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# Interactive effects of self-concept and social context on perceived cohesion in intensive care nursing

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## Abstract

Group cohesion is critical in the workplace, especially when individual and contextual constraints coexist but high performance is essential. We assess the source of variation in group members' perceptions of cohesion. Using an interactional psychology perspective, and within the context of intensive care, this study examines the interactive effects of nurses' self-concept and the objective social context within which they are embedded. Individual- and unit-level factors are investigated because they jointly shape the degree to which nurses perceive their intensive care units as cohesive. A multisource, multilevel study of approximately 140 nurses employed in 20 units across Denmark demonstrates the role self-concept plays in easing and enhancing the constraints workplaces impose on cohesion. Implications for research on emergent states and interactional psychology are discussed.

## KEYWORDS

group cohesion, healthcare, interactional psychology, levels of self-concept, social context

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## INTRODUCTION

Organizations are increasingly relying on cohesive work groups for innovation and performance due to an expectation that groups respond more effectively to the dynamism and complexity that organizations experience (Kozlowski & Bell, 2013). Among various characteristics of well-functioning groups, cohesion is consistently shown to be a condition for effectiveness (Beal et al., 2003; Mathieu et al., 2015; Salas et al., 2009). Cohesion is a vital collective competency (Salas et al., 2009), defined as the overall attraction and commitment of members to their work group, and their desire to work with the group and contribute to attaining its goals (Goodman et al., 1987). Most research on cohesion assesses the concept as a consensual aspect of groups (e.g. within-group averages of cohesion perceptions; Chan, 1998), but much less attention has been on cohesion dispersion (e.g. within-group variances of cohesion perceptions). The literature largely assumes that groups are either cohesive or not, and it does not examine potential disparities in members' perceptions of cohesion and emergent diversity in groups (van Knippenberg & Mell, 2016).

Diversity among group members regarding individual perceptions of the group concerning conflict, team climate, and so forth might influence a variety of group outcomes, including effectiveness, and “there is no reason why [this] should not also apply to other emergent states like team cohesiveness” (González-Romá & Hernández, 2014; Jehn et al., 2010; Mathieu et al., 2008, 2019; van Knippenberg & Mell, 2016, p. 142). Some variance in group members' perceptions of cohesion likely emerges due to diversity in the group's composition (Mathieu et al., 2015; van Knippenberg & Mell, 2016). Individual differences thus might shape emergent differences in individual perceptions of a group's environment under the same objective conditions for all individuals in the group, but research rarely examines this proposition.

We examine sources of variation in group members' perceptions of cohesion, suggesting that perceptions of group cohesion are a function of interactive relationships between employee self-concepts and social-contextual factors. As an emergent group state, antecedents of cohesion include both macrolevel (i.e. at the group level or above) and lower level influences, such as group members' individual tendencies (Grossman, 2014; Rapp et al., 2021). We examine how cohesion develops from within a group by using theories of person-situation interaction, compatibility, and fit (George, 1992). This range of perspectives, not applied often to groups and teams, is promising (Goodman et al., 1987; Sagie & Krausz, 2003; Schneider, 2007; Seong et al., 2015; Terborg, 1981). Untangling what it means for individuals to be compatible with their work group environments extends research that links across levels of analysis to understand organizational behaviors (Seong et al., 2015). More specifically, and regarding group cohesion research, an interactionist perspective might address “the problem of integrating the individual and group levels at which social cohesion has been defined” (Friedkin, 2004, p. 409).

We assess interactive effects of self (Johnson & Chang, 2006) and social context (Johns, 2006). Social context constrains or enables employees' scope of action, and although group context affects work group dynamics directly (Cummings, 2004; Deeter-Schmelz & Kennedy, 2003; Grossman, 2014), context might be interpreted, experienced, and reacted to differently, depending on the person (George, 1992; Johns, 2006). People differ in their fundamental, individual tendencies, such as their conception of self, which might result in the emergence of diverse perceptions of group cohesion.

This study contributes to the literature in two ways. First, we test the assumption that groups hold shared properties and that group members have comparable experiences and perceptions about group emergent states and processes such as cohesion (Klein &

Kozlowski, 2000). By showing that perceptions of group cohesiveness (i.e. emergent diversity) depend on group members' self-concept differences (i.e. trait diversity) across contexts, this study contributes to research on diversity in group processes and emergent states (Crawford & LePine, 2013; Jehn et al., 2010; Schulte et al., 2012; van Knippenberg & Mell, 2016). Second, the study contributes to interactional psychology research and to the study of social context. Person–situation studies substantially advance research on teams and small groups (Schneider, 2007; Seong et al., 2015), but such research focuses on personality and the subjective situation. Supplementing that research with a focus on the objective situation (i.e. context), we test a framework in which various facets of the social context are examined in relation to each other and the people affected (Johns, 2017).

## THEORETICAL BACKGROUND

### Emergent states in groups

Literature on emergent states in groups builds on Kozlowski and Klein's (2000, p. 55) premise that a “phenomenon is emergent when it originates in the cognitive, affect, behaviors, or other characteristics of individuals, is amplified by their interactions and manifests as a higher level, collective phenomenon” (Rapp et al., 2021; Waller et al., 2016). Research on emergent states traditionally outlines how through interaction group members build and reinforce affective, cognitive, and other collective states mutually (Mathieu et al., 2008). Although early research focused on emergent state outcomes, states themselves are now assessed, regardless of outcomes (for reviews that corroborate this trend, see Coultas et al., 2014; Fulmer & Ostroff, 2016; Rapp et al., 2021; Waller et al., 2016).

Defined as “properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes, and outcomes” (Marks et al., 2001, p. 357), emergent states do not exist independent of either people or context, and this includes cohesion, one of the most studied emergent states (Rapp et al., 2021). Cohesion is an affective state (i.e. it relates to feelings, attitudes, and emotions) that reflects the total set of forces that encourage members to remain in a group (Festinger et al., 1950). Research on cohesion commonly focuses on relationships with effectiveness outcomes (Grossman, 2014; Mathieu et al., 2008, 2019), only occasionally assessing group-level antecedents, such as team design, composition, leadership, and processes (Rapp et al., 2021). Few studies extend beyond group- and upper-level antecedents of cohesion, such as team and organizational design, to examine lower level antecedents, such as individual characteristics. A focus on consequences rather than antecedents, combined with indexing cohesion as shared member perceptions (Chan, 1998; Coultas et al., 2014; Kozlowski & Klein, 2000), has deterred advancement of cohesion research.

Sharedness captures the opposite of diversity, and thus, research on cohesion as a group property that is not necessarily shared might be facilitated greatly by recent research on group composition and diversity (van Knippenberg & Mell, 2016). Research that integrates trait diversity (i.e. diversity in stable individual attributes) with emergent diversity (i.e. diversity in group interaction processes and group emergent states) might accelerate understanding of variations in perceptions of cohesion. Using interactional psychology and to serve research on the emergence of cohesion best, our approach combines a focus on stable attributes with the traditional focus on group context.

## Interactional psychology

The core of interactional psychology is that both the individual and organizational contexts in which a person is embedded are important to individual attitudes and behaviors (Jumelet et al., 2020; Liden et al., 2016). Interactional psychology is one of the most influential principles in social psychology, dating to Lewin's research during the first half of the 20th century (Schneider, 2007) and more recently invigorated by person–environment fit theory (van Vianen, 2018). Fit theory suggests that attitudes and behaviors are a function of a person and his or her environment, building on the principle that person and environment together predict human behaviors better than each alone (Schneider, 1987; van Vianen, 2018). To understand group cohesion from an interactional psychology perspective, both person and context must be considered. It is thus important to assess how employees see themselves as individuals and the social context within which individuals are embedded. Individuals with different concepts of self interpret their contexts differently, resulting in disparate perceptions of cohesion. We briefly discuss each side of the person–environment interaction, and we then turn to this study's hypotheses, which are explicit in their interactional logic.

### The person

We build on a framework of levels of self-concept to conceptualize potential variance in attributes of individuals working in groups. Theories of the self traditionally distinguish the personal self (i.e. reflecting independence from others) and the social self (i.e. reflecting interdependence with others), but only more recently consider two types of social self—the relational and collective (Sedikides & Brewer, 2001). We build on and extend such literature by considering three separate levels of the self—individual, relational, and collective—each with a distinct focus, frame of reference, motivation, and source of self-esteem (Ashforth & Johnson, 2001; Brewer & Gardner, 1996). The individual (personal) level of the self-concept focuses on unique individual traits, abilities, and goals. The relational (interpersonal) level of the self-concept focuses on an individual's dyadic connections and role relationships with specific others, such as a client or coworker. The collective (group) level of the self-concept focuses on being a prototypical member of a collective, such as an organization or profession (Brewer & Gardner, 1996). Individuals have all three levels of self-concept, which may cooperate, complement, and (at times) compete to influence an individual's attitudes and behaviors (Brewer, 1991; Prentice, 2001; Sedikides & Brewer, 2001). There is, however, a tendency for one of the levels to dominate preferences and the lens through which a person views the world.

Due to varying cognitive, affective, and motivational processes behind the three levels of self-concept (Cross et al., 2011), we argue that employees whose self-concept levels are configured differently perceive the objective social context, and therefore group cohesion, differently. Cognitively, self-concept directs an individual's attention and leads to differential information recall and processing; it structures emotional experiences affectively, including sources of well-being and satisfaction. Motivationally, it calls for distinct values and goals. Different evaluative standards correspond to each level of the self-concept, and contextual information is used to verify or adapt these standards so comparisons between self and others subsequently influence attitudinal outcomes such as cohesion (Johnson et al., 2006). Table 1 summarizes differences among the three levels.

TABLE 1 Levels of self-concept<sup>a</sup>

Level	The individual (personal)	The relational (interpersonal)	The collective (group)
Focus	The self is defined in terms of unique individual traits, abilities, and goals.	The self is defined in terms of dyadic connections and role relationships with specific others (e.g. client/patient, manager, coworker, and subordinate).	The self is defined in terms of group membership; being a prototypical member of a particular collective (e.g. organization and social category).
Basic drives	Self-interest, independence, and autonomy; concern for one's own well-being, personal goals, and personal success.	Well-being of the relational dyad and the welfare of the specific other.	The welfare of the group to which one belongs, leading to promotion of collective interests.
Self-esteem	Derived from interpersonal comparisons, such that one's sense of uniqueness and self-worth stem from perceived similarities and differences with other individuals.	Derived from meeting the relational obligations that arise from specific relationships; appropriate role behavior regarding a specific person determines self-worth.	Derived from intergroup comparisons, rather than interpersonal comparisons, and from fulfilling one's social roles and obligations.
Organizational relevance	Competing with and outperforming colleagues.	Fulfilling relationships and commitments to clients, supervisors, coworkers, etc.	Remaining committed to the collective/work group/organization.
Relevant socio-contextual variable in this study	Individual training/certification through overall levels of training/certification within the unit.	Number of patient beds in the unit.	Size of the unit (i.e. number of nurses in the unit).
Generalizes to which facet of social structure?	Social influence; average tendency and/or differences in authority, status, competence, etc.	Social density; location of others in the space.	Social structure; in-group size and configuration.

<sup>a</sup>Based on Ashforth et al. (2008), Brewer and Gardner (1996), Cooper and Thatcher (2010), Cross et al. (2011), Johns (2006), Johnson and Chang (2006), Johnson et al. (2006), and Sluss and Ashforth (2008).

## The context

“Context refers to situational or environmental stimuli that impinge upon focal actors and are often located at a different level of analysis from those actors. Functionally, context provides constraints and opportunities that affect the occurrence of organizational behavior and shape its meaning as either direct effects or moderators” (Johns, 2018, p. 22; see also Johns, 2006, p. 386). Understood best in juxtaposition with individual-level variables such as dispositions (Mowday & Sutton, 1993; Sagie & Krausz, 2003), context operates simultaneously as discrete

context (i.e. at a narrower, more specific, more proximal level) and omnibus context (i.e. at a broader, more general, more distal level; Johns, 2006, 2017; Rousseau & Fried, 2001). For example, omnibus context would embrace a wide range of aspects related to the national or regional culture, legal frameworks and institutions, the occupational and demographic context, the labor market, industrial and professional relations, and so on. In contrast, discrete context refers to the specific situation within or outside the unit of observation, such as specific organizational structures, systems of relationships, and networks. This is the immediate environment, within which organizational behavior takes place. In other words, the omnibus context is the background and “tells a story” (Johns, 2006, p. 391), whereas the discrete context provides the specific condition in which researchers can observe, measure, and test the relationship among variables for the unit of observation. Because the discrete context is nested under the omnibus context, a solid understanding of the omnibus context (Danish intensive care nursing in our case) warrants further research on concrete, discrete, contextual features.

### *The omnibus context of Danish intensive care nursing*

We contextualize this study in healthcare, which is facing serious organizational and clinical challenges, having experienced an increase of work in groups and teams (Cooke & Bartram, 2015; Ramanujam & Rousseau, 2006). We focus on cohesion among nurses employed in intensive care units (ICUs) because low cohesion might, at least partially, explain poor engagement and retention of healthcare staff, and poor patient care (Brooks, 2000). Nurses are at higher risk of experiencing and perceiving low cohesion, in comparison with other clinicians (i.e. possibly because of repeated routine work, lower remuneration, and lower professional status), making cohesion's antecedents in nursing groups especially pertinent for practice (Manser, 2009). Knowledge derived from intensive care nursing has implications for scholarship in professions characterized by very high job pressures, beyond healthcare. Because intensive care is a highly dynamic, demanding environment, in which group processes and effectiveness have consequences for patient outcomes, this context generalizes to other extreme team contexts (Bell et al., 2018; Manser, 2009; Sagie & Krausz, 2003).

Denmark is a strong welfare state, with a small population of 5 million. The average ICU nurse per patient ratio is stable and high across the nation (1:1 in 75% of units and a maximum of about 1:1.4; Egerod et al., 2013; Rose et al., 2011). Variances in working conditions and equipment availability (i.e. physical context) across hospitals and units are trivial. One level of analysis directly above an individual nurse is an *afsnit* (i.e. section, group, team, or unit), the immediate group of colleagues with which a nurse works daily. The term *intensive care unit* can be used interchangeably with *work group* and *team*. Little variance exists in terms of not only physical but also task context between *afsnit*. For example, autonomy is high and decision-making collaborative in nearly 85 percent of work groups (Egerod et al., 2013). Some variances in task context depend on the type of ICU specialty (i.e. mixed medical–surgical, cardio/thoracic, neurosurgical, and pediatric units), but approximately 80 percent of Danish units are mixed medical–surgical (Rose et al., 2011).

Here, we focus on social context not only because it may be particularly relevant for group dynamics (Reis, 2008) but also because in the omnibus Danish ICU context, there is little measurable variance in the task and physical context of units. Social context can be understood as the nexus or network of relationships: the way group members fulfill their social roles and reciprocally interact at work. Social context includes influence, density, and structure (Johns, 2006), and because these facets are neither exhaustive nor mutually exclusive, we conducted a qualitative study to assess specific context effects (Johns, 2006). It is typically necessary

to contextualize frameworks of context to make them operational (Johns, 2006), and to do so, we conducted seven semi-structured interviews with nine respondents at various hierarchical levels and different parts of the country over 8 months, for a total of 10 h of interview time (see the supporting information). Interview questions were directed mostly toward assessing the resources and constraints of ICU nurses' work, and the governance and organization of their units. An interview guide included open questions such as "Please tell us a little bit about your unit."

Contextual factors that emerged as most salient included unit size (i.e. number of nurses), patient density (i.e. number of patient beds), and number of nurses with specialized training. We were guided by several considerations when identifying the most relevant contextual factors (Kennedy & Thornberg, 2018). First, the factor was repeatedly mentioned during initial interviews. Second, the factor was repeatedly studied in healthcare and nursing literature, despite there being no single, unified framework for the ICU context. Third, the factor was clearly relevant in the ICU context but, if possible, generalized to non-ICU and even non-healthcare contexts. Fourth, the factor corresponded to one or more existing frameworks of organizational context, also because there is no framework specific to the ICU context. In our case, the preferred framework was that from Johns (2006, 2017), but we were open to alternatives. Fifth, extant research suggested a relationship of the factor with group cohesion.

We anticipated unit size to be relevant (Gooding & Wagner, 1985; Johns, 2006), and when we asked nurses about unit size, they reflected on the number of patient beds, in addition to the number of nurses employed. When asked about the nursing social environment, the nurses spoke of patients, often abstractly (e.g. number of patient beds), in addition to colleagues, and vice versa. Consistent with Johns (2006, p. 397), our field work suggested that both colleagues and clients are relevant stakeholders who define the social context of work. Finally, we did not anticipate nurses' training (i.e. 2-year specialized certification in intensive care) to be pertinent. Training was mentioned repeatedly, and we found literature on its relationship with both employee attitudes in healthcare (Mäkinen et al., 2003; Oyama & Fukahori, 2015) and group cohesion in other domains (Duguid et al., 2012), and thus, we included training as a contextual factor. We identified research in nursing that examines a combination of these three contextual factors (i.e. nurse certification, unit size, and number of beds), though not necessarily in a unified theoretical framework. These factors were included in studies of job satisfaction (Mäkinen et al., 2003) and care quality (Oyama & Fukahori, 2015), among other outcomes. Using iteration (Kennedy & Thornberg, 2018), we roughly mapped relevant, discrete contextual features of Danish ICU nursing into a unified theoretical framework, the features of social context that Johns (2006) suggests. However, for discussion purposes, we retain contextualized constructs, occasionally suggesting how they generalize to Johns' (2006) features of social context—social influence (i.e. number of nurses with training), social density (i.e. number of patient beds), and social structure (i.e. unit size).

## **HYPOTHESES**

Mechanisms that connect context and self-concept to team cohesion relate to emotional attachment and identification (Forsyth, 2021; Meyer & Herscovitch, 2001), and we expect that such affective processes are more pronounced when group members interact more meaningfully and cooperate with one another. Attachment is easier in smaller groups, in which there is less status competition but greater resources available (e.g. social, physical, and temporal) for cooperation.

That said, fit theory suggests that people have an innate need to belong to their environments, and they seek contexts that match their own characteristics. Individuals strive to fit because they prefer consistency, wish to control their lives, and want to reduce uncertainty, and they have a need to belong, as illustrated by theories such as diverse as self-consistency theory (Lecky, 1968), social comparison theory (Festinger, 1954), balanced state theory (Heider, 1958), and the similarity attraction hypothesis (Byrne et al., 1986; van Vianen, 2018). All of these frameworks suggest that people want to maximize consistency among aspects of their selves, attitudes, beliefs, behaviors, and social contexts.

Nurses form attachment to groups when they feel like they belong, when they feel that their self-concept is consistent with their social environment. Table 1 shows that people strive to maximize consistency among aspects of their selves, attitudes, beliefs, behaviors, and social contexts. Contextual features might be salient for nurses with different self-concepts (e.g. the individual self-concept is attuned to social influence, which relates to education and certification). Self-concept serves as a perceptual filter on the environment, and thus, nurses' self-concepts shape the way the objective group context results in subjective perceptions of the group. Ample evidence suggests the relevance of self-concept of employee commitment to the organization (Johnson et al., 2006, 2010; Johnson & Chang, 2006, 2008). Self-concepts also relate to the degree to which employees feel attraction, pride, and commitment to their units, the extent to which they perceive their group as cohesive. We elaborate on how context and self operate together in the formation of nurses' affective attachment to groups.

## **Nurse training and the individual self-concept**

Individual self-concept (ISC) reflects comparative identity, which emphasizes an individual's abilities, performance, and general standing above others. It makes comparisons with others salient, highlights a person's uniqueness, and aids contrastive social comparisons (Johnson et al., 2006). Relevant comparison dimensions at work typically revolve around qualification, performance, and status, and titles might be particularly relevant to those with strong ISC (Johnson et al., 2006). The social influence component of social context relates most closely to professional authority, legitimacy, and status derived from education, experience, competencies, and/or skills (Johns, 2006; Judge & Ferris, 1993). Again, these represent the same criteria for workplace social comparisons that are relevant to those with strong ISCs (Feldman & Ruble, 1981; Wheeler & Miyake, 1992). Considering the ISC and individual status together, those with strong ISC are attracted to environments with less prominent authority and where they can assume positions of influence.

The combination of individual status (i.e. having specialized training) with peers (i.e. average degree of training in the group) influences individual attachment to a group and its perceived cohesion (Duguid et al., 2012). Because they experience less competition and their self-esteem is affected less by the composition of the group, highly trained nurses with a weak ISC perceive their groups to be more cohesive than those with a strong ISC do. This should be the case when there are many other highly trained colleagues around, because perceived competition and jockeying for position are less pronounced to those with weak ISCs. In contrast, nurses with a strong ISC, and whose professional legitimacy is otherwise lower, are more likely to self-enhance and bask in reflected glory than those with weak ISCs are (Snyder et al., 1986), especially when they work among better-trained colleagues, which, in turn, enhances such nurses' perceptions of cohesion. Therefore:

**H1.** A strong ISC (a) weakens the positive relationship between number of nurses with training and perceived group cohesion, especially among nurses who are more trained, and (b) strengthens the positive relationship between number of nurses with training and perceived group cohesion, especially among nurses who are less trained.

## Number of patients and the relational self-concept

Self-concept reflects concern for others, which emphasizes being committed to, helping, and caring for others. Employees with strong relational self-concept (RSC) define themselves in terms of dyadic interactions and interpersonal exchanges with specific others in organizations (e.g. supervisors, colleagues, and clients; Johnson et al., 2006). Nurses' motivation has been found to consistently associate with relationships with patients (Bjerregaard et al., 2015), and the quality of nurse–patient relationships has served as an indicator of care quality (Wilson et al., 2009). In the context of ICU nursing, when there is a small number of patients in critical condition, nurses primarily work together to treat the same patient(s) and are, therefore, more likely to form closer relationships with the same group of colleagues when serving the same purpose (i.e. saving the same patient's life). Cohesion will be stronger when nurses are united in the pursuit of shared goals, namely, providing quality care to patients and saving lives. Given the importance of patients in this context, the discrete contextual factor of number of patient beds is relevant here.

Number of patient beds relates closely to social density, because social density reflects the location of relevant others, such as patients and colleagues, in space (Bruballa Vilas et al., 2017; Johns, 2006). Social density consistently relates to service and prosocial behaviors. For example, the likelihood of helping others decreases with the number of people in a room (i.e. similar to the bystander effect) (Johns, 2006). High density (i.e. many patient beds) creates a noisy, crowded, and hectic work environment that is known to affect the social dynamics in ICUs negatively (Bruballa Vilas et al., 2017; Gurses & Carayon, 2007). The likelihood of helping a colleague out may be lower when there are many inpatients, diminishing perceived cohesion in a workgroup. Emergent cohesion, however, ultimately depends on a combination of self-concept and context.

Patient density decreases attachments to colleagues, decreasing perceptions of work group cohesion when nurses who serve several patients have fewer opportunities to develop bonds with colleague groups, and they develop conflicted feelings toward colleagues (Melia, 2001). Most ICUs in Danish hospitals have few beds, but several large, regional hospitals have much more than the average number of beds. However, not all care contexts emphasize role relationships with patients equally. In the context of intensive care nursing, the negative influence of patient density can be alleviated for nurses with strong RSCs, because such nurses find meaningful relationships with colleagues (Melia, 2001; Millward, 1995; Mitchell & Boyle, 2015), insofar as they are able to establish strong relational bonds with one or more colleagues and/or supervisors. We argue that perceived group cohesion decreases in units that must care for increasing numbers of patients, but such negative perceptions lessen among nurses with strong RSCs. Thus:

**H2.** A strong RSC weakens the negative relationship between number of patient beds and perceived group cohesion.

## Unit size and the collective self-concept

Collective self-concept (CSC) reflects group achievements and emphasizes being a member of a successful group. Characteristics of a CSC, such as desire for a group's welfare, include an individual's role in a larger whole. Nurses with a strong CSC take greater pride in their work groups and, all else equal, may perceive their groups as more cohesive. However, the context of group work is not always equal. Group size, defined in terms of the number of individuals in the collective, is essential to CSC and the role individuals play in collective welfare (Brewer & Kramer, 1986). As the size of an (in-)group increases, individuals identify less with the group and are more likely to withhold contributions. Size is also a factor in collectives and an essential characteristic of social structure (Gooding & Wagner, 1985; Johns, 2006). Thus, social structure, especially group size, might be the contextual factor that relates most to CSC. Size has already been assessed as a contextual, main-effect variable that reduces cohesion (Grossman, 2014), but its interactive effects are essential in an interactionist framework.

When groups are small, individuals with strong CSCs perceive connection, integration, and assimilation with a group (Brewer, 1991). The tendency for individuals to be more favorable toward the in-group when the size of the group, relative to the out-group, decreases is particularly pronounced among those who derive self-esteem from in-group membership (Brewer, 1991). Nurses who derive meaning from belonging to social groups (i.e. those with strong CSCs) perceive that large groups are not sufficiently held together as a cohesive whole. The well-being and pride of those with a CSC are based on adherence to group norms, getting along, and group harmony, all of which are more difficult in larger groups (Cross et al., 2011). Therefore:

**H3.** A strong CSC strengthens the negative relationship between unit size and perceived group cohesion.

## METHOD AND MEASURES

After conducting the interviews described the supporting information, we conducted a multisource survey study as part of a larger research project. We developed two versions of a questionnaire—one for nurse employees who work with patients (i.e. an employee version) and one for managing nurses who are employed in a unit, such as head and ward nurses (i.e. a manager version). The employee version was designed to assess degrees of self-concept, individual perceptions of group cohesion, and individual demographics, including individual training and control variables. The manager version asked about hospital and ICU characteristics, and quality of care (Pronovost et al., 2001; we intended to assess the effects of group cohesion on quality of care, but sample size limitations did not allow us to conduct rigorous analyses;  $n = 23$ ; mean = 4.26;  $SD = 0.55$ ;  $\alpha = .88$ ). Group cohesion and degrees of self-concept were measured using validated psychometric instruments and Likert-type scales (see the supporting information). Unless otherwise noted, respondents reported the extent to which they agreed (1 = *strongly disagree* to 5 = *strongly agree*) with statements. All instruments were originally published in English, but they were translated into Danish and back-translated to English by two independent professional translators. Inconsistencies were resolved by a registered nurse and clinical nursing scholar who were native bilingual in English and Danish.

We conducted a pilot study to pretest the instrument, following best practices of the survey method (van Teijlingen & Hundley, 2001). Given the translations that the validated, published

scales underwent, and because the survey was adapted to a local context and language, we assessed its validity. The sample for the pilot study included 11 managers and 62 employees in a large hospital that had four ICUs. We collected comments on the questionnaire related to its appearance, length, instruction clarity, question clarity, and potential omissions, in the form of open questions and several follow-up interviews. The psychometric properties of the instrument were evaluated, the length of the survey was reduced to ease participants' cognitive load, and unclear questions were clarified and further adapted to the local context.

Following the pilot study, we distributed a web-based questionnaire through *Forskernetværk for Intensivsygepleje* (Research Network for Intensive Care Nurses in Denmark; hereafter FNI), reaching 45 research members of FNI who were employed in 39 ICUs at 29 hospitals. The hospital that participated in the pilot study was excluded. FNI members received two versions of the questionnaire and distributed them throughout their units, especially to at least one manager (e.g. head nurse; the manager version) and to all regular nurses (i.e. employee version). Two hundred fifty-four nurses completed the employee version (regarding degrees of self-concept, perceptions of group cohesion, and demographics), and 67 completed the manager version (regarding ICU and hospital characteristics). Given requirements for a matched sample (i.e. we required both employee and manager versions from each unit), the final sample was 138 nurses in 20 units. Ninety-seven percent of employee nurses were Danish, 94.5 percent were female, and the mean age was 44. On average, respondents had nearly 17 years of experience with nursing and 11 years at the hospital in which they were currently employed. Data on social context and other ICU characteristics (e.g. type, size, and equipment availability) were obtained from FNI administration (i.e. an archival dataset), in addition to the manager questionnaire.

We tested for the most important biases related to Web-based surveys, such as response bias (i.e. a potential problem that some nurses, due to their general interest and motivation for example, find it more interesting to participate in a survey than others do) (Armstrong & Overton, 1977). In our case, this suggests that nurses who perceive their units as more cohesive are more likely to answer the questionnaire more quickly. To test for this potential bias, we compared the earliest 10 percent of respondents with the last 10 percent and tested for differences in self-reported measures of cohesion (Jeppesen & Frederiksen, 2006). We conducted a Mann–Whitney *U* test, using the Wilcoxon rank-sum function. Results suggests that the null hypothesis that means are equal between the two samples cannot be rejected ( $z = .986$ ,  $p = .324$ ). We found no differences between the two groups (i.e. no response bias).

## Ethical approval

Ethical approval was obtained from FNI. The confidentiality of responses was ensured, and respondents provided consent prior to completing the questionnaire.

## Individual-level variables

### Levels of self-concept

Measures of ISC ( $\alpha = .82$ ), RSC ( $\alpha = .77$ ), and CSC ( $\alpha = .81$ ) were drawn from Johnson et al. (2006, cited in Selenta & Lord, 2005), in which each subscale includes five items for a

total of 15. Example items are “I have a strong need to know how I stand in comparison to others” (ISC), “It is important to me that I uphold my commitments to certain other people” (RSC), and “Making a lasting contribution to groups that I belong to, such as my work organization, is very important to me” (CSC); the supporting information lists all final questionnaire items. We adapted and extended the RSC measurement to reflect the study’s omnibus context. Preceding the five-item RSC subscale, we asked respondents to think of “certain other person(s)” from work, such as a patient, a colleague, or a manager, and directly following the subscale, respondents indicated whom they had in mind while answering the questions, allowing them to select more than one choice. Over 90 percent of respondents marked a colleague (i.e. another nurse), and 11 percent marked a patient. Approximately 25 percent marked supervisor (i.e. head or ward nurse), and 15 percent marked a doctor. All who selected more than one choice included a colleague. We interpret H2 given this finding.

## Perceived cohesion

We measured individual perceptions of group cohesion using a three-item instrument (Earley & Mosakowski, 2000;  $\alpha = .93$ ). An example item is “The feeling that we are all sharing a common set of beliefs and values is high in our group”. Intraclass correlations of individual ratings (ICC (1) = .22) and the reliability of mean ratings (ICC(K) = .66) were generally high, justifying multilevel analyses as hypothesized (LeBreton & Senter, 2008). We collected alternative dependent measures, such as identification with a group (Chiu et al., 2006) and profession (Adams et al., 2006), but these were insufficiently correlated between individual nurses and within groups to justify multilevel analyses that capture context.

## Individual demographics

All measures were collected on the employee questionnaire. Danish ICU nurses are required to have a basic nursing degree (i.e. professional bachelor’s degree) and a minimum of 2 years of clinical nursing experience at a hospital before they can work in an ICU. Some nurses also follow a 2-year, postgraduate program to obtain specialized and formal certification in intensive care nursing. About 50 percent of Danish ICU nurses hold this nonmandatory certificate. We asked respondents whether they had completed specialty education (0 = no; 1 = yes), and we used this variable as measure of individual training (see “Number of nurses with training”). We controlled for sex, age, and tenure at the hospital (in years). Tenure in nursing correlated with tenure at the hospital ( $\rho = .70$ ), so we omitted it.

## Group-level variables

All data on social context were triangulated between archival sources and the manager’s version of the questionnaire, when available, with no discrepancies found. Hospital-level controls were obtained from FNI archival sources ( $n = 39$ ), but these measures, such as region and size, were nonsignificant.

## Number of nurses with training

The relevance of the 2-year, nonmandatory certification for informal status and influence was indicated during interviews (see the supporting information), and FNI collected data and kept records on the number and proportion of certified nurses in each unit. We tested an alternative “proportion of nurses with training” (mean = 0.55,  $SD = 0.20$ ) but results were consistent, so we retained the simpler count measure. At the unit level, we used archival sources obtained from FNI ( $n = 39$ ) to capture the number of nurses with intensive care training (mean = 32.39;  $SD = 18.69$ ). This measure was independent from the self-reported measure “individual demographics”; indeed, it is a direct measure from the FNI archives about “number of nurses with training within the unit” in a given year; FNI relied on HR data for this measure.

## Number of patient beds

The interviews suggested that most ICU rooms in Danish hospitals hold one or two beds, even though “many units can actually fit in 3 to 4 beds with screens between them. Therefore, the rooms are always large enough to fit in equipment such as ventilators, dialysis” (anonymized informant). Because space per bed is a fixed factor in Danish ICUs, the total number of patient beds in a unit is the most pertinent social contextual variable related to patient density. This prompted us to use the total number of patient beds to index relevant others in space (mean = 11.43;  $SD = 5.40$ ). We attempted to account for physical space (see Auxiliary analysis), and we also tried the number of patients per nurse and number of patient beds per nurse. However, as noted earlier, there is a high, stable nurse per patient ratio in Denmark (1:1), and in approximately 80 percent of cases, there were three or more nurses per patient bed, due to 8-h work shifts.

## Unit size

We measured group size as the number of nurses in each ICU (mean = 60.21;  $SD = 30.91$ ). We also considered other measures, such as subgroup size (e.g. in-group vs. out-group size), but unlike less specialized nurses, Danish intensive care nurses are homogenous in terms of gender, age, and ethnicity.

## RESULTS

Summary statistics and correlations among variables appear in Table 2. To test H1 through H3, we conducted two-level, mixed-effects linear regression analyses with robust standard errors, reporting unstandardized coefficients (Hayes, 2006). Table 3 summarizes the analyses. Model 1 included only main effects of degrees of self-concept and social context on individual perceptions of cohesion. None of the Level 2 contextual variables had main effects on Level 1 perceptions, but CSC ( $\beta = .31, p < .01$ ) and to some extent RSC ( $\beta = .16, p < .10$ ) related positively with cohesion. Model 2 tests H1 regarding the three-way interaction among training with other and ISC. ISC related negatively to perceived cohesion ( $\beta = -.38, p < .01$ ), and individual training ( $\beta = -.70, n.s.$ ) and overall degree of training in the unit ( $\beta = -.03, n.s.$ ) had no main

TABLE 2 Summary statistics and correlations<sup>a</sup>

Individual-level variables	Mean	SD	1	2	3	4	5	6	7
1. Perceived cohesion	3.39	0.90	<b>.93</b>						
2. Individual self-concept (ISC)	2.29	0.83	.00	<b>.82</b>					
3. Relational self-concept (RSC)	3.82	0.84	.22†	.24†	<b>.81</b>				
4. Collective self-concept (CSC)	3.62	0.75	.27†	.16†	.28†	<b>.77</b>			
5. Age	44.13	9.77	.03	-.13	.02	-.09			
6. Sex (male = 0)	0.95	0.23	.08	.01	.02	-.03	.01		
7. Tenure at the hospital	11.68	9.20	.08	-.08	-.02	-.10	.65†	.04	
8. Individual influence (training = 1)	0.80	0.40	.02	-.10	.03	.11	.36†	-.02	.29†
Group-level variables	Mean	SD	9	10	11				
9. Group cohesion	3.50	0.61							
10. Unit size	60.21	30.91	-.19						
11. Number of patient beds	11.43	5.40	-.20	.45†					
12. Number of nurses with training	32.39	18.69	-.27	.84†	.43†				

Note: Cronbach's alpha coefficients appear on the diagonal, where applicable. Group cohesion was not included during main analyses.

<sup>a</sup>Individual  $n = 150$ – $210$  (pairwise). Group  $n = 13$ – $42$  (pairwise).

\* $p < .05$ .

effects. However, these variables had noteworthy interactions with perceived cohesion, so that the effects of individual training  $\times$  ISC ( $\beta = .30$ ,  $p < .10$ ), individual training  $\times$  number of nurses with training ( $\beta = .03$ ,  $p < .01$ ), and ISC  $\times$  number of nurses with training were positive ( $\beta = .01$ ,  $p < .01$ ), and the three-way interaction was negative ( $\beta = -.01$ ,  $p < .01$ ).

Simple slope analyses suggest that for less trained nurses, the slope of ISC was negative and marginally significant when there are few others trained in the unit ( $dy/dx = -.12$ ,  $p < .10$ ), but positive and significant when there are many others trained in the unit ( $dy/dx = .20$ ,  $p < .01$ ). For untrained, uncertified nurses in environments characterized by lower professional training and certification, 1-SD increase to ISC results in a 3 percent reduction to perceived cohesion. The same increase to ISC results in a 5 percent increase to perceived cohesion among uncertified nurses in certified environments, the opposite effect. For more influential, certified nurses, the slope of ISC was not significant regardless of certification in the unit, but it was slightly more negative and approached significance when there were many other certified nurses ( $dy/dx = -.13$ ,  $p < .15$ ) than few others ( $dy/dx = -.10$ , *n.s.*). Simple slope tests at the 25th and 75th percentiles of social context are plotted accordingly in Figure 1a,b. Results support H1b regarding less trained nurses, but not H1a regarding more trained nurses. Trained nurses with a strong ISC perceive less cohesion than those with weak ISC, regardless of the degree of training in the unit. The overall degree of training in the unit strengthened less trained nurses' perceptions of cohesion, especially when they have strong ISC.

Model 3 tests H2 regarding the interaction between RSC and patient density. RSC did not relate to perceived cohesion ( $\beta = -.06$ , *n.s.*), and although the number of patient beds related negatively ( $\beta = .08$ ,  $p < .05$ ), the interaction term RSC  $\times$  number of beds was positive ( $\beta = .02$ ,  $p < .05$ ). The slope of RSC was nonsignificant when patient density was low ( $dy/dx = .07$ , *n.s.*),

**TABLE 3** Results of multilevel, mixed-effects linear regression of perceived cohesion<sup>a</sup>

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>
	<b>β (robust SE)</b>				
Regression coefficients (fixed effects)					
Age	-.00 (.01)	-.00 (.01)	-.00 (.01)	-.00 (.01)	-.00 (.01)
Sex	.18 (.14)	.18 (.15)	.15 (.13)	.22* (.13)	.18 (.12)
Tenure at the hospital	.01 (.01)	.01* (.01)	.01 (.01)	.01 (.01)	.01 (.01)
Individual training (yes = 1)	.07 (.20)	-.70 (.54)	.06 (.20)	.08 (.20)	-.73 (.51)
Individual self-concept (ISC)	-.11 (.08)	-.38** (.09)	-.10 (.07)	-.11 (.08)	-.34** (.07)
Relational self-concept (RSC)	.16* (.09)	.17* (.09)	-.06 (.14)	.17* (.09)	-.07 (.15)
Collective self-concept (CSC)	.31** (.11)	.32** (.09)	.30** (.10)	.56** (.14)	.53** (.15)
Number of nurses with training	.00 (.02)	-.03 (.02)	.00 (.02)	.01 (.02)	-.02 (.02)
Number of patient beds	-.02 (.02)	-.02 (.02)	-.08* (.04)	-.02 (.02)	-.09* (.04)
Unit size	-.01 (.01)	-.01 (.01)	-.01 (.01)	.00 (.01)	.00 (.01)
Individual training × ISC		.30* (.17)			.29* (.16)
Individual training × number of nurses with training		.03** (.01)			.03** (.01)
ISC × number of nurses with training		.01** (.00)			.01** (.00)
Individual training × ISC × number of nurses with training		-.01** (.00)			-.01** (.00)
RSC × number of patient beds			.02* (.01)		.02* (.01)
CSC × unit size				-.00* (.00)	-.00* (.00)
Intercept	2.36** (.39)	3.04** (.72)	3.18** (.65)	1.46* (.69)	3.11** (.89)

(Continues)

TABLE 3 (Continued)

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>
	<b><math>\beta</math> (robust SE)</b>				
Variance components (random effects)					
Intercept ( $\tau_{00}$ )	−22.93	−23.54	−21.94	−20.91	−21.98
Number of nurses with training	−26.26	−24.93	−25.92	−24.27	−24.99
Number of patient beds	−5.05	−5.08	−5.04	−5.03	−5.03
Unit size	−16.30	−15.96	−15.36	−11.86	−13.67
Residual ( $\sigma^2$ )	−.28	−.29	−.29	−.29	−.31
Level 1 $R^2$	.14	.16	.15	.15	.17
Level 2 $R^2$	.16	.18	.17	.14	.17

Note:  $R^2$  is the Snijders/Bosker  $R^2$ .

<sup>a</sup> $n = 138$  (group  $n = 20$ ).

<sup>†</sup> $p < .10$ .

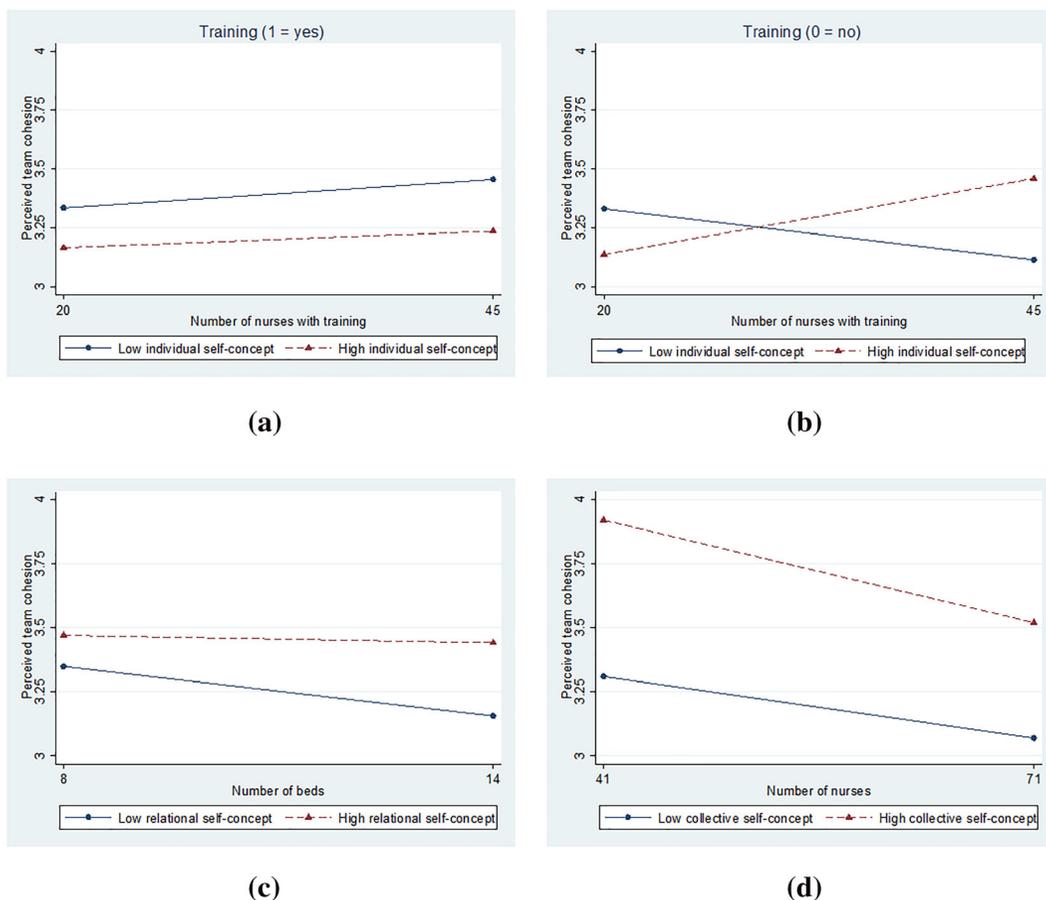
\* $p < .05$ . \*\* $p < .01$ .

but was positive when patient density was high ( $dy/dx = .17$ ,  $p < .05$ ). A 1-*SD* increase to RSC associated with a 5 percent increase in perceived cohesion, particularly when there were a few more than the average number of beds in a unit (specifically, at the 75th percentile or 14 beds in a unit, which is 2.5 beds more than average, or 5 more than the median). This result, which supports H2, is plotted in Figure 1c. This finding is intuitive because ICU nurses think not only of patients but also of colleagues, supervisors, and doctors, when they think of relevant and specific relationships with certain others. Relating to colleagues might offset the negative relationship between patient density and perceived cohesion.

Model 4 tests H3 regarding the interaction between CSC and unit size. CSC had a strong, positive effect on perceived cohesion ( $\beta = .56$ ,  $p < .01$ ), and size itself was unrelated. The interaction term was close to zero but negative ( $\beta = -.00$ ,  $p < .05$ ), supporting H3. The slope of CSC was significant, both when units were small ( $dy/dx = .41$ ,  $p < .01$ ) and large ( $dy/dx = .30$ ,  $p < .01$ ), but was stronger in smaller units. A 1-*SD* increase to CSC associated with an increase of 8 percent to 10 percent to perceived cohesion in most units (i.e. 25th to 75th percentiles). As Figure 1d shows, nurses with a strong CSC always perceived their units as more cohesive, but the relationship was weaker in larger units.

## Auxiliary analysis

We performed two sets of additional analyses. First, we wanted to capture how the two other aspects of context (i.e. physical and task; Johns, 2006) affect cohesion. Second, we tested for cross-interactions between degrees of self-concept and aspects of social context that were un-hypothesized (e.g. CSC and number of patient beds). To capture physical and task contexts, we reran analyses using additional control variables. For physical context, we used measures of physical space and equipment, none of which had effects as controls or altered results, which was likely due to the homogeneity of physical context. For example, over 80 percent of Danish ICUs occupy one building, and 90 percent occupy up to two buildings. In 55 percent of units,



**FIGURE 1** Interaction effects of levels of self-concept and social context on perceived cohesion. (a) Effects of individual self-concept and training context on perceived cohesion for nurses with training (Model 2). (b) Effects of individual self-concept and training context on perceived cohesion for nurses with no training (Model 2). (c) Effects of relational self-concept and patient density on perceived cohesion (Model 3). (d) Effects of collective self-concept and unit size on perceived cohesion (Model 4). Table 3 (Models 2–4) plotted 1 SD above and below the mean (i.e. low/high) for self-concept at the 25th and 75th percentiles (i.e. low/high) for the social context variables number of nurses with training, number of beds, and unit size

all ICU beds are respiratory beds, and in 80 percent of cases, respiratory beds represent at least 70 percent of ICU beds. Similarly, we tested the extent to which task context, measured as type of ICU (i.e. mixed medical–surgical, cardiovascular, thoracic, neurosurgical, and pediatric), mattered for cohesion. Eighty-one percent of ICUs were mixed, 3 percent cardiovascular, 3 percent thoracic, 7 percent neurological (12% were both mixed medical–surgical and neurological), and 6 percent pediatric (13% were both mixed medical–surgical and pediatric). Thus, 7 percent of ICUs carried out functions that include neurology or pediatrics, in addition to primary medical–surgical functions. There were no effects of ICU type on results. However, an additional dummy that represented whether ICUs performed multiple functions (i.e. in 7% of cases) produced a positive effect on cohesion in a model parallel to Model 1 ( $\beta = .79, p < .05$ ), though the addition did not alter results in any model. Due to concerns about reliability and

interpretation (i.e. only 2 of 20 ICUs met this condition), we do not report it in the tables, but results are available on request.

Because we found that nurses identify with colleagues more than they do with patients, we tested two-way interactions RSC  $\times$  unit size ( $\beta = -.00$ , *n.s.*) and CSC  $\times$  number of patient beds ( $\beta = -.00$ , *n.s.*). We found no effects on perceived cohesion, and none for three-way interactions of RSC and CSC with number of patient beds. However, some evidence suggested a three-way negative effect RSC  $\times$  CSC  $\times$  size ( $\beta = -.01$ ,  $p < .01$ ). The main effect of size on cohesion was negative in the model ( $\beta = -.10$ ,  $p < .01$ ), and both RSC  $\times$  size ( $\beta = .03$ ,  $p < .01$ ) and CSC  $\times$  size ( $\beta = .02$ ,  $p < .01$ ) were positive. Main effects for RSC ( $\beta = -.50$ , *n.s.*) and CSC (and  $\beta = -.10$ , *n.s.*) were nonsignificant. Perceived cohesion reduced as size increased, as expected, and effects were pronounced when both RSC and CSC were low and both RSC and CSC were high. Size was least relevant to perceived cohesion when nurses had low CSC but high RSC.

## DISCUSSION

This study assesses how people and contexts, in combination, affect the emergence of group cohesion. Instead of assuming that cohesion is a shared group property, we examine sources of variation in group members' perceptions of cohesion. We show that degrees of self-concept and social context jointly affect the extent to which perceptions of cohesion emerge in ICU groups. One advantage to considering person–situation interactions that affect cohesion is avoiding partial understanding of either objective conditions of work or subjective individual worlds. The two relate and thus must be understood in a coherent framework (George, 1992; Goodman et al., 1987; Terborg, 1981), and the framework proposed and tested in this study contributes to theory and practice in several ways.

### Implications for theory

In terms of theory, this study makes novel contributions to the interactionist tradition in psychology and organizational behavior. This study focuses on groups rather than tasks or organizations, thereby expanding the domain of interactional psychology and person–environment fit theory to smaller collectives such as work groups and teams (Sagie & Krausz, 2003; Schneider, 2007; Seong et al., 2015). The study considers objective, discrete contextual variables, rather than subjective situations only, which has been recommended to move the interactionist perspective forward (Johns, 2017, 2018). This study demonstrates how an objective context (i.e. a global unit property), in combination with individual characteristics, results in group situations or states (i.e. perceived cohesion) that are both consensual and idiosyncratic (i.e. shared and configural unit properties; Kozlowski & Klein, 2000; Rauthmann et al., 2015). By developing and testing a multilevel model of emergent cohesion, this study is relevant to research on diversity in team processes and emergent states (van Knippenberg & Mell, 2016). We demonstrate that the sharedness of cohesion is not assured because group members may differ in self-concepts. Within the scope of interactional psychology, this study contributes simultaneously to literature on context and selfhood. Furthermore, by contributing to the study of context and selfhood in tandem, the study contributes to research on how team states emerge.

Careful contextualization of the study constitutes a particularly important contribution. We demonstrate that distal, omnibus contextual features get translated into organizational attitudes

and behavior, directly tapping into unexplored research opportunities concerning the study of context (Johns, 2018, p. 36). By showing how cohesion emerges in groups under contextual constraints, we underscore mediators of distal context effects in organizations. For example, group size affects group effectiveness partly because it affects what group members perceive about a group. Unit size (i.e. number of colleagues) has been among the most studied contextual features in organizational behavior, relevant to outcomes that include innovation, performance, and leadership of small groups as well as organizations (Camisón-Zornoza et al., 2004; Dalton et al., 1999; Hülshager et al., 2009; Livi et al., 2008). In these and other studies, size is an objective, structural aspect of units and therefore theoretically generalizable to Johns' (2006) notion of social structure.

Studies often account for internal size, but *external* social context remains largely unassessed. The number of clients with which a team works, indexed by the number of patient beds in our study, is important to many organizational contexts, including education, professional work, such as banking and consulting, and customer service (Finn & Achilles, 1999; Johnston, 1995; McGivern, 1983). These backdrop aspects of the staff–client interface remain understudied, despite the importance of “who” and “whom” in the study of social context (Johns, 2006). Our study does not overlook the tremendous influence of clients on the social context of profession work, and this constitutes a leading advantage in drawing on qualitative work and specialized professional literature (e.g. Millward, 1995) to develop research in applied psychology. With relevance to generalizing to theory, patient density maps to social density (Johns, 2006), and future work should examine the implications of density for how workers in other professions interact not only with colleagues/coworkers but also with customers/clients, such as students in the case of teachers, customers in the case of salespeople, and citizens seeking public service in the case of municipality clerks. For these and other professions, it may be relevant to contextualize density to include not only number of ties but also type and strength of relationships (Granovetter, 1973). Social density—and social context more broadly—should be “contextualized,” operationalized, and measured with caution to reflect potential nuance in meaning.

This study has implications for research on groups in other domains precisely because we were careful to contextualize it explicitly. In addition to size and density, training had profound influence for the outcomes of our study. Superior educational qualifications in relation to those of colleagues are an important source of social influence and social comparisons in many other semi-skilled and highly skilled occupations (Bunderson, 2003; Hennequin, 2007; Joshi, 2014). Our findings are therefore highly relevant for other professions in which certification through formal training may add positive social credit to the worker, including programming, data science, accounting and finance, coaching, counseling and clinical psychology, and specialized engineering. This study's design allowed us to concentrate on facets of social context related to unit size, client density, and certification, but retain other facets of context—particularly facets of the task and physical context—as constants. This is a strength because evolutionary forces encourage people to be especially sensitive to social contexts or to the demands and opportunities of interacting with others (Reis, 2008). Thus, although objective task and physical contexts are much better studied, social context represents the most critical aspect of context among individuals employed in organizations (Johns, 2006, 2018; Tett & Burnett, 2003).

Finally, considering context is also especially important to research on extreme teams because they make such research actionable and generalizable (Bell et al., 2018). Units similar to those included in the current study are extreme because ineffective performance has extremely negative consequences (i.e. compromised health, or even death, of clients; Bell

et al., 2018). For ICUs and other extreme teams, applying omnibus and discrete contexts is necessary for the accumulation and integration of research results across studies and for theoretical generalization to other domains (Johns, 2006). Our approach was to conduct qualitative research to expose discrete context effects (Johns, 2006) and relate findings to theory iteratively and abductively (Kennedy & Thornberg, 2018). Within the omnibus context of Danish ICUs, discrete social context comprises nurses' training, patient density, and unit size. Although these factors appear idiosyncratic, they are pertinent in other professional contexts. Team researchers are advised to investigate emergent states of teams by considering both omnibus context and discrete context, where the latter can be specified as a set of configural properties of teams.

This study's findings also add nuance to research on selfhood, especially to the study of the tripartite ISC, RSC, and CSC. Rarely are these three facets of self simultaneously the theoretical and empirical focus, and yet they cooperate, complement, and even compete to influence individual attitudes and behaviors (Brewer, 1991; Prentice, 2001; Sedikides & Brewer, 2001), so we closely examine the tripartite distinction. For example, current results demonstrate that a strong relational self reduces the negative effects of patient density (Figure 1c), but a strong collective self operates in the opposite way with unit size (Figure 1d). Auxiliary analyses further demonstrate that the relational and the collective self compete in the context of large groups, reducing perceptions of cohesion. Little extant research examines how RSC and CSC work together, with independent self-concept commonly juxtaposed to the broad concept of interdependent (i.e. relational + collective) self-concept (Sluss & Ashforth, 2008). Pairwise comparisons are meaningful, with the relational–collective pair the least studied yet “most interesting and potentially revealing” (Prentice, 2001, p. 318). The current study contributes to literature with evidence of joint, and opposing, effects of relational self, collective self, and group context, thereby adding to sparse research on multiple potential configurations of the tripartite self (Sluss & Ashforth, 2008).

This study extends research on self-concepts and identities in other ways. Neither research on domain-specific identities nor research on fundamental aspects of the self explores implications of self-concept for employees' perceptions of smaller work groups, which is surprising given how much is known about the role played by self-concept in employees' perceptions of their managers and organizations. Current findings enrich the literature, which suggests that self-concept predicts workplace attitudes and behaviors, such as organizational commitment (Johnson & Chang, 2006) and citizenship behaviors (Johnson et al., 2006), by assessing the effects of self-concept on commitment to specific work groups. Research on domain-specific professional identity (e.g. in nursing) is disconnected from recent advances in social psychology regarding the tripartite self-concept as a fundamental tendency. For example, two types of orientations have been identified within nursing—the communal–interpersonal (i.e. patient-centered) and the instrumental–intergroup (i.e. professional group-centered; Millward, 1995). These two orientations map to the distinction between RSC and CSC. Organizational research looks for foci of identification in the organization, but we bridge nursing literature, illustrating that the focus of identification might represent a variety of relational others, including work groups, patients, and other clients.

## Implications for practice

Results suggest several recommendations to managers and team leaders. Practitioners are well advised to explore the possibility that understanding what is occurring in their work groups is

not shared by all. A first step is acquiring an overview of how perceptions of group dynamics, such as cohesion, differ between group members. If group members do not all perceive the group as equally cohesive, it might be time to introduce interventions to reshape the conditions that create such differences. We show that two sets of factors create differences in perceptions of cohesion—the social context of groups and individual member self-concepts. Self-concept is stable among individuals, but social contexts that manifest in the objective environment are open to observation, assessment, redesign, and implementation. In practice, group leaders should begin by assessing their group members' self-concepts (e.g. using measures in the supporting information) and then work toward putting the right social context in place—the one that works best for most (or the most critical) group members. This might relate to adjusting the provision of professional training of group members, adjusting the intensity of interfaces with clients, and reorganizing units to adjust their size.

A vivid example can be drawn from the recent pandemic, which has added great pressures on ICUs in hospitals around the world. Under COVID-19, the patient:nurse ratio significantly dropped (i.e. social density significantly increased). Managers were compelled to take actions to counter this negative force. We have witnessed from the media and public debate that in some cases, new approaches, such as having short update meetings every day, taking short breaks and napping together among shifts, and dancing together during breaks, were used by the ICU nurses and their managers to enhance the feeling of belonging and cohesion. These practices align with suggestions found in extant research on team cohesion, as well as team diversity (Jehn et al., 2010) and team size (Wheelan, 2009).

Lessons can also be learned regarding diversity and the processes through which group states emerge. Managers should pay closer attention to individual differences of motives, drives, and foci of identification among workers. When many group members are, for example, individually driven (i.e. as is the case in the West; Triandis & Trafimow, 2001), it is effective to enhance individual and group status (e.g. through specialty training) to create common norms, communication styles, and cultures that downplay the significance of individuality and uniqueness. When a client orientation is essential, it is effective to consider the relational orientation of staff members with the optimal staff/customer ratio (Johnston, 1995). When most of the group is collectively driven (i.e. as is the case in the East; Triandis & Trafimow, 2001), it is important to maintain small work group sizes, if possible. Again, managers should not fixate on individual differences but instead try to understand how the social context affects the asymmetry of information accessibility. Perceptions of cohesion might vary across people, but they also vary across groups. Managers may establish formal and informal communication mechanisms to listen to different perceptions and holistically evaluate the opportunity to address the causes of differences in emergent team dynamics by adapting social contexts.

Related to healthcare organizations, teamwork issues are among the most frequently cited reasons for adverse events, accounting for up to one third of all healthcare incidents (Manser, 2009). Group cohesion is critical to ensuring team performance (Deeter-Schmelz & Kennedy, 2003; Manser, 2009), but evidence worldwide shows that healthcare reforms often have negative consequences on workers, particularly nursing staff, leading to reduced job satisfaction and engagement, rising stress and burnout, and difficulties with recruitment and retention (Brooks, 2000; Clarke & Aiken, 2006; Cooke & Bartram, 2015). As the current study suggests, reforms that address only the context of work, without understanding group diversity in its various forms, may inadvertently reduce group cohesion, which may then jeopardize the intended objectives of healthcare reforms and the overall quality of care provided to patients.

One suggestion for managers is to be aware of underlying dynamics among individuals, groups, and contexts.

## Limitations and future research

This study focuses on trait, or chronic, self-concept, but self-concept has both trait- and state-like qualities (Johnson et al., 2006, 2010). Chronic self-concept refers to the average and time-invariant accessibility of each level in a person that occurs because different learning histories produce stable differences in self-schemas, and working self-concept refers to situation-specific, moment-to-moment activations of the self-concept produced by priming factors that vary across situations. Individuals have, to some extent, all three levels of self-concept, but each can be activated through feedback, for example, Swann et al. (2009), such that “in particularly strong situations, [situational cues] can even override one’s chronic self-concept” (Johnson et al., 2006, p. 177). Another limitation is that organizations represent strong situations, and thus, they limit the effect of dispositions, which might even adapt to fit organizational contexts (Davis-Blake & Pfeffer, 1989). However, interactional psychologists argue that “organizations do not stamp out all individual differences” and that as much as individuals adapt to situations, certain personality dimensions are enduring over time (George, 1992, p. 205). We did observe variance in perceptions of cohesion within groups. Although ICUs explain up to 30 percent of the variance in perceptions of cohesion, there is also sufficient variability within ICUs. We did not have the data to test whether and how dispositions change, but this limitation is not serious because the influence of personal traits does not diminish during activation of the working self-concept (Sim et al., 2014). Chronic self-concepts and contexts together affect working self-concepts, such that working self-concepts mediate the interactive effects of chronic self-concepts and contexts on perceived cohesion (George, 1992).

Another limitation relates to research on emergent states, such as cohesion. First, although some have argued that cohesion can be divided conceptually into two types, namely, social cohesion (i.e. attraction to the group because of positive relationships with other members of the group) and task cohesion (i.e. attraction to the group because of shared commitment to the group task) (van Vianen & De Dreu, 2001), our study fails to distinguish between the two. More importantly, the study does not address the influence of (perceived) group cohesion on group performance, such as patient care quality. This is partially warranted by our theoretical focus, which is relationships among social context, self-concept (i.e. trait diversity), and perceptions of group cohesion (i.e. emergent state diversity). Another limitation derives from constraints on data availability. We could not access archival performance data (e.g. clinical incidents and patient satisfaction) because of ethical restrictions on Danish healthcare. Due to a small sample at the group level and limitations to statistical methods, we could not empirically assess how individual perceptions move upward to unit-level cohesion. Group cohesion is commonly operationalized as within-unit averages of individual perceived cohesion (in our study, group  $n = 21$ ; mean = 3.50;  $SD = 0.61$ ; average  $r_{wg} = .93$ ; median = .93). We intended to test whether group cohesion relates to quality care, but the group-level sample size disallowed such regressions (matched  $n = 13$ ). This study focuses on individual-within-group mechanisms, which multilevel analyses and the nature of the data allowed to demonstrate robust results. The decision to exclude performance outcomes and focus on antecedents and emergence of cohesion was warranted because the literature contains rich evidence of the effect of group cohesion on group performance. Rather than corroborate the literature, this study makes valuable additions

to it. Future research should do so similarly by examining how variations in perceptions of cohesion relate to group effectiveness.

## Conclusion

Although healthcare is heavily professionalized, the literature “has been slow to engage with debates in the field of organizational studies on this distinctive group of employees” (Kessler et al., 2015, p. 737). Current findings that self-concept relates differentially to cohesion, depending on the social context of the unit, generalize to contexts in which professionals experience heavy demands to work effectively in groups. This study has implications for work groups in which whether the feeling of cohesion is shared is relevant, and we believe it will spark interest in how people and contexts shape cohesion together. Because we highlight the relevance of both in interactions, we add to both sides of the classic debate on the primacy of person versus situation regarding employee attitudes and behavior. Research on emergent group dynamics should consider what goes on both in the context overhead and inside the heads of individual group members.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## ETHICS STATEMENT

Ethical approval was obtained from Forskernetværk for Intensivsygepleje (Research Network for Intensive Care Nurses in Denmark). The confidentiality of responses was ensured, and respondents provided consent prior to completing the questionnaire.

## DATA AVAILABILITY STATEMENT

Data are available on request due to privacy/ethical restrictions.

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