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Nurses' perception of feedback on quality measurements: Development and validation of a measure[**]

Increasingly, hospitals use the data from their quality measurement activities, as feedback information for their nurses. It is argued that feedback on quality measurements can result in quality improvement at the expense of *or* for the benefit of nurses' well-being. The proposed relationship is assumed to be mediated by (1) nurses' attribution about management's purpose in providing feedback, and (2) nurses' perception of feedback as a job demand versus a job resource. This contribution describes the development and validation of an instrument to measure these constructs, based on research on HR attributions (Nishii et al., 2008) and the Job Demands-Resources model (Bakker & Demerouti, 2007). The measure has been discussed with several experts and practitioners, and pilot-tested among 55 nurses. Our pilot study reveals promising results regarding the content, construct and predictive validity of our measure.

Key words: **feedback, quality measurements, attribution, job demands-resources model, measurement instrument**
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1. Introduction/background of the project

This article focuses on the HRM instrument of feedback that is based on measurable aspects of nursing care that may indicate potential problems or rather refers to good quality of care, and that is provided to nursing teams, on a regular basis. The underlying idea of providing feedback on quality measurements to nursing teams is that this allows nurses to assess and to adjust their performance, which will positively affect the quality of nursing care (Flottorp, Jamtvedt, Gibis, & McKee, 2010). However, although it seems logical that feedback will lead to quality improvement, worldwide empirical research does not fully support this assumption (Ivers, Jamtvedt, Flottorp, Young, Odgaard-Jensen, O'Brien, Johansen, Grimshaw, & Oxman, 2012). This corresponds with the findings from previous research on the relationship between HRM and organizational performance (Guest, 2011). Building upon literature on the 'black box' of HRM, Giesbers, Schouteten, Poutsma, Van der Heijden and Van Achterberg (2013) argued that a better understanding of the role of nurses' well-being in linking feedback to quality improvement is needed, since feedback on quality measurements can result in quality improvement at the expense of *or* for the benefit of nurses' well-being. The latter may, at least partly, explain the heterogeneous results from previous research about the quality improvement effects of feedback on quality measurements.

Nurses' *perception* of feedback is an important mediating variable in the relationship between feedback on quality measurements on the one hand, and nurses' well-being and quality improvement on the other (Giesbers et al., 2013). More specifically, it can be assumed that when nurses perceive the feedback provision as a burdening *job demand* (Bakker & Demerouti, 2007), feedback may only result in quality improvement at the expense of nurses' well-being. On the other hand, when nurses perceive the feedback provision as a *job resource* that helps them to improve the quality of nursing care (Bakker & Demerouti, 2007), feedback can result in quality improvement for the benefit of nurses' well-being. The attribution nurses make about management's purpose in providing feedback comprises an important factor that might influence nurses' perception of feedback provision as a job demand versus a job resource (Giesbers et al., 2013).

2. Aim, theoretical background and propositions

This contribution describes the development and validation of an instrument to measure (1) the attribution nurses make about management's purpose in providing feedback on quality measurements, and (2) nurses' perception of feedback on quality measurements as a job demand versus a job resource.

Based on a thorough literature study and the typology of HR attributions by Nishii, Lepak and Schneider (2008), we developed 15 items to measure nurses' different attributions about management's purpose in providing feedback on quality measurements. An example item was "I believe I am provided with feedback on quality measurements, because my supervisor aims to improve the quality of patient care". Additionally, building upon previous literature in the scholarly field of feedback and the Job Demands-Resources model (Bakker & Demerouti, 2007), we developed 10 items to measure nurses' perception of feedback on quality measurements as a job demand versus a job resource. An example item was "Because I am provided with feedback on quality measurements, I am motivated to improve the quality of patient care at my ward".

As regards the measure on the attribution nurses make about management's purpose in providing feedback on quality measurements, a differentiation is made between external and internal attributions. *External attributions* reflect the perception that feedback is provided in response to situational pressures that are external to management (Nishii et al., 2008). *Internal attributions* reflect the perception that feedback is provided due to factors over which the management has control (Nishii et al., 2008). The latter can be either commitment- or control-focused (Arthur, 1994; Nishii et al., 2008). *Commitment-focused* internal attributions connote positive consequences for employees, while *control-focused* internal attributions connote negative consequences for employees. Initially, Nishii et al. (2008) distinguished between two commitment-focused internal HR attributions [i.e., the attributions that HRM practices are designed from management's intent to: (i) enhance service quality, and (ii) employee well-being] and two control-focused internal HR attributions [i.e., the attributions that HRM practices are designed from management's interest in: (i) cost reduction, and (ii) exploiting employees]. As this distinction was not supported by empirical data (Nishii et al., 2008), we did not include this in our typology. However, our measure did include items related to both management's intent to enhance service quality, and to their intent to enhance nurses' well-being. An important addition to the typology by Nishii et al. (2008), is the distinction we made between nurses' internal attributions that are focused on factors for which the nurses' supervisor (operational management) is responsible and factors for which the (strategic) hospital management is responsible.

We expect that the attribution nurses make about management's purpose in providing feedback on quality measurements influences nurses' perception of feedback as a job demand versus a job resource. For example, when nurses believe that management's purpose is to support nursing teams in their quality improvement endeavor (a commitment-focused internal attribution), they will more likely perceive feedback as a job resource. In contrast, when they believe that management's purpose is to closely supervise the quality of care (a control-focused internal attribution), nurses will more likely perceive feedback as a job demand. External attributions are thought to be non-influential for nurses' perception of feedback as a job demand versus a job resource, since it is possible for nurses to have either an optimistic or cynical view of management's response to situational pressures (Nishii et al., 2008).

To test the predictive validity of nurses' attributions on nurses' perception of feedback as a job demand versus a job resource, we formulated the following propositions:

1. External attributions will not be significantly related to nurses' perception of feedback as a job demand versus a job resource.
2. Internal commitment-focused attributions, focused at the supervisor or the hospital management, will be positively related to nurses' perception of feedback as a job resource.
3. Internal control-focused attributions, focused at the supervisor or the hospital management, will be positively related to nurses' perception of feedback as a job demand.

3. First findings

3.1 Content validity

We pilot-tested our measure with three nurses and a quality manager from a general, teaching hospital in the Netherlands and with four organizational scholars. This pilot-study resulted in several minor changes to the wording of the measure, and one *extra* item. Subsequently, a paper-and-pencil survey was distributed among 116 nurses working at four different wards, from two different hospitals in the Netherlands. The survey included the measures and some additional questions to check whether the instructions were comprehensible, the questions were clear and no important items have been omitted. Data were collected from 55 nurses, resulting in a response rate of 47.41%. 77.78 % of the nurses were of the opinion that the instructions were comprehensible, 75.93% thought the questions were clear and 64.81% thought no important items had been omitted. No significant differences between nurses working across the different hospitals or wards were found. Some nurses wrote down a remark, which indicated that they had little experience with feedback provision based on quality measurements. Other nurses wrote down a remark about 'quality measurements' being a very generic term, and recommended a further specification for sake of clarity.

3.2 Construct validity

A principal axis factoring, using varimax (orthogonal) rotation was conducted on the 16 items related to nurses' attribution about management's purpose in providing feedback. The item about management's purpose to make a better appearance in the media appeared to cross-load on three factors and was therefore removed from the analysis. We expected this item to load on the factor related to external attributions, yet, it did not appear so. It might be that although hospitals are confronted with newspapers and magazines that publish information about quality measurements, 'making a better appearance in the media' does not make management a passive recipient of external, environmental forces.

Subsequently, a principal axis factoring was conducted on the remaining 15 items, using direct oblimin (oblique). Table 1 shows the factor loadings, which do not seem to fit the proposed five-dimensional structure of nurses' attribution about management's purpose in providing feedback. Factor one refers to management's purpose in providing feedback to involve nurses more in the pursuit of the hospital's quality objectives. Factor two refers to management's intention to make nurses' work more attractive and challenging. When factor one and two are combined in one dimension ($\alpha = .74$), the factor can be characterized to reflect the dimension on 'employee enhancement HR attribution' within the initial typology by Nishii et al. (2008). Factor three reflects the external attribution nurses may make about management's purpose in providing feedback. Factor four is about management's intention to improve and supervise the quality of care, and fits the dimension on 'quality enhancement HR attribution' within the initial typology by Nishii et al. (2008). Factor five refers to management's purpose to make nurses work harder or to give them extra work, and may be characterized to reflect the internal control-focused attribution. Table 1 shows that the items in the measure that

are focused on the supervisor or the hospital's management, do not cross-load on different factors. These items appear to be significantly and very strongly correlated with one another (see Table 2 for more specific outcomes).

Based upon our empirical outcomes, a new typology was designed existing of four dimensions, and making no distinction between nurses' attribution focused on the supervisor and the hospital management:

External attributions *(1)*

Internal attributions

- Commitment-focused internal attributions
    - Quality enhancement attributions *(2)*
    - Nurse enhancement attributions *(3)*
- Control-focused internal attributions *(4)*

Table 1: Summary of factor analysis results for items related to nurses' attribution about management's purpose in providing feedback (N = 55)

Items	**Factor**				
I believe I am provided with feedback on quality measurements, because…	*1*	*2*	*3*	*4*	*5*
my supervisor wants to improve the quality of patient care.		-.15	-.15	**-.62**	
the hospital management wants to improve the quality of patient care.	.26		.12	**-.64**	
my supervisor wants to closely supervise the quality of care delivered.		.19		**-.80**	
the hospital management wants to closely supervise the quality of care delivered.		.18	.17	**-.78**	
the hospital needs to adhere to the quality standards by the healthcare inspectorate.	-.22		**.66**		
my supervisor wants to make nurses' work more attracting and challenging.		**.89**			
the hospital management wants to make nurses' work more attracting and challenging.		**.90**			
the hospital needs to adhere to societal norms on transparency.	.23		**.71**	.11	
my supervisor wants to make the nurses work harder.	.13	.15			**.90**
the hospital management wants to make the nurses work harder.	.16				**.94**
my supervisor wants to involve nurses more in the pursuit of the hospital's quality objectives.	**.70**	.10		-.12	-.14
the hospital management wants to involve nurses more in the pursuit of the hospital's quality objectives.	**.79**				
the hospital needs to adhere to the quality standards by the health insurers			**.56**	-.19	
my supervisor wants to give the nurses extra work.	-.23	-.15	.12		**.75**
the hospital management wants to give the nurses extra work.	-.35				**.70**
Eigenvalues	3.88	3.35	1.84	1.55	1.06
% of variance	25.85	22.31	12.24	10.34	7.07
α	.82	.93	.69	.81	.90
α (when items on factors 1 and 2 are combined)	.74		.69	.81	.90

Note. Factor loadings above .40 appear in bold and factor loadings below .10 are not shown (Field, 2009).

Table 2: Partial correlations between the items related to the supervisor and the hospital management (N = 55), controlling for hospital

I believe I am provided with feedback on quality measurements, because…						
	the hospital management wants to:					
my supervisor wants to:	1	2	3	4	5	6
1. improve the quality of patient care.	**.61****	.38**	-.09	-.10	.16	-.10
2. closely supervise the quality of care delivered.	.50**	**.83****	.30*	.04	.27*	-.04
3. make nurses' work more attracting and challenging.	.15	.32*	**.86****	.33*	.20	.12
4. make the nurses work harder.	.03	.04	.44**	**.93****	-.06	.60**
5. involve nurses more in the pursuit of the hospital's quality objectives.	.41*	.29*	.14	-.16	**.71****	-.49**
6. give the nurses extra work.	-.14	-.16	.10	.60**	-.32*	**.82****

Note. Correlations between the same items related to the supervisor and the hospital management appear in bold.
** Correlation is significant at the 0.01 level (two-tailed). * Correlation is significant at the 0.05 level (two-tailed).

A principal axis factoring with a fixed number of 2 factors was conducted using the 10 items related to nurses' perception of feedback on quality measurements as a job demand versus a job resource (no rotation). Table 3 shows the resulting factor loadings. The factor loadings suggest an instrument comprising a first factor that represents job demand and a second factor that represents job resource.

Table 3: Summary of factor analysis (fixed on two factors) results for the job demand versus job resource items (N = 55)

Items	**Factor**	
Because I am provided with feedback on quality measurements …	*1*	*2*
I get the feeling that those aspects of patient care that are not measureable, are considered less important.	**.60**	
I know better what the hospital objectives are.	.12	**.42**
I can spend less time on direct patient care, at the patients' bedside.	**.89**	-.11
I know better what the hospital and my supervisor expect from me.	.15	**.59**
I am confronted with extra work.	**.81**	
I am motivated to improve the quality of patient care at my ward.	-.21	**.59**
I am pressured to meet the standards of the quality measurements.	**.56**	.25
I am more aware of the level of quality of patient care at my ward.	-.25	**.55**
I get insecure about my skills / abilities as a nurse.	**.51**	.22
I know better how to improve the quality of patient care.		**.63**
Eigenvalues	2.96	2.33
% of variance	29.61	23.32
α	.80	.68

Note: Factor loadings over .40 appear in bold and factor loadings below .10 are not shown (Field, 2009).

3.3 Predictive validity

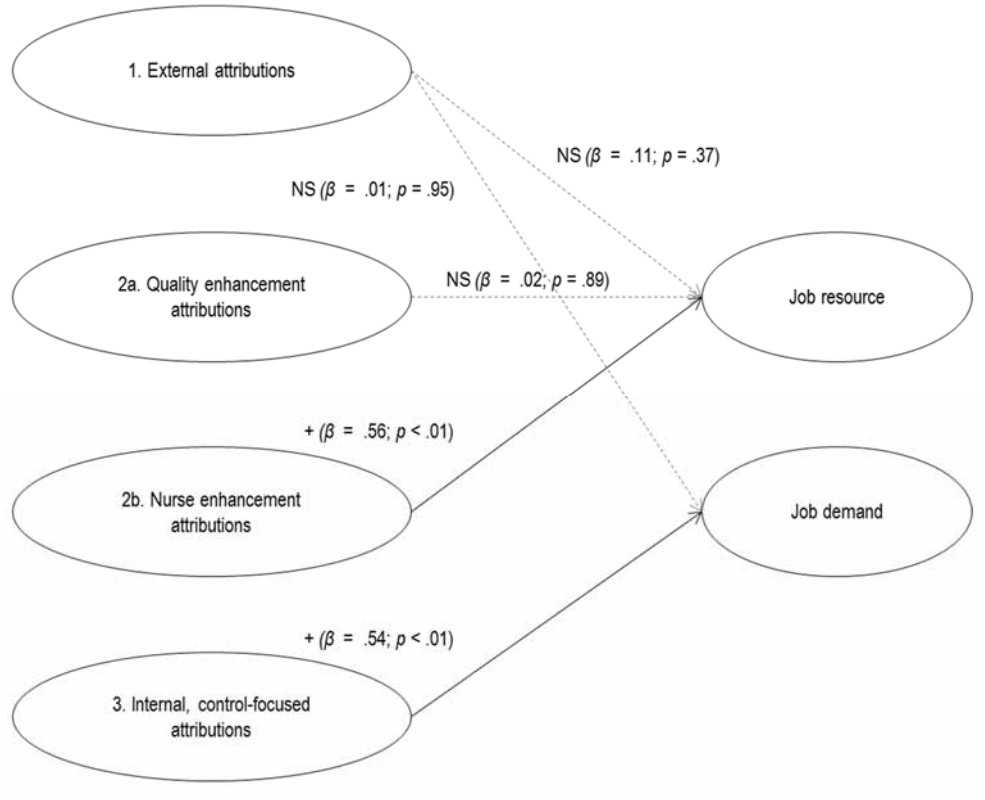
Due to the fact that the commitment-focused internal attribution was divided into a "Quality enhancement attribution" and a "Nurse enhancement attribution", our second proposition was divided into:

2a: Quality enhancement attributions will be positively related to nurses' perception of feedback as a job resource.

2b: Nurse enhancement attributions will be positively related to nurses' perception of feedback as a job resource.

Since the items about nurses' attributions which were focused on the supervisor and on the hospital's management did not cross-load on different factors, this distinction was not taken into account in our test of the predictive validity of our measure. All propositions were tested using multiple linear regression analysis, controlling for hospital only (no significant differences between wards were found). The outcomes of this analysis (see Figure 1) indicated that propositions 1, 2b and 3 were confirmed with our data.

Figure 1: Regression coefficients (N = 55)



4. Further research steps

Although our findings are encouraging, an important limitation of the present study concerns the sample size which makes it difficult to draw definite conclusions about the validity of the measurement instrument. On the other hand, the results of our pilot study reveal promising results and call for more research using larger samples in order to cross-validate our outcomes, and to investigate how nurses' perception of feedback mediates the relationship between feedback on quality measurements, nurses' well-being and quality improvement. Additionally, our study shows that the typology on HR attributions (Nishii et al., 2008) and the Job Demands-Resources model (Bakker & Demerouti, 2007) are good starting-points for the development of measures about specific HR practices, like feedback provision.

Several opportunities for improvement, that emerged from this pilot study, should be taken into account in future research. The *content validity* may be improved by specifying the term 'quality measurements'. Moreover, the *construct validity* of the instrument may be improved by further large-scale empirical research on the distinction between supervisor and hospital management related to the attribution that nurses make of management's purpose in providing feedback. The findings of our pilot study indicated that this distinction is not made by the nurses. Possibly, these outcomes can be explained by the so-called 'cascading effect' (Yang, Zhang, & Tsui, 2010); nurses perceive that feedback on quality measurements is designed due to factors for which the hospital management is responsible, and this responsibility is 'cascaded' down to the supervisor. It could also be desirable to reword the items in order to refer specifically to 'the direct supervisor' and 'the Board of Directors', which makes the distinction between these levels of management more explicit. Finally, the *construct validity* may be enhanced by distinguishing the quality of nursing care and nurses' well-being as separate factors related to the attribution that nurses make of management's purpose in providing feedback.

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