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TEAM COHESION IN INTENSIVE CARE NURSING: AT THE INTERFACE OF NURSE SELF-CONCEPT AND UNIT STRUCTURE

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ABSTRACT

We investigate levels of self-concept (individual, relational, collective) alongside intensive care unit structure as they jointly shape whether nurses perceive their teams as cohesive. A multi-source, multi-level study demonstrates that self-concept eases and enhances constraints workplaces impose on cohesion, and confirms the positive effect of cohesion on quality of care.

INTRODUCTION

The development of team-based work in healthcare has been conceived as key to improving the quality of a nation's health system (Ferlie & Shortell, 2001). Yet, teamwork issues remain among the most frequently cited reasons for adverse events in healthcare, accounting for up to a third of all incidents (Manser, 2009). *Team cohesion*, the overall attraction and commitment of members to their particular team, their desire to work with the team and contribute to the attainment of its goals (Goodman, Ravlin, & Schminke, 1987; Zander, 1979), is consistently identified as a vital "teamwork competency" and an important condition for effective teamwork (Salas, Rosen, Burke & Goodwin, 2009). Cohesion, the feeling of "we", is an overall tendency of a group to stick together and remain united in the pursuit of its objectives (Cota, Evans, Dion, Kilik, & Longman, 1995). Healthcare research has also begun confirming the positive role of team cohesion, so that healthcare providers' perceptions of and attitudes toward their teams are related to the quality and safety of patient care (Deeter-Schmelz & Kennedy, 2003; Manser, 2009). While "a wealth of research has deemed cohesion critical for team effectiveness, less emphasis has been placed on understanding how to get it" (Grossman, 2014, p. iii). In this study, we focus on how and when teams get cohesion, that feeling of "we", in addition to whether cohesion works to enhance the quality of care provided by the team. We focus specifically on what determines intensive care nurses' perceptions of cohesion because compared to other clinicians, nurses are at higher risk to experience and perceive lowered cohesion (Manser, 2009).

The study examines the interface of self and non-self (Anderson, 1984; Stapel & Koomen, 2001) as it affects team cohesion and quality of care in turn. On the "self" side, we argue that nurse self-concepts matter profoundly for the degree to which they feel attraction, pride, and commitment to their units (i.e., team cohesion). Our basic argument is that different levels of self-concept will influence how objective unit-level structural characteristics are experienced by individual nurses, thereby influencing the degree to which nurses feel attracted to their teams. On the "non-self" side, questions remain about how nursing practitioners can

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understand and foster cohesion given the structural constraints of their units, the individual characteristics of their fellow employees, and especially without the use of costly team interventions. Structural characteristics have been found highly relevant for team dynamics and communication (e.g., Cummings, 2004), while in hospital units, structural characteristics appear to also shape cohesion (Deeter-Schmelz & Kennedy, 2003). Little work exists, in healthcare as in other organizational settings, on the interactive relationship between the self-concept and structural factors with team cohesion (Grossman, 2014). In sum, this study contributes to organizational behavior theories in general and to the literature on teamwork in particular by bridging team cohesion, self-concept (the self), and the objective conditions set by unit structural characteristics related to size, training profile, and patient beds (the non-self). Unless otherwise noted, we use the terms intensive care unit (ICU), team, and group interchangeably.

THEORY AND HYPOTHESES

Recent work has recognized three separate levels of the self-concept—the individual, relational, and collective—each with a distinct focus, frame of reference, motivation, and source of self-esteem (Brewer & Gardner, 1996; Ashforth & Johnson, 2001). The individual (personal) level of the self-concept focuses on unique individual traits, abilities, and goals. Basic motivations include self-interest, independence, and autonomy. Self-esteem is derived from interpersonal comparisons, so that one's sense of uniqueness and self-worth stem from perceived similarities with and differences from other individuals (Brewer & Gardner, 1996). The relational (interpersonal) level of the self-concept focuses on one's dyadic connections and role relationships with specific others (e.g., patient, subordinate, manager, coworker, etc.). The basic motivation is the well-being of the relational dyad, as well as the welfare of the specific other. Self-esteem is derived from meeting the relational obligations that arise from specific relationships. Finally, the collective (group) level of the self-concept focuses on being a prototypical member of a particular collective (e.g., organization, social category). The self is defined in terms of group membership, and the individual internalizes the goals and norms of their group (Brewer & Gardner, 1996). The basic motivation is the welfare of the group to which one belongs, leading to the promotion of collective interests. Self-esteem is derived from intergroup comparisons, as well as from successfully fulfilling one's social roles and obligations.

Individuals have at their disposal all three levels of self-concept, and each may be activated through feedback, for example. A nurse may receive feedback pertaining to his technical expertise (activating his individual self-concept), his ability to care for a patient (relational self-concept), and his role as a hospital representative to an international conference (collective self-concept) (Swann, Russell, & Bosson, 2009). The levels of self may cooperate, complement, and (at times) compete to influence one's attitudes and behaviors (Brewer 1991; Prentice 2001; Sedikides & Brewer, 2001), so we closely examine the tripartite distinction as it works in tandem with structural characteristics to influence nurses' attitudes towards their teams. While the independent (individual) and interdependent (relational and collective) have been more extensively juxtaposed and studied in tandem, sparse research has examined the effects of the tripartite levels, particularly in the context of teamwork.

In themselves, structural characteristics tend to have a relationship with team dynamics (Cummings, 2004) such as team cohesion (Grossman, 2014). Team interdependence, autonomy, team tenure, resource availability, task importance, and communication richness are generally expected to have a positive relationship with team cohesion, while team size and challenge are

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expected to have a negative relationship (Grossman, 2014). In healthcare, it has been argued that cohesion is fostered through small team sizes, similar attitudes, and physical proximity (Husting, 1996; Mickan & Rodger, 2000). However, because of the different cognitive, affective, and motivational processes behind the three levels of self-concept (Cross, Hardin, & Gercek-Swing, 2011), we expect that the same structural characteristics may be interpreted differently. Cognitively, the self-concept directs one's attention and leads to differential information recall and processing, so that nurses' sensitivity to their context is affected by self-concept. Affectively, the self-concept structures one's emotional experiences, including the sources of well-being and satisfaction, while motivationally, the self-concept calls for distinct values and goals. We consider specifically contextual factors such as the training profile of a nurse and his/her team, the number of nurses (i.e., team size), and number of beds as relevant characteristics in an intensive care setting. These structural characteristics were chosen because they are expected to matter for team dynamics more broadly (Cummings, 2004). We reason how each of these characteristics affects a nurse's perception of team cohesion jointly with self-concept and its associated cognitive, affective, and motivational mechanisms, and summarize our reasoning in a set of hypotheses.

First, we predict that individual self-concept will interact with nurse training profile to affect cohesion. Because nurses with a strong individual self-concept have strong differentiation and self-enhancement motives, their team experiences will be shaped by the extent to which they are unique (e.g., better trained) compared to their colleagues. Since they experience less competition and their self-esteem is less affected by the composition of their teams, professionally trained ICU nurses with a weak individual self-concept are likely to perceive their teams as more cohesive than trained nurses with a strong individual self-concept. This will be the case particularly when there are many other trained nurses on the team because perceived competition would be lower for those with a weak individual self-concept. In contrast, untrained nurses with a strong individual self-concept are more likely to "bask in reflected glory" (Snyder, Lassegard, & Ford, 1986) and self-enhance (than untrained nurses with a weak individual self-concept) when they work among many professionally trained nurses on the team.

Second, we argue that relational self-concept and number of beds will have a joint effect on perceived cohesion. When there are many patient beds in a unit, (perceived) interdependence and proximity with colleagues would decrease, while the (perceived) challenge and obstacles at the job would increase (Gurses & Carayon, 2007). All of these processes are likely to decrease cohesion (Grossman, 2014). However, the negative impact of a large number of patient beds on team cohesion could be alleviated for nurses with a strong relational self-concept, because these nurses will cognitively focus on specific relationship with significant others, relating more strongly with their colleagues and supervisors, for example, and finding more meaning in their work. Thereby, they will "make up" or compensate for the decreased proximity and increased complexity caused by the intense but short interaction with intensive care patients.

Third, collective self-concept and number of nurses will jointly affect cohesion. Team size has been consistently shown to reduce cohesion (see meta-analysis by Grossman, 2014). When a large number of nurses is employed in the ICU group, the cohesive team feeling would be difficult to develop and maintain; "Who is this 'we'?" (Brewer & Gardner, 1996) would be more difficult to answer. Nonetheless, nurses' collective self-concepts may act to moderate the perceived implications of ICU size for cohesion, as indicated best by the number of nurses employed in the unit. Following Brewer (1991; see also Triandis & Trafimow, 2001), we argue

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that nurses with strong collective self-concepts are more likely to perceive connection, integration, and assimilation to the group when the group is smaller.

Finally, team cohesion will affect quality of care. The degree to which team members, overall, take pride in and feel attraction and commitment to their team (i.e., team cohesion) will be related to the quality of the team's outputs. As team cohesion reflects nurses' overall perception of integration into the collegial environment, it will improve the ability of the collective to communicate, and share responsibility in getting work done. Team cohesion is a situational support mechanism that will assist nursing teams in problem solving and enhance personal and professional integrity (DiMeglio et al., 2005). In the context of ICU nursing, like any other healthcare profession in which the working conditions are intense and demands for optimal performance are high, an important indicator of performance is quality of care.

Hypothesis 1: A strong individual self-concept will (a) weaken the positive relationship between number of trained nurses in a unit and perceived team cohesion, particularly for nurses who are trained, (b) strengthen the positive relationship between number of trained nurses in a unit and perceived team cohesion, particularly for nurses who are untrained.

Hypothesis 2: A strong relational self-concept will weaken the negative relationship between number of beds in a unit and perceived team cohesion.

Hypothesis 3: A strong collective self-concept will strengthen the negative relationship between number of nurses in a unit and perceived team cohesion.

Hypothesis 4: Team cohesion will be positively related with quality of care.

METHODS

After carrying out interviews and a pilot survey study with a smaller sample of nurses, we conducted a multi-source survey study as part of a larger research project. Ethical approval was obtained from the "Forskernetværk for Intensivsygepleje" (Research Network for Intensive Care Nurses in Denmark, hereinafter "FNI"). We developed two versions of a survey questionnaire—one aimed at nurse employees, working with patients (employee version) and one designed for the managing nurse(s) employed in the unit, such as head and ward nurses (manager version). The employee version of the questionnaire was designed to tap onto levels of self-concept, individual perceptions of team cohesion, and individual demographics, including individual training and control variables. The manager version captured quality of care, as well as questions about hospital and ICU characteristics. All instruments were originally designed in English and were translated into Danish and back-translated by two independent professional translators. In June 2014, we distributed the final questionnaire through FNI. A total of 254 nurses and 67 managers completed the questionnaires but because of the requirement of matched sample, usable data at both employee and manager level were collected from 22 units in 17 hospitals, for a final usable sample of approximately 140. Finally, data about ICU characteristics were obtained from the administration of FNI, in addition to the manager version of the questionnaire. Measures of basic member demographics and qualifications, ICU type, size, availability of equipment, etc., were available in the archival dataset.

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Individual-level variables included measures of individual (ISC; mean = 2.29; SD = 0.83; α = 0.82), relational (RSC; mean = 3.82; SD = 0.84; α = 0.81), and collective (CSC; mean = 3.62; SD = 0.75; α = 0.77) self-concept adapted from Johnson, Selenta and Lord (2006; citing Selenta & Lord, 2005). Directly preceding the relational self-concept sub-scale, we asked respondents to think of "certain other person(s)" from work, and directly following the five items, we asked respondents to indicate whom they had in mind while answering the questions. Over 90% of the respondents marked "a colleague" ("another nurse"). We measured individual perceptions of their team's cohesion with an instrument from Earley and Mosakowski (2000) (mean = 3.39; SD = 0.90; α = 0.93; ICC(1) = 0.22; ICC(K) = 0.66).We controlled for sex (female = 1; mean = 0.95; SD = 0.23) , age (mean = 44.13 years; SD = 9.77), tenure at the hospital (mean = 11.68 years; SD = 9.20), and specialized training in intensive care nursing (yes = 1; mean = 0.80; SD = 0.40). In Denmark, this training is a two-year post-graduate program, which is not strictly required for employment in intensive care, as only about 50% of nurses employed hold the certificate. *Team-level variables* included team structural characteristics. We used archival sources (n = 39) to capture number of nurses employed in the unit (mean = 60.21; SD = 30.91), the number of beds (mean = 11.43; SD = 5.40), and number of nurses with intensive care nursing training (mean = 32.39; SD = 18.69). Team cohesion was operationalized as the within-team average of individual perceived team cohesion (team n = 21; mean = 3.50; SD = 0.61; average rwg = 0.93; Mdn = 0.93). Quality of care was measured in the manager version with an instrument adapted from Pronovost, Miller, Dorman, Berenholtz, and Rubin (2001) (n = 23; mean = 4.26; SD = 0.55; α = 0.88).

RESULTS

To test hypotheses 1 to 3, we performed two-level mixed-effects linear regression with robust standard errors in Stata14 (StataCorp, 2015). In Model 1, none of the level-2 structural characteristics had significant main effects on level-1 perceptions; however, collective (CSC; β = 0.31, $p < 0.01$) and to some extent relational (RSC; β = 0.16, $p < 0.10$) self-concept were positively related to cohesion. In Model 2, which tests Hypothesis 1, individual self-concept (ISC) was negatively related to perceived team cohesion (β = -0.38, $p < 0.01$), while individual training (β = -0.70, n.s.) and number of nurses with training (β = -0.03, n.s.) had no main effects. However, these variables had strong interactive effects on perceived cohesion, so that the effects of individual training * ISC (β = 0.30, $p < 0.10$), and individual training * number of nurses with training (β = 0.03, $p < 0.01$), and ISC * number of nurses with training were positive (β = 0.01, $p < 0.01$), whereas the three-way interaction individual training * ISC * number of nurses with training was negative (β = -0.01, $p < 0.01$). Simple slope analyses revealed that for untrained nurses, the slope of ISC was negative and marginally significant when there were few others trained (dy/dx = -0.12, $p < 0.10$), but positive and highly significant when there were many others trained (dy/dx = 0.20, $p < 0.01$). For trained nurses, the slope of ISC was not significant regardless of the number of trained nurses, but was slightly more negative and approaching significance when there were many trained nurses (dy/dx = -0.13, $p < 0.15$) than when there were few trained nurses (dy/dx= -0.10, n.s.). Results support Hypothesis 1b about untrained nurses, but not Hypothesis 1a about trained nurses. Trained nurses with a strong individual self-concept experienced less cohesion than trained nurses with a weak individual self-concept, regardless of the number of trained of nurses in the unit. However, the number of trained nurses in the unit

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strengthened untrained nurses' perceptions of cohesion, particularly of nurses with a strong individual ISC.

In Model 3, which tests Hypothesis 2, relational self-concept (RSC) was not related to perceived team cohesion ($\beta = -0.06$, n.s.), and while number of beds was negatively related ($\beta = 0.08$, $p < 0.05$), the interaction RSC * number of beds was positive ($\beta = 0.02$, $p < 0.05$). The slope of RSC was not significant when there were few beds in the unit ($dy/dx = 0.07$, n.s.), but was positive when there were many beds in the unit ($dy/dx = 0.17$, $p < 0.05$). This result indicates support for Hypothesis 2. It makes sense in light of our assertion—and empirical finding—that nurses tended to think not only of patients, but also (and even more so) of colleagues, supervisors, and doctors, when they thought of relevant and specific relationships with certain others. Finally, in Model 4, which tests Hypothesis 3, collective self-concept (CSC) had a strong positive effect on perceived team cohesion ($\beta = 0.56$, $p < 0.01$), while number of nurses was in itself unrelated. The interaction term was close to zero but negative ($\beta = -0.00$, $p < 0.05$), supporting Hypothesis 3. The slope of CSC was highly significant both when there were few nurses in the unit ($dy/dx = 0.41$, $p < 0.01$), and many nurses in the unit ($dy/dx = 0.30$, $p < 0.01$), but stronger when there were few nurses. Sample size restrictions of the team-level matched sample did not allow us to regress quality of care on team cohesion (matched $n = 13$). However, we found preliminary support for Hypothesis 4: the positive correlation between manager-rated quality of care and member-rated team cohesion (i.e., within team average of perceived cohesion) was strong ($\rho = 0.73$, $p < 0.01$). A set of auxiliary analyses generally concurred with our framework and hypotheses.

CONCLUSION

Team cohesion is a critical factor in the provision of high-quality care, yet its antecedents remain understudied, particularly in the context of some healthcare professional groups where structural and individual constraints coexist, and demand for high quality performance is prevailing. In this study, we focused on the nursing group in ICUs. Specifically, we examined how employee attitudes towards their workplaces and workgroups are shaped at the interface between the characteristics of individual care providers and those of the teams and organizations in which they are employed. Despite its limitations, our multi-source and multi-level study has a number of strengths, and makes an original contribution to nursing research and practice. We believe our study also contributes to organizational behavior research more broadly. Even though our study was conducted with a sample of ICUs, our findings that self-concept is differentially related to team cohesion depending on the objective structural conditions of the team is most likely generalizable to a wide variety of settings where employees face similar demands for effective teamwork. The findings certainly have implications for other healthcare professionals, as pressures to provide patient care of highest quality have been growing together with aging societies and rapid increases in urban populations. We hope this study inspires future research to fully capture the complexity embedded in the relationships *leading to* cohesion and quality of care. The interface of self-concept and unit structure must be examined for other clinical professionals, and with alternative and complementary research designs and methodologies.

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