

## ORIGINAL RESEARCH

## Leaving the organization or the profession – a multilevel analysis of nurses' intentions

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**Abstract**

**Title.** Leaving the organization or the profession – a multilevel analysis of nurses' intentions.

**Aim.** This paper is a report of a study of (i) which variables are associated with the intention to leave the profession (ii) which variables are associated with the intention to leave the organization; and (iii) how the related variables differ between intentions in a secondary analysis of data of the German part of the European Nurses' Early Exit Study.

**Background.** Nursing turnover research so far rarely differentiates between leaving the profession or the organization. The identification of specific correlates for different leaving intentions would support better understanding of the turnover process and the development of targeted measures to reduce turnover.

**Methods.** A secondary data analysis of the German sample of the European Nurses' Early Exit-Study was performed, using a generalized linear mixed model approach.

**Results.** Data from 2119 Registered Nurses in 71 departments of 16 hospitals from 2003 were analysed. Models for intentions to leave the profession explained more of the variance ( $r^2 = 0.46$ ) than models for intentions to leave the organization ( $r^2 = 0.28$ ). Both leaving intentions were associated with age, professional commitment and job satisfaction. Intentions to leave the profession were strongly associated with variables related to the personal background and the work/home interface whereas intentions to leave the organization were related to organizational leadership and the local context.

**Conclusion.** Retention initiatives should address the work-home interface. Surveys assessing nursing turnover should be based on comprehensive turnover definitions, including different leaving directions.

**Keywords:** Germany, leaving intentions, nursing personnel, nursing turnover, regression model

## Introduction

Nursing turnover has been of interest to researchers from different disciplines for several decades. Although a considerable amount of research exists, turnover definitions vary widely among studies (Hayes *et al.* 2006). Operationalizations range from actual leaving the organization to cognitional pre-conditions such as leaving intentions or thoughts about leaving. Mobley *et al.* (1978) developed a framework for the precursors of turnover and therefore gave us a way to organize leaving pre-conditions conceptually and tie them to actual leaving. In earlier research, turnover definitions referred mainly to three dimensions: voluntariness (Mueller & Price 1990), controllability (Abelson 1984) and functionality (Dalton *et al.* 1982). Whereas voluntariness reflects the will of the employee and/or of the organization to work together, controllability describes the possibility to act as an individual or organization to control turnover. Functionality depicts the potential advantages or disadvantages of turnover. Whereas high turnover rates are without doubt expensive and threaten quality, no turnover or very low turnover rates signify the inability to hire new talented or highly skilled experienced nurses. An additional dimension rarely used in nursing-related turnover research thus far is the direction of leaving or the type of job change (Kirschenbaum & Weisberg 2002, Fields *et al.* 2005, Parry 2008). Leaving directions can be viewed as different paths employees follow when they leave an organization. Some might change organization and continue to work in the same type of unit, while others might change organization and unit type, and another group might change organization and profession. From a nursing viewpoint, two directions might be of special interest: (i) nurses leaving their organizations to work for another organization of the same type or (ii) nurses generally leaving the profession. While (i) is of interest for each organization (ii) is of importance those policymakers interested in keeping an adequate workforce.

Nursing shortages in many countries have raised the attention of scholars worldwide (Buchan & Calman 2004). However, in the last decade nursing workforce issues have not attracted much attention in Germany. This is mainly based on the introduction of diagnosis-related groups in 2005, which caused considerable downsizing in hospital nursing (Simon 2007) and therefore prevented the development of a nursing shortage. However, long-term predictions by the OECD see a reduction of nursing personnel in 2021 by 17%, which will lead to a nursing shortage in Germany in the future (Simoens *et al.* 2005).

## Background

Several models for the investigation of turnover have been proposed. According to Maertz and Campion (2004), two broad classes of turnover models exist: process models explaining *how* turnover develops and content models explaining *why* turnover occurs. More recent models both integrate turnover research traditions and cover a wide array of variables (Hom & Griffeth 1995).

For the purpose of the analysis reported in this paper, we grouped variables associated with turnover in six domains:

- *Individual factors* describe the individual situation and include demographics such as age, sex, and marital status, which play an important role in turnover (Price 2000). In addition to these demographics, work/family-conflict reflects the interference of family life by work and hours worked per week represent exposure to the work environment. Both have been shown to be associated with leaving intentions (Simon *et al.* 2004).
- *Health-related factors* such as burnout are associated with leaving intentions (Hasselhorn *et al.* 2003). Adequate health is a requirement for work; health-related constraints promote reconsideration of the work situation and can therefore contribute to turnover intentions.
- *Social work environment* includes leadership quality, which is negatively associated with leaving intentions (Hom & Griffeth 1995). Additionally, we hypothesized that the relationship of the individual nurse to nurse management would be associated with turnover intentions.
- *Work content* variables such as emotional and physical demands are associated with leaving intentions (Hasselhorn *et al.* 2003). Emotional demands and physical demands are important variables that contribute to work stress and stress-related health outcomes such as burnout.
- *Work organization factors* such as role conflict, influence at work, opportunities for development and quantitative demands are associated with leaving intentions (Hasselhorn *et al.* 2003).
- *Labour market* variables are associated with leaving intentions (Price 1977, Price & Mueller 1981). City size (urbanization) is used as a proxy for the local job market, assuming that bigger cities offer more opportunities to work in and outside nursing. Additionally, we hypothesized that actual job offers in and outside nursing would be associated with leaving intentions.

The analysis followed this integrated approach of these six domains and focused on the distinction between intention to leave the profession and intention to leave the organization.

Leaving intentions are precursors of turnover (Mobley *et al.* 1978) and are deductions from Fishbein and Ajzen's (1975) theory of reasoned action, which describes the connection between attitudes, intentions and behaviour. In this framework, job satisfaction and professional commitment are job attitudes that are negatively associated with both leaving intentions (Hom & Griffeth 1995). Job satisfaction describes the overall enjoyment of employees with their work, while professional commitment is the allegiance of nurses to the profession.

Leaving intentions are, like almost all job-related phenomena, associated with *contextual effects* on the unit and organizational level (Klein & Kozlowski 2000). This means that the context of an organization (e.g. urban or rural) influences leaving intentions, as well as attributes on the department level. In an urban setting with several hospitals, for example, job opportunities are differently perceived than in rural areas, where only one hospital exists.

Although an extensive amount of turnover literature exists, research explicitly focusing on professional turnover is rare. Early professional turnover models such as those of Rhodes and Doering (1983), Blau & Lunz (1998) mainly adopted organizational turnover models by transferring established correlates and shifting the endpoint of interest from organizational to professional turnover. More recent approaches have been aimed at investigating the direction of turnover and differences in the associated variables (Kirschenbaum & Weisberg 2002, Fields *et al.* 2005). Despite these developments, differentiation between the intention to leave the organization and leaving the profession is widely omitted in research into nursing turnover.

## The study

### Aim

The aim of the present study was to investigate: (i) which variables are associated with the intention to leave the profession (ii) which variables are associated with the intention to leave the organization; and (iii) how do the related variables differ between intentions in a secondary analysis of data of the German part of the Nurses' Early Exit Study (NEXT-Study), which was funded by the European Union (No: QLK6-CT-2001-00475).

### Design

In this paper we present an exploratory secondary analysis of a self-administered survey. The data analysed were collected in 2003.

### Sample

The sample consisted of the German part of the NEXT-Study and included 16 hospitals with 2119 Registered Nurses in 71 departments. Small, medium and large-scale hospitals from all parts of Germany were included and the agreement of employers and employee representatives was obtained. A department was defined by the hospital and a single item of the questionnaire asked for the working area. The response rate per hospital varied between 37.5% and 82.6%.

### Data collection

The paper-based survey was distributed by participating facilities and completed surveys were mailed by respondents with pre-paid envelopes to the study center.

Intention to leave the profession (ITLprof) was assessed by one question: '*How often during the course of the past year have you thought about giving up nursing completely?*' Intention to leave the organization (ITLorg) was assessed by five questions, such as '*How often during the course of the past year have you thought to change to...?*', where the change options included '*another hospital*', '*home care*', '*nursing home*', '*practice*', and '*self-employment*'. The response options for ITLprof and ITLorg ranged from '*never*', '*sometimes/year*', '*sometimes/month*', '*sometimes/week*' to '*every day*'. ITLorg items were collapsed according to the highest response to any of the five change options. ITLprof and ITLorg were dichotomized, with '*sometimes/month*', '*sometimes/week*' and '*every day*' indicating 'potential leavers' (1) and '*never*' or '*sometimes/year*' indicating 'potential stayers' (0).

Age, sex, marital status, weekly working hours, satisfaction with work prospects, job offers in and outside nursing and relationship to nurse management were assessed with single items.

Scales employed were translated and back-translated from English to German to English. High consistency of psychometric indicators between countries indicated no language bias. Table 1 summarizes the sources, items and Cronbach's alpha for all scales used. Further descriptions and more detailed psychometric analyses of all scales used have been reported by Kümmerling *et al.* (2003).

### Ethical considerations

The institutional review board of the coordinating university approved the design of the European NEXT-Study.

**Table 1** Descriptive summary of categorical variables

Scale	Source	Items	Response	Cronbach's alpha
Work-family conflict	(Netemeyer <i>et al.</i> 1996)	<ul style="list-style-type: none"> <li>• The demands of work interfere with my home and family life</li> <li>• The amount of time my job takes makes it difficult to fulfil family responsibilities</li> <li>• Things I want to do at home do not get done because of the demands of my job</li> <li>• My job produces strain that makes it difficult to fulfil family duties</li> <li>• Due to work-related duties, I have to make changes to my plans for family activities</li> </ul>	From (1) 'total disagreement' to (5) 'complete agreement'	0.89
Possibilities for development	(Kristensen <i>et al.</i> 2005)	<ul style="list-style-type: none"> <li>• Does your work require taking the initiative?</li> <li>• Do you have the possibility of learning new things through your work?</li> <li>• Can you use your skills or expertise in your work?</li> <li>• Is your work varied?</li> </ul>	From (1) 'very small extent' to (5) 'to a large extent'	0.75
Quantitative demands	(Kristensen <i>et al.</i> 2005)	<ul style="list-style-type: none"> <li>• How often do you lack time to complete all your work tasks?</li> <li>• Can you pause in your work whenever you want?</li> <li>• Do you have to work very fast?</li> <li>• Is your workload unevenly distributed so that things pile up?</li> <li>• Do you have enough time to talk to patients?</li> </ul>	From (1) 'hardly ever' to (5) 'always'	0.71
Leadership quality	(Kristensen <i>et al.</i> 2005)	To what extent would you say that your immediate superior: <ul style="list-style-type: none"> <li>• Makes sure that the individual member of staff has good development opportunities</li> <li>• Gives high priority to job satisfaction</li> <li>• Is good at work planning</li> <li>• Is good at solving conflicts</li> </ul>	From (1) 'very small extent' to (5) 'to a large extent'	0.91
Job satisfaction	(Kristensen <i>et al.</i> 2005)	How pleased are you with... <ul style="list-style-type: none"> <li>• Your work prospects?</li> <li>• The physical working conditions?</li> <li>• The way your abilities are used?</li> <li>• Your job as a whole, everything taken into consideration?</li> </ul>	From (1) 'very unsatisfied' to (4) 'very satisfied'	0.71
Role conflict	(Hasselhorn <i>et al.</i> 2003)	<ul style="list-style-type: none"> <li>• If you think of a typical working day, do you, in your opinion, perform tasks, which do not belong to your profession?</li> <li>• How often do you have to perform tasks for which you are not qualified enough?</li> <li>• How often do you receive information, which is relevant to your work, insufficiently or too late?</li> <li>• How often do you receive conflicting/contradictory orders concerning the performance of your work?</li> </ul>	From (1) 'never' to (5) 'constantly'	0.72
Influence at work	(Hasselhorn <i>et al.</i> 2003)	<ul style="list-style-type: none"> <li>• I have a say in what type of task I am asked to fulfil</li> <li>• I can decide for myself how to fulfil the tasks given to me</li> <li>• I can set my own work pace</li> <li>• I have a say in when I fulfil the tasks given to me</li> </ul>	From (1) 'totally inaccurate' to (5) 'totally accurate'	0.80

**Table 1** (Continued)

Scale	Source	Items	Response	Cronbach's alpha
Lifting and bending	(Hasselhorn <i>et al.</i> 2003)	<ul style="list-style-type: none"> <li>• Bedding and positioning patients</li> <li>• Transferring or carrying patients</li> <li>• Lifting patients in bed without aid</li> <li>• Mobilizing patients</li> <li>• Clothing patients</li> <li>• Helping with feeding</li> <li>• Making beds</li> <li>• Pushing patient's beds, food trolleys or laundry trolleys</li> </ul>	From (1) '0–1 times a day' to (5) 'more than 10 times a day'	0.67
Emotional demands	(de Jonge <i>et al.</i> 1999)	How often are you confronted with ... <ul style="list-style-type: none"> <li>• Death</li> <li>• Illness or any other human suffering</li> <li>• Aggressive patients</li> <li>• Troublesome patients</li> </ul>	From (1) 'never' to (5) 'always'	0.80
Burnout	(Borritz <i>et al.</i> 2006)	How often do you ... <ul style="list-style-type: none"> <li>• Feel tired</li> <li>• Are physically exhausted</li> <li>• Are emotionally exhausted</li> <li>• Think: 'I can't take it anymore'</li> <li>• Feel worn out</li> <li>• Feel weak and susceptible to illness</li> </ul>	From (1) 'never/almost never' to (5) '(almost) every day'	0.91
Professional commitment	(Allen & Meyer 1996)	<ul style="list-style-type: none"> <li>• I really feel that I belong to the nursing profession</li> <li>• The nursing profession has a great deal of personal meaning for me</li> <li>• I am proud to belong to the nursing profession</li> <li>• I do not feel like a part of the nursing profession</li> </ul>	From (1) 'no commitment at all' to (5) 'high commitment'	0.80

### Data analysis

Based on an analysis of the six domain models (not presented), variables associated with one or both endpoints were included in four models with variables from all domains (see Simon 2008). These models varied in terms of the included attitudes *professional commitment* and *job satisfaction*. Whereas the first model skipped both attitudes, the second model included professional commitment, the third included job satisfaction and the fourth included both attitudes. This sequence of models was chosen because of the generic professional commitment and job satisfaction scales that were used. A pronounced association between both job attitudes and leaving intentions in general can be expected; however, because these constructs are so broad there is a risk of diluting the associations with other meaningful variables. All four models were computed for both intentions to leave the profession and leave the organization. Based on data from 16 hospitals with several department types (e.g. intensive care, internal medicine, etc.), the independence assumption of ordinary regression analyses was violated, and a three-level approach was chosen.

Therefore nurses were regarded as clustered in departments, which in turn are clustered in hospitals. Although the level I sample size is reasonable ( $n = 2119$ ) the number of departments ( $n = 71$ ) and hospitals ( $n = 16$ ) is rather small, and hence does not allow a reliable analysis of the random effects. Based on this limitation, our analysis follows a 'multilevel analysis as a nuisance' approach (Snijders & Bosker 1999) focusing on the fixed effects.

We explored cross-sectional data with a generalized linear mixed model approach (GLMM). To assess the credibility of the associations, MCMC simulations with uninformative prior distributions with 10,000 iterations and 95% highest posterior density intervals (HPDI) were computed. When HPDI and coefficient share the same algebraic sign, 95% of the simulated coefficients have the same direction and therefore indicate a credible association. The term 'credible' is the Bayesian equivalent of the frequentist term 'significant'.

Like all generalized models, GLMMs lack an intuitive fit measure such as the explained variance ( $R^2$ ) of traditional linear regression. Therefore a pseudo- $R^2$  based on Snijders and Bosker (1999) was computed. Since the model coefficients of a binomial GLMM do not allow an intuitive

interpretation, odds ratios for the empirical minimum and maximum value ( $OR_{max}$ ) and the interquartile range ( $OR_{IQR}$ ) of all numeric independent variables were computed. All statistics were computed with R Version 2.7.2 (R Development Core Team 2007) and the packages lme4 (Bates *et al.* 2007).

Three level II variables and one level III variable were incorporated in the models tested. Job vacancies [ICC2: 0.86 (95% CI = 0.81–0.90)], emotional demands [ICC2: 0.91 (95% CI = 0.88–0.94)], and shift takeover on short notice [ICC2: 0.67 (95% CI = 0.54–0.77)] were aggregate measures (means) on the department level based on questionnaire items. ICC2 estimates represent the group mean reliability of the aggregated variables (Bliese 2000) and indicate satisfactory reliability for all level II measures. The level III variable covered city size where each hospital was located and was based on census data from the German Federal Statistical Office.

## Results

Tables 2 and 3 summarize basic descriptive information for all included variables. Approximately one-sixth of the nurses either considered leaving the profession (18%) or leaving the organization (15%). Based on the unconditional hierarchical models for ITLprof and ITLorg, intraclass correlations (ICC) were computed. Whereas an ICC of 0.11 for ITLprof indicated the use of a random effects model as a prerequisite, an ICC of 0.02 for ITLorg did not stress this requirement.

Tables 4 and 5 show models for ITLprof and ITLorg. Only credible associations are reported. Role conflict, influence at work, emotional demands, lifting and bending, job vacancies (II), emotional demands (II) and shift take over on short notice (II) were not credibly associated in any of the models and are therefore omitted from the tables.

The explained variance ranging between 0.37 and 0.46 of ITLprof models indicates a considerably better model fit than ITLorg models ranging from 0.27 and 0.28 (see Tables 4 and 5). While job satisfaction and professional commitment could substantially increase model fit for ITLprof, both variables did not improve model fit for ITLorg.

Six variables were associated with ITLprof in all four model specifications: age, weekly working hours, burnout, job offers outside nursing, and the marital status categories of single parent and with partner and child (Table 4). Adding professional commitment (model 2) weakened the association with opportunities for development and sex. Adding job satisfaction (model 3) diluted associations with quantitative demands, relationship with nursing management, and work prospects and revealed an association with city size. Model 4, including professional commitment and job satisfaction, demonstrated the highest explained variance with age, two marital status categories, weekly working hours, burnout, job offers outside nursing, professional commitment and job satisfaction as associations with ITLprof.

Four variables showed a credible association in all ITLorg models: (age, leadership quality, burnout and city size, see Table 5). Adding professional commitment reduced the association of work-family conflict in model 2. Adding job satisfaction to model 3 weakened the association with opportunities for development. Although the pseudo- $R^2$  cannot demonstrate much difference among the models, a likelihood ratio test based on the AIC finds model 4 to be the model with the best fit ( $P < 0.001$ ).

Two variables are associated in all models of ITLprof and ITLorg: age and burnout. Professional commitment and job satisfaction were associated with both outcomes when included in the model. While leadership quality and city size were specifically associated with ITLorg, marital status categories, weekly working hours and work-family conflict were almost always associated with ITLprof.

**Table 2** Descriptive summary of categorical variables

Level	Variables	Categories: percentages ( <i>n</i> )			
I	ITLprof	Stay 82% (1740)	Leave 18% (379)		
I	ITLorg	Stay 85% (1792)	Leave 15% (327)		
I	Sex	Female 81% (1713)	Male 19% (406)		
I	Job offers	No 73% (1543)	Yes, in nursing 20% (425)	Yes, not nursing 7% (151)	
I	Marital status	Alone 25% (524)	Single parent 6% (129)	With partner 32% (669)	With partner and child 37% (783)

Level	Variables	Range (max)	IQR	Mean	SD
I	Age	20–65	29.0–42.0	37	9.00
I	Weekly working hours	2–45	28.9–38.5	32	9.30
I	Work prospects	1–4	2.0–3.0	2.3	0.75
I	Work-family conflict	1–5	2.0–3.4	2.8	1.00
I	Possibilities for development	1–5	3.8–4.5	4.0	0.67
I	Quantitative demands	1–5	3.0–4.0	3.4	0.62
I	Leadership quality	1–5	2.8–4.3	3.5	1.10
I	Relationship to nurse management	1–5	2.0–4.0	3.1	1.00
I	Burnout	1–5	1.8–3.0	2.5	0.88
I	Job satisfaction	1–4	2.3–2.8	2.5	0.51
I	Professional commitment	1–5	3.3–4.5	3.9	0.85
I	Role conflict	0–100	25.0–50.0	40	19.00
I	Influence at work	1–5	2.5–3.5	3.1	0.84
I	Emotional demands	1–5	3.3–4.0	3.6	0.56
I	Lifting & bending	0–100	14.6–40.4	28	20.00
II	Job vacancies on units	0.00–0.85	0.18–0.60	0.38	0.24
II	Emotional demands	2.64–0.33	3.45–3.77	3.56	0.33
II	Shift take over on short notice	0.00–0.52	0.03–0.20	0.14	0.13
III	City size (population × 1000)	3–1746	23.2–358.6	255	511

**Table 3** Descriptive summary of continuous variables

**Table 4** ITLprof models (1) without attitudes, (2) with professional commitment, (3) with job satisfaction, (4) with both attitudes. Only credible (95% HPDI) associations are reported

ITLprof	Model 1		Model 2		Model 3		Model 4	
	OR <sub>max</sub>	OR <sub>IQR</sub>	OR <sub>max</sub>	OR <sub>IQR</sub>	OR <sub>max</sub>	OR <sub>IQR</sub>	OR <sub>max</sub>	OR <sub>IQR</sub>
Age	0.2	0.6	0.1	0.5	0.2	0.6	0.1	0.5
Sex								
Female								
Male	1.7		–		1.8		–	
Marital status								
Alone								
Single parent	0.4		0.4		0.5		0.4	
With partner	–		–		–		–	
With partner and child	0.5		0.5		0.5		0.5	
Weekly working hours	0.1	0.6	0.1	0.6	0.1	0.6	0.1	0.6
Work-family conflict	2.8	1.4	2.5	1.4	2.2	1.3	–	–
Possibilities for development	0.2	0.7	–	–	0.4	0.9	–	–
Quantitative demands	3.3	1.3	5.0	1.3	–	–	–	–
Leadership quality	–	–	–	–	–	–	–	–
Relationship to nurse management	0.6	0.7	0.6	0.8	–	–	–	–
Work prospects	0.1	0.5	0.2	0.5	–	–	–	–
Burnout	6.6	1.8	6.8	1.8	5.4	1.7	5.8	1.7
Job offers								
No								
Yes, nursing	–		–		–		–	
Yes, not nursing	1.8		1.7		1.8		1.8	
City size	–	–	–	–	2.0	1.2	–	–
Job satisfaction	Not included		Not included		0.01	0.4	0.02	0.4
Professional commitment	Not included		0.04	0.3	Not included		0.05	0.4
AIC	1417		1327		1372		1300	
Pseudo-R <sup>2</sup>	0.37		0.44		0.40		0.46	

**Table 5** ITLprof models (1) without attitudes, (2) with professional commitment, (3) with job satisfaction, (4) with both attitudes. Only credible (95% HPDI) associations are reported

ITLorg	Model 1		Model 2		Model 3		Model 4	
	OR <sub>max</sub>	OR <sub>IQR</sub>	OR <sub>max</sub>	OR <sub>IQR</sub>	OR <sub>max</sub>	OR <sub>IQR</sub>	OR <sub>max</sub>	OR <sub>IQR</sub>
Age	0.1	0.4	0.1	0.4	0.1	0.4	0.1	0.4
Sex								
Female								
Male	-		-		-		-	
Marital status								
Alone								
Single parent	-		-		-		-	
With partner	-		0.7		-		0.7	
With partner and child	-		-		-		-	
Weekly working hours	-	-	-	-	-	-	-	-
Work-family conflict	2.1	1.3	-	-	-	-	-	-
Possibilities for development	0.3	0.8	0.4	0.9	-	-	-	-
Quantitative demands	-	-	-	-	-	-	-	-
Leadership quality	0.5	0.8	0.5	0.8	0.6	0.8	0.6	0.8
Relationship to nurse management	-	-	-	-	-	-	-	-
Work prospects	-	-	-	-	-	-	-	-
Burnout	3.6	1.5	3.6	1.5	3.1	1.4	3.2	1.4
Job offers								
No								
Yes, nursing	1.4		1.5		1.4		1.4	
Yes, not nursing	-		-		-		-	
City size	0.4	0.8	0.4	0.8	0.4	0.8	0.4	0.8
Job satisfaction		Not included		Not included	0.1	0.6	0.1	0.6
Professional commitment		Not included	0.3	0.7		Not included	0.4	0.8
AIC	1417		1402		1404		1392	
Pseudo-R <sup>2</sup>	0.27		0.28		0.28		0.28	

## Discussion

In the wake of strong downsizing in hospital nursing in Germany and a future with retiring cohorts of nurses and increasing care demands, questions about why nurses leave the profession are high priorities on the current agenda of researchers and policymakers in Germany. Although the data reflect the situation in Germany, the differences found between ITLprof and ITLorg show the value of differentiating leaving directions, which is of interest for researchers and policymakers from other countries with highly developed healthcare systems.

ITLprof and ITLorg were associated with different variables with dissimilar strengths of associations. Although we investigated intentions instead of actual turnover, it can be assumed that leaving directions of actual turnover are associated with different variables, too.

Professional commitment, job satisfaction, burnout, and age were the most pronounced associated variables with ITLprof and ITLorg, which is not surprising taking previous research into account. Both job satisfaction and professional

commitment have shown strong associations with both leaving intentions (Irvine & Evans 1995, Lu *et al.* 2002, Lynn & Redman 2005). Similarly, burnout has been reported to be associated with both leaving intentions (Shader *et al.* 2001, Shimizu *et al.* 2005). The statistically significant role of age (inverse relationship) is well-documented (see Eley *et al.* 2007); however, explanations for the association remain less apparent. One explanation might be the increasing human capital that employees develop throughout their careers, which leads to higher salaries and lower mobility (Mertens 1997). An alternative explanation might be the healthy worker effect, which would base the inverse association of age and leaving intentions on attrition of nurses not matching the requirements of the demands in the job.

Leadership quality and city size were specifically associated with ITLorg in all four models. Even though effect sizes of both associations are limited, they remain consistently credible in all models. Whereas leadership quality has a well-documented association with actual leaving (e.g. Griffeth *et al.* 2000), the association with city size is



### What is already known about this topic

- Nursing shortages are predicted in many industrialized countries in the next decade.
- Leaving intentions are antecedents of actual turnover.
- Professional commitment and job satisfaction are associated with leaving intentions.

### What this paper adds

- Non-work variables are associated with leaving intentions.
- Context variables influence leaving intentions.
- Intentions to leave the profession and to leave the organization differ with respect to the associated variables and effect size.

### Implications for policy and/or practice

- Based on the strong association of non-work variables and the intention to leave the profession, retention initiatives should address the work-home interface.
- Surveys assessing nursing turnover should be based on comprehensive turnover definitions including different leaving directions.
- Hospital comparisons should take contextual factors into account.

remarkable. It is the only level III variable with a credible association in all computed models in spite of a small sample size ( $n = 16$ ). Furthermore, the direction of the association indicates that decreasing city size is associated with increased ITLorg. This direction is somewhat surprising, since one would expect larger cities to offer increased job opportunities, which are strongly associated with leaving intentions (Hom & Griffeth 1995).

The models used have shown associations of the health-related factor burnout as well as factors from the work-home interface with leaving intentions. These associations challenge the ideas of voluntariness and controllability in turnover research and, more importantly, its practical implications. Voluntariness assumes that individuals and organizations agree to work together; however, this might not be the case when health issues such as burnout force nurses to leave the profession or organization. Since burnout is strongly tied to the workplace the sole focus on voluntary turnover should be reconsidered, especially taking into account the fact that burnout is preventable (Awa *et al.* 2009).

The work-home interface association contests the idea of controllability. Age, sex, marital status, weekly working hours, and work-family conflict are related to personal background and the so-called work-home interface. The analysis shows ITLprof to be strongly susceptible to non-work variables. Whereas work-family measures are an established part in assessment of the interaction between family and work-life (Geurts & Demerouti 2003), this integration in nursing turnover research is still to be done. Although non-work related variables seem to be less accessible to organizational interventions, there are numerous examples of targeted measures by organizations to improve family-work balance among their employees (Scheibl & Dex 1998).

### Study limitations

The analysis was based on cross-sectional data collection and therefore does not allow judgment on any causal relationship.

### Conclusion

This research adds leaving intentions and related leaving directions, such as change of organization or change of profession, as another dimension of comprehensive turnover definitions. This requires researchers and nurse managers who are interested in understanding nursing turnover not only to ask *how* or *why* they are leaving, but also *where* are they going.

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### Conflict of interest

No conflict of interest has been declared by the authors.

### Author contributions

MS was responsible for the study conception and design. MS performed the data analysis. MS and HMH were responsible for the drafting of the manuscript. BHM and HMH made critical revisions to the paper for important intellectual content. MS provided statistical expertise. BHM and HMH provided administrative, technical or material support. BHM and HMH supervised the study.

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