to affective commitment and negatively related to turnover intention from the unit. HLM analysis provided support for both Hypotheses 3a and b (β = .32, p < .001, β = −.25, p < .05, respectively).

Cross-Level Interaction

To determine whether the between-group interaction between job satisfaction at Level 1 and nurse-physician collaboration at Level 2 was significant, nurse-physician collaboration was inserted as a predictor of the variance in the slopes relating job satisfaction to affective commitment at Level 1. There was no significant interaction between groups (β = .31, p > .05) but a significant cross-level interaction (β = −.17, p < .05), thereby supporting Hypothesis 4 (see Fig. 2; Table 4).

As shown in Figure 3, the form of the interaction was as expected. The association between nurses’ job satisfaction and team affective commitment at Level 1 was more robust when perceived work collaboration with physicians at Level 2 was high (simple slope = .71, t = 3.86, p < .001). In other words, nurses who perceived high levels of satisfaction with their job and positive work collaboration with physicians were more strongly committed to their team.

### Table 1. Means, Standard Deviations, and Correlations of Variables (N = 1,024)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Job satisfaction</td>
<td>3.25</td>
<td>.63</td>
<td>.92</td>
<td>−.272</td>
<td>−.303</td>
</tr>
<tr>
<td>2. Team affective commitment</td>
<td>3.28</td>
<td>.77</td>
<td>.85</td>
<td>.448</td>
<td>.321</td>
</tr>
<tr>
<td>3. Turnover intention</td>
<td>1.87</td>
<td>.92</td>
<td>.92</td>
<td>−.272</td>
<td>−.303</td>
</tr>
<tr>
<td>4. Nurse-physician collaboration</td>
<td>2.57</td>
<td>.85</td>
<td>.321</td>
<td>−.182</td>
<td></td>
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</table>

Note. All the correlations are significant at the level p < .01.

### Table 2. Fit Indices for Confirmatory Factor Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>χ²</th>
<th>df</th>
<th>Δχ²</th>
<th>Δdf</th>
<th>TLI</th>
<th>IFI</th>
<th>CFI</th>
<th>RMSEA</th>
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<tbody>
<tr>
<td>Four-factor measurement model</td>
<td>1080.5</td>
<td>246</td>
<td>.92</td>
<td>.03</td>
<td>.93</td>
<td>.93</td>
<td>.06</td>
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<tr>
<td>One-factor model</td>
<td>3545.4</td>
<td>252</td>
<td>2464.9</td>
<td>6</td>
<td>.68</td>
<td>.71</td>
<td>.11</td>
<td></td>
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<tr>
<td>Three-factor model (combining TAC and TI)</td>
<td>1757.6</td>
<td>249</td>
<td>677.1</td>
<td>3</td>
<td>.85</td>
<td>.87</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>Three-factor model (combining TAC and job satisfaction)</td>
<td>2468.2</td>
<td>249</td>
<td>1387.7</td>
<td>3</td>
<td>.78</td>
<td>.80</td>
<td>.09</td>
<td></td>
</tr>
</tbody>
</table>

Notes. TAC, team affective commitment; TI, turnover intention from the unit; TLI, Tucker-Lewis Index; IFI, incremental fit index; CFI, comparative fit index; RMSEA, root mean square error of approximation. N = 1,024. A χ² difference test was assessed in contrasting measurement model against two nested models.
Given the nursing shortage and the ageing of nursing staff, promoting a work context that stimulates positive work collaborations and relationships in order to maintain nurses in their units is vital for healthcare organizations. Therefore, we aimed to investigate both contextual and individual factors in order to understand the conditions fostering nurses’ work attitudes.

This study highlights the potential benefits in promoting positive collaboration between nurses and physicians, which can result in an increased identification with the team and reduced turnover intention. The relationship between job satisfaction and affective commitment at the individual level was moderated by nurse-physician collaboration at the group level. A higher level of satisfaction with work activities was associated with a higher level of affective commitment to the team, and this association was stronger when collective perceptions of positive nurse-physician collaboration were higher. Nurse-physician collaboration at the group level significantly interacted with job satisfaction in affecting nurses’ team commitment at the individual-level, emphasizing the importance of team-specific factors on the work experience of the individual nurse. Although the associations between the variables examined in this study have been profusely documented at the individual level, they rarely have been examined at the group level (e.g., Laschinger et al., 2009). Therefore, this investigation should be a valuable addition to the relevant literature.

Our findings highlight that a collective perception of a positive work environment among staff members is desirable to promote nurses’ identification and commitment to their team. Nurse-physician collaboration may play an important role in improving work conditions and promoting a work environment that reduces nurses’ intention to leave, by enhancing their identification with the work unit. These

Table 3. Low Level Mediation—Results for Hypothesis 2

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
<th>Model 3</th>
<th></th>
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<tr>
<td></td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
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<tr>
<td>Intercept</td>
<td>1.87***</td>
<td>.04</td>
<td>3.29***</td>
<td>.03</td>
<td>1.87***</td>
<td>.04</td>
</tr>
<tr>
<td>Individual level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>-.39***</td>
<td>.05</td>
<td>.58***</td>
<td>.04</td>
<td>-.24***</td>
<td>.05</td>
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<tr>
<td>Team commitment</td>
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<td></td>
<td></td>
<td></td>
<td>-.26***</td>
<td>.04</td>
</tr>
<tr>
<td>Group level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean job satisfaction</td>
<td>-.44**</td>
<td>.16</td>
<td></td>
<td>.89***</td>
<td>.10</td>
<td>-.17</td>
</tr>
<tr>
<td>Mean team commitment</td>
<td></td>
<td></td>
<td></td>
<td>.67</td>
<td></td>
<td>.08***</td>
</tr>
<tr>
<td>$\delta^2$</td>
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<td>.42</td>
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<td>.02***</td>
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<td>$\tau_{00}$</td>
<td>.08***</td>
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</tbody>
</table>

Notes. $\delta^2$ = variance in Level 1 residual; $\tau_{00}$ = variance in Level 2 residual; SE = standard error.

$*** p < .01$

$*** p < .001$

*p = .06

Figure 2. Hypothesized model with unstandardized path coefficients for cross-level moderation and low level mediation. *p < .05, **p < .001.

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results are in line with the characteristics identified in Magnet hospitals, which also include a healthy work context that positively affects nurses’ well-being and retention (Kramer & Schmalenberg, 2002, 2005). Furthermore, our results support the influential role of affective commitment in mediating the influence of individuals’ job satisfaction on their intention to leave the unit, as well as the importance of promoting job satisfaction to reduce turnover intention via team affective commitment (e.g., Aydogdu & Asikgil, 2011; Clugston, 2000). Thus, the results of this study support previous findings and add new knowledge about the importance to improve team identification by promoting effective collaboration at the unit level in multidisciplinary teams.

Study Limitations

First, the data consisted of nurses’ self-reports obtained via questionnaires and were not supported by additional objective measures, such as actual turnover and/or absenteeism data. Reliance on a single information source may produce a common method bias (Goffin & Gellatly, 2001) although the CFA’s single-factor test indicated that common method bias was not a concern in this study. Second, we used a convenience sample and therefore were unable to generalize results to other settings. Nevertheless, we included several different teams from three hospitals, thus preserving the heterogeneity of the sample.

Another limitation was the cross-sectional design of the study, preventing us from demonstrating causal relationships among the variables (Mathieu & Taylor, 2006). Moreover, the measurement model examined in this study tested the discrimination validity of the variables but did not test for alternate forms equivalence, specifically for semantic equivalence, of the translated scales (unit turnover intention and nurse-physician collaboration).

Because we studied turnover intention rather than actual turnover, we were unable to investigate changes across time, which would require longitudinal studies. Future researchers should take advantage of the three-level HLM method (e.g., including time as a third level) to explore the long-term effects of both nurse-physician collaboration and job satisfaction on changes in affective commitment and actual turnover rates. In addition, in this study we did not examine physicians’ perceptions of collaboration but only those of nurses. Usually, nurses are less satisfied with nurse-physician collaboration than are

### Table 4. HLM Models and Results for Hypothesis 4

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>SE</td>
</tr>
<tr>
<td>Intercept</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>0.58**</td>
<td>0.04</td>
</tr>
<tr>
<td>Group level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse-physician collaboration</td>
<td>0.09</td>
<td>0.16</td>
</tr>
<tr>
<td>Mean job satisfaction</td>
<td>0.81**</td>
<td>0.39</td>
</tr>
<tr>
<td>Mean job satisfaction (nurse-physician collaboration)</td>
<td>-0.07</td>
<td></td>
</tr>
<tr>
<td>Cross-level moderation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job satisfaction (nurse-physician collaboration)</td>
<td>0.17*</td>
<td>0.08</td>
</tr>
<tr>
<td>( \delta )</td>
<td>0.41</td>
<td>0.41</td>
</tr>
<tr>
<td>( \tau_{00} )</td>
<td>0.01</td>
<td>0.02**</td>
</tr>
<tr>
<td>( \tau_{11} )</td>
<td>0.02</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Notes: \( \delta \) = variance in Level 1 residual; \( \tau_{00} \) = variance in Level 2 residual; \( \tau_{11} \) = variance in Level 2 residual; SE = standard error.

\* \( p < .05 \)

\** \( p < .001 \)

Figure 3. Moderating effect of nurse-physician collaboration on the relationship between job satisfaction and team affective commitment.
physicians, and nurses are more critical in evaluating physicians’ collaboration efforts (Conn, Kenaszchuk, Dainty, Zwarenstein, & Reeves, 2014; O’Leary et al., 2010). Conn et al. (2014) found that, during work, physicians are more patient-oriented and less team-oriented. Future researchers should look at expanding knowledge on nurse-physician collaboration perceptions via qualitative measurements. Finally, future studies should consider factors such as nurse/patient ratio and other working environment factors that may be related to turnover intention.

Clinical Implications

These findings enhance the current understanding of cross-level factors related to affective commitment and turnover intention among nurses working in some Italian health organizations. This study's results can inspire the development of a plan to promote job satisfaction, positive work collaboration, and a high level of commitment to the unit, thereby reducing the risk of turnover. These intervention strategies are important for economic reasons related to absenteeism and turnover costs (Campagna et al., 2012); ethical reasons related to nurses’ organizational well-being (Cortese et al., 2010; Swansburg, 2002); and normative reasons, including the 81/2008 Italian legislative decree that organizations assess psychosocial risks originating from the work environment, in order to preserve employees’ psychological well-being (Cortese et al., 2010; Franco & Mora, 2009), and guarantee high quality of patient care.

This study’s results reveal that organizational dynamics are complex and indicate that phenomena at the group or unit level affect relationship dynamics at the individual level. Even if each nurse has his/her own perspective on their work environment, all of the nurses employed on the same team share some aspects of their work experience (Galletta et al., 2013). A main element of the shared experience of the nurses of this study was the quality of work collaboration with the team physicians. The results suggest that a good quality of collaboration with physicians at the group-level would make a difference in preventing nurses’ turnover intention. Hence, it is important that organizations activate management strategies to promote high-quality nurse-physician collaboration.

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