Beyond Occupational Differences: 
The Importance of Cross-Cutting Demographics and Dyadic Toolkits for Collaboration in a US Hospital

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ABSTRACT

Scholars of work and occupations have long shown that asking members from different occupations to collaborate with one another is difficult because of differences in status, meanings, and expertise across occupational groups, but they have failed to consider how the demography of the setting affects cross-occupational collaboration. Our 12-month ethnographic study of two units in a US hospital demonstrates the importance of cross-cutting demographics and dyadic toolkits to cross-occupational collaboration. In this paper, we demonstrate that a social structure characterized by cross-cutting demographics between occupational groups (where occupational membership is uncorrelated with demographic group membership) can loosen the occupational identity and status order, thereby creating space for members of cross-occupational dyads (e.g., nurses and patient-care technicians) to draw on other shared social identities (e.g., shared race, age, immigration-status) in their interactions with one another. Drawing on a shared social identity at the dyad level provides members with alternative (non-occupational) expertise, meanings, status rules, and emotional scripts that facilitate collaboration across occupational differences. These findings about cross-cutting demographics and dyadic toolkits have implications for research on cross-occupational collaboration and demography and intergroup relations.

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INTRODUCTION

Many of the outcomes that organizations strive to achieve require cross-occupational collaboration. But such cross-occupational collaboration is extremely difficult to accomplish. In organizations as diverse as semiconductor equipment manufacturers (Bechky, 2003b; 2003a), automobile manufacturers (Carlile, 2002; 2004), insurance companies (Levina and Vaast, 2005), hospitals (Barley, 1986; Faraj and Xiao, 2006), film crews (Bechky, 2006), music companies (Lingo and O'Mahony, 2010), website development firms (Kellogg, Orlikowski, and Yates, 2006), computer manufacturers (Dougherty, 1992; Bailyn, 2006 [1993]), software development teams (Faraj and Sproull, 2000), and museums (Star and Griesemer, 1989), workers from different occupations have struggled to coordinate their work.

Scholars of the sociology of work and occupations have long demonstrated that occupational differences in status, meanings, and expertise make cross-occupational collaboration difficult (Barley and Tolbert, 1991; Nelsen and Barley, 1997; Bechky, 2003a; Anteby, 2008b; Barley, 2008; O'Mahony and Bechky, 2008; Bechky, 2011). Occupational differences stem, in part, from occupation-specific “cultural toolkits” (Swidler, 1986) of values, beliefs, knowledge, demeanors, and jargon. Top managers in organizations often try to help occupation members overcome these difficulties by providing them with organizational tools such as rules and routines, boundary objects, and common spaces to help them work together across occupational boundaries (see Okhuysen and Bechky, 2009, for a review).

The sociology of work and occupations literature has been critical to explaining how members of different occupations can successfully accomplish interdependent work, but we must add to it to explain the outcomes we observed in our 12-month ethnographic study of collaboration between nurses and PCTs (patient-care technicians) on two different units at Huron
hospital (all names are pseudonyms). Nurses and PCTs on both units faced similar challenges due to differences in occupational status, meanings, and expertise and had similar organizational tools available to them. Yet, nurses and PCTs on Unit A collaborated successfully with one another while those on Unit B did not.

We find that, to explain how and when cross-occupational collaboration is successful, we must move beyond considering only occupational identities and organizational tools. Members of different occupations have access not only to the cultural toolkits provided by their occupational identities and the organizational toolkits provided by top managers, but also to what we call the *dyadic toolkits* provided by the non-occupational social identities they share with one another at the dyad level (e.g., shared race, age, immigration-status, motherhood). By drawing on shared social identities, cross-occupational dyads gain access to an alternative (non-occupational) toolkit of expertise, meanings, status rules, and emotional scripts they can use to successfully work with one another across occupational differences.

However, these dyadic toolkits are useful to cross-occupational dyads only within a social structure characterized by cross-cutting demographics across occupational groups. Social structures with cross-cutting demographics are those in which occupational status is uncorrelated with demographic characteristics so that those who occupy a high level position in the occupational hierarchy (nurses) frequently do not also have other social identities that are high status in their context (e.g., in this case, white, younger, US-born) and members who occupy a low level position in the occupational hierarchy (PCTs) frequently do not also have other low status social identities (e.g., non-white, older, non-US-born). As will be detailed below, scholars of intergroup relations have demonstrated that social structures with cross-cutting demographics promote intergroup dynamics that we found to be critical for enabling the use of dyadic toolkits.
In what follows, we review the relevant literature and describe our research setting and design. We then detail how the cross-cutting demographics on Unit A, and the intergroup dynamics they promoted at the unit level, loosened the occupational identity and status order on the unit and provided space for nurses and PCTs to draw on shared social identities to successfully work with one another across occupational differences. On Unit B, where demographics were not cross-cutting, nurse-PCT dyads did not use dyadic toolkits and collaboration failed. We end by discussing the implications of cross-cutting demographics and dyadic toolkits for understanding cross-occupational collaboration and demography and intergroup relations.

CROSS-OCCUPATIONAL COLLABORATION IN THE LITERATURE

Cross-Occupational Collaboration

Scholars of work and occupations have demonstrated that since different occupations have different status, meanings, and expertise, it is difficult for them to collaborate with one another across occupational boundaries (Barley and Tolbert, 1991; Nelsen and Barley, 1997; Bechky, 2003a; Anteby, 2008b; Barley, 2008; O'Mahony and Bechky, 2008; Bechky, 2011). Status difficulties can occur because an occupational group’s prestige, authority, and autonomy results from hiving off lower status dirty work to subordinate occupation members and from successful boundary struggles to exclude competing providers of similar services (e.g., Abbott, 1988; Nelsen and Barley, 1997; Bechky, 2003a; Barley, 2008; Anteby, 2010; Ranganathan, 2013; Loyd, Phillips, Whitson, and Thomas-Hunt, 2010). Meaning difficulties can occur because occupation-specific identities and beliefs often make it difficult for members of different occupations to understand and appreciate one another’s actions (Kaplan, 2008; Perlow, 1999; Perlow and Weeks, 2002; Bechky, 2003b; Bechky, 2006; Anteby, 2008a; Leonardi, 2011). And, expertise difficulties can occur because incompatible codes, routines, or protocols often make it
difficult for occupation members to share knowledge with non-members (Barley, 1986; Barley and Bechky, 1994; Perlow, 2001; Carlile, 2002; Barley and Kunda, 2004; Bailey, Leonardi, and Chong, 2010; Lingo and O'Mahony, 2010).

Despite these difficulties, when organizations provide certain collaboration tools, cross-occupational collaboration can be successful (see Okhuysen and Bechky, 2009, for a review). Rules and routines can improve collaboration by bringing interdependent groups and individuals together and specifying responsibility for tasks (e.g., Feldman, 2000; Feldman and Pentland, 2003; Heimer, 2001). Boundary objects can support the translation of meanings and the negotiation of status across occupational boundaries (e.g., Star and Griesemer, 1989; Carlile, 2004; Bechky, 2003b; Levina and Vaast, 2005). And common spaces can help promote communication and camaraderie among team members (e.g., Bechky, 2003b; Kellogg, Orlikowski, and Yates, 2006).

The sociology of work and occupations literature provides important explanations for how members of different occupational groups can use organizationally-provided collaboration tools to successfully work with one another across occupational differences. But, to explain our findings, we must add to this literature. In our study, nurses and PCTs on both hospital units faced the same differences in occupational status, meanings, and expertise, served the same patient population, worked under the same management and organizational structure, had the same pressures and goals, and had the same organizational collaboration tools available to them (Table 1). However, nurses and PCTs on Unit A successfully collaborated while those on Unit B did not. To explain this difference, we bring an understanding of cross-cutting demographics and dyadic interactions into existing explanations of cross-occupational collaboration.
Cross-Cutting Demographics, Cultural Toolkits, and Dyadic Interactions

Scholars of demography and intergroup relations find that demographics shape intergroup dynamics. However, it is not always the “overall diversity” of a social system that explains how different groups interact with one another, but rather the extent to which the social structure is characterized by “cross-cutting” demographics (e.g., Blau and Schwartz, 1984). In social structures with cross-cutting demographics, positional characteristics (e.g., occupation) and nominal characteristics (e.g., race) are uncorrelated so that people who share a high-status characteristic on one dimension (e.g., occupation) do not also always share high-status characteristics on other dimensions (e.g., race, age, and immigration-status). Cross-cutting demographics promote three kinds of intergroup dynamics.

First, in settings with cross-cutting demographics, members with traditionally devalued social identities are relatively equally distributed among members in higher status and lower status positions. This leads members to view traditionally devalued identities more positively and to use them to build relationships (Ely, 1994, 1995). For example, Ely demonstrates that in sex-integrated firms, the proportional representation of low status group members (women) in senior positions can signal to low status group members at lower levels that positions of power are attainable by members of their group. This greater integration at senior levels creates conditions for more positive identification experiences and more constructive relationships between junior and senior members of traditionally devalued groups.

Second, crosscutting demographics put “individuals at the intersection of a web of group affiliations that exert diverse and often counteracting pressures, weakening the hold any one group has on its members, widening the options of individuals, and increasing their freedom”

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1 Faultlines researchers (e.g., Lau and Murnigham, 1998), who build on insights from Blau and Schwartz (1984), also make this point. We draw on the concept of “cross-cutting demographics” rather than faultlines because research on cross-cutting demographics takes into account not only identity differences across groups but also status differences.
(Blau and Schwartz 1984, pp. 83–84). Scholars have shown that individuals who identify with a social group adopt its norms and values and act according to the group's prescriptions (Turner, 1987; Hogg and Terry, 2000). In settings with cross-cutting demographics, members are influenced not only by ties to one group (e.g., occupation), but also by ties to other groups with whom they identify (e.g., Haitian). This reduces the control that any single group has on members' thoughts, actions, and loyalties.

Third, cross-cutting demographics facilitate intergroup liking and trust via direct and indirect effects of homophilous cross-group interactions. Since group members tend to informally associate with colleagues who share salient demographic characteristics (e.g., McPherson, Smith-Lovin, and Cook 2001), when many members from one group have some demographic similarity with members of the other group, there is a higher degree of intergroup contact that, under particular conditions such as the sharing of a superordinate goal and the support of authorities (e.g., Allport, 1954), can lead to liking and comfort. The direct effect of this is liking and attraction between members of the two groups who share demographic characteristics (e.g., Byrne 1971; Reagans, 2005; Tsui and O'Reilly 1989), and the indirect effect is increased feelings of comfort and liking, even between members of the two groups who do not share at least one demographic characteristic, because of enhanced member knowledge about the other group, reduced anxiety about intergroup contact, and increased empathy and perspective taking (e.g., Pettigrew and Tropp, 2006).

We find that, because cross-cutting demographics promote these three dynamics—the valuing of traditionally devalued identities and the building of relationships around them, low in-group pressure, and feelings of intergroup comfort and liking—cross-cutting demographics can loosen identity and status distinctions more generally, readying the way for actors from different
groups to interact with one another using a wide array of social identities rather than one
dominant identity (e.g., occupation). Drawing on a wide array of social identities (e.g.,
immigrant, young person) during interaction is important because it provides members with
multiple “cultural toolkits” (Swidler, 1986) they can use to develop strategies of action in
particular situations.

While cultural theorists demonstrate that people draw on the cultural tools afforded by
their social identities to shape their actions, symbolic interactionists remind us that social
identities are not achieved in the abstract, but are constructed in the context of particular
situations with specific interaction partners. Thus, individual action is not merely an expression
of social identities, but is highly variable and dependent on interaction with specific interaction
partners. People tailor their actions toward others based on the information each participant has
about the other participants. They gradually shape a line of action by taking into account not only
broad environmental cues but also the imagined responses of their interaction partners to various
actions they might undertake (Goffman, 1959; Blumer, 1969; Van Maanen, 2001). Members ask
themselves, “If I do it this way, how will it feel? To me? To others? They also ask themselves
whether, if I do it that way, resources will be forthcoming, whether other people they depend
upon for cooperation, in fact, will cooperate…” (Becker, 1982: p. 201). In short, they take the
point of view of the other people involved in the interaction, and modify what they are doing to
fit in more or less easily with what their interaction partners are likely to do.

As we will show in further detail below, Unit A was characterized by cross-cutting
demographics at the unit level that loosened occupational identity and status distinctions and
created space for nurse-PCT dyads to connect around a shared social identity. Even though most
dyads on Unit A differed on at least one visible demographic characteristic, most identified at
least one shared identity that provided them with a non-occupational toolkit at the dyad level which they used to overcome occupational differences and collaborate to provide patient care. In what follows, we explain how the cross-cutting demographics on Unit A allowed nurse-PCT dyads to draw on non-occupational social identities to broaden their dyadic toolkits and collaborate successfully while on Unit B they did not.

**METHODS**

**Ethnographic Data Collection**
We conducted 12 months of ethnographic data collection in which the first author interviewed and observed nurses and PCTs for two to three-and-a-half-hour sessions. This author dressed in scrubs and accompanied nurses and PCTs while they went about their work and also conducted “real-time” interviews (Barley and Kunda, 2001) during moments of privacy in supply rooms, medication rooms, the kitchenette, and break room.

We noticed particularly interesting dynamics occurring on the overnight shift (as explained below) which led us to focus observations on this shift. Cross-occupational collaboration is particularly valuable on overnight shifts due to the vulnerability of patients without visitors to monitor them. The first author conducted 42, two to three-and-a-half-hour observations of nurses and PCTs working on two medical-surgical units during the night shift.

We selected these two medical-surgical units (Units A and B) to study because they were well-matched on factors shown to affect cross-occupational collaboration (see Okhuysen and Bechky, 2009, for a review). Since the two units were part of the same hospital, they shared the same management and organizational structure, were subject to the same pressures and goals, and had the same procedures, protocols, and collaboration tools. The units also served the same patient populations—medical-surgical patients—and both units ran at full capacity. Unit A had
fewer patient beds than Unit B (24 vs. 36 beds)\textsuperscript{2}; however, the units were staffed according to hospital-wide staffing guidelines so that patient-to-staff ratios were the same on each unit.

The observations were conducted across all days of the week and all times of the night. In addition, the first author conducted 42 background interviews with nurses and PCTs. These interviews averaged between thirty and forty-five minutes and were conducted at various times during the observational session, typically when the nurse or PCT had a period of downtime.

We used interviews to triangulate our observations with occupation members' own interpretations of the cross-occupational interactions in which they had recently participated. We did this to reduce possible researcher bias regarding the interpretation of nurse-PCT interactions. Interviews that did not focus on members' own interpretations of recent nurse-PCT interactions centered on four main themes: background and career histories and goals, including what collaboration had been like when the member first joined her current unit; the beliefs of each occupational group regarding what constitutes good patient care; how members decided who performed each task, particularly when one member of the nurse-PCT dyad was busy; and how their unit compared to other units they had "floated" on (worked on temporarily when another unit was short-staffed). Extensive notes were taken during observations and interviews and were typed up within 24 hours.

Nurse and PCT pairings were made in the same way on both units each evening by the resource nurse—a shared, rotating position held by a different nurse each night on each unit. The assignment of nurses and PCTs was to patients, however, and not to specific nurse-PCT dyads, as every effort was made to ensure nurses and PCTs were assigned to patients whom they had been assigned to on previous nights to facilitate continuity of care. Since patients stayed on the

\textsuperscript{2}We address alternative explanations such as the difference in size between units in the Online Appendix.
unit an average of 36 hours, in this assignment system, all nurses worked with all PCTs regularly; there were no consistent nurse-PCT dyads.

The first author observed 137 unique nurse-PCT dyads working together: 56 on Unit A and 81 on Unit B. We used a sampling spreadsheet to select for observation of an equal number of nurses and PCTs on each unit for an equal number of days of the week (weekdays vs. weekends) and times of the night (11pm-2am, 2am-5am, 4am-7am). We did not know ahead of coming in which nurses and PCTs would be working (except for the nurses and PCTs who had steady schedules). When the first author arrived, the resource nurse selected the nurse or PCT to be observed, typically by asking the closest nurse or PCT if she was willing to be “shadowed.” Nurses and PCTs at Huron were used to being followed around by trainees, and they were usually quite willing to be shadowed. There were only a handful of cases where the randomly selected nurse or PCT was not shadowed, and these were the times when the nurse or PCT selected had already been recently observed. This sampling led us to observe 74 of the 137 dyads in depth (31 on Unit A and 43 on Unit B), by which we mean that we shadowed one or both parties of the dyad one-on-one while they were working together and collected enough data to reach saturation on the dyad’s typical social and work interactions. The demographic characteristics of the dyads sampled on each unit were representative of the demographic make-up of that unit.

Our data collection proceeded in three phases. In the first two months, we focused on understanding the PCT and nursing occupations and the nature of nurse-PCT cross-occupational collaboration at Huron. As mentioned above, we noticed interesting dynamics occurring on the night shift which led us to focus our observations on this shift after the first month.
Next, we took a month to code our data for preliminary themes and patterns. We analyzed all instances of nurse-PCT collaboration. We saw clear differences in the collaboration practices on the two units studied, with successful cross-occupational collaboration occurring among many nurse-PCT dyads on Unit A and not on Unit B. We re-read in detail the literature on cross-occupational collaboration, which highlighted that the failed collaboration on Unit B was expected because of occupational differences in expertise, meanings, and status, while the successful collaboration on Unit A was unusual.

We used the second phase of data collection (five months) to understand how and when successful versus unsuccessful cross-occupational collaboration was accomplished on the two units. In the final phase of data collection (four months), we more closely followed the work and social interactions of nurse-PCT dyads on Unit A to understand why most dyads collaborated well. In this phase, we also used our in-situ interview questions to test our emerging understanding of how successful cross-occupational collaboration was occurring.

**Inductive Data Analysis**

Once we determined high levels of collaboration were occurring on Unit A but not Unit B, we contrasted the two cases to identify practices associated with successful cross-occupational collaboration. Our inductive analysis (Glaser and Strauss, 1967) consisted of multiple readings of field notes and interview notes, the writing of analytical memos, and the tracking of patterned activities and issues related to collaboration in ATLAS/ti, a qualitative data analysis program. To understand why many dyads on Unit A successfully collaborated while those on Unit B did not, we analyzed each nurse-PCT dyad’s social and work interactions. We provide more information about our analyses below.
SIMILAR BARRIERS TO CROSS-OCCUPATIONAL COLLABORATION ON BOTH UNITS BUT SUCCESSFUL COLLABORATION ONLY ON UNIT A

What makes the difference in collaboration on the two units interesting is that they were so similar in terms of barriers previously shown to make cross-occupational collaboration difficult. On both units, nurses and PCTs needed to overcome occupational differences in status, emotional scripts, meanings, and expertise in order to successfully collaborate with one another (Table 2).

Cross-Occupational Differences in Status on Both Units

Because occupational members maintain their status, in part, through the tasks they do in everyday work and through the communication rules they use with one another (see Sauder 2005, for a review), asking nurses to help with “PCT work” was problematic on both units.

Regarding tasks, nurses primarily performed higher status cerebral work associated with patient management while PCTs spent most of their shift engaged in low-status, physically taxing work that put them in close contact to patients with contagious infections and diseases. But, delivering responsive care required nurses to sometimes perform “PCT tasks” such as helping patients with toileting needs, changing linens, bathing patients, feeding patients, and repositioning patients, and this violated the nurses’ jurisdiction. This was problematic because nurses had hived off hands-on care work to PCTs years earlier in response to pressures for cost-cutting (Weiss and Lonnquist, 2000). This hiving off allowed nurses to focus on more abstract issues associated with patient management such as conducting documentation activities and coordinating care activities among various hospital workers. In part because of this more abstract work, nursing was considered more prestigious than the PCT occupation; in the US, the average nursing salary was $66,530 compared to $24,980 a year for PCTs (Bureau of Labor Statistics, 2009), and while the majority of nurses had four-year college degrees, the majority of PCTs had
only high school level education and a 6-week PCT training course. Some nurses felt that doing “PCT work” was not a good use of their time given their more advanced skill-sets and education.

Nurses and PCTs also had different occupational rules for communication that reflected and maintained status differences between groups. We observed nurses give direct commands to PCTs, speak more frequently when interacting with PCTs, and often sit down during report (when nurses update PCTs on their shared patients). The PCTs we observed frequently took orders or gave orders only indirectly (e.g., “51 is requesting his nurse” instead of “go to 51”). PCTs usually spoke less than nurses, stood up during report and were more attentive to nurses than nurses were to them.

**Cross-Occupational Differences in Emotion Rules on Both Units**

Nurses and PCTs on both units also faced challenges due to differences in occupational feeling rules for expressing negative and positive emotions with other staff.

When nurses were upset with PCTs, we saw nurses confront PCTs directly and often publicly, and we observed nurses openly express negative emotions, including stress ("Tonight is crazy. It's a full house!") and frustration ("We're short on staff cause someone on (another unit) was sick so they took one of ours.") to both fellow nurses and PCTs. In contrast, when PCTs were upset with a nurse, we often observed them suppress these negative emotions and not confront the nurse; in addition, PCTs typically responded to nurses’ expressions of anxiety by appearing calm (e.g., when told they would have an increased patient load due to short-staffing). We typically saw PCTs express negative emotions privately only to other PCTs.

These differences in occupational feeling rules for expressing negative emotions between staff members often made it difficult for nurses and PCTs to effectively relate to one another, particularly when dealing with conflict or when mistakes were made.
Nurses and PCTs also differed in how they expressed positive emotions. We frequently observed nurses publicly express positive emotions such as gratitude and pride and share patient triumphs with other nurses but not with PCTs. For example, we often saw nurses go out of their way to find and personally thank other nurses who had done something to help them out without being asked during the shift (e.g., changing another nurse’s patient’s IV bag, etc.), but nurses did not typically demonstrate the same level of gratitude towards PCTs when PCTs did the same. PCTs, in contrast, were less publicly expressive about positive emotions with other staff members, and when they did express emotions, such as feeling happy because of compliments patients had given them, PCTs typically oriented them toward other PCTs rather than toward nurses. Perhaps because positive emotions such as gratitude and pride were most often directed toward members of one’s own occupational group, nurses and PCTs had no available occupational scripts for showing appreciation to or sharing their triumphs with one another.

Cross-Occupational Differences in Meanings on Both Units
Cross-occupational collaboration was also difficult because nurses and PCTs drew on occupation-specific beliefs and values and demeanors that often led them to judge the actions of members of the other group as unnecessary or even inappropriate.

Nurses and PCTs on both units had different occupational beliefs and values. Nurses reported that the best nurses were the ones who easily engaged in the critical thinking needed to analyze lab results and who demonstrated accuracy and precision when documenting, filling, and administering medications. Common nurse sayings on both units included: “Always double check your books”; “Cross your Ts and dot your Is”; “Being OCD is a good thing.” In contrast, PCTs valued providing responsive, hands-on care to patients by physically helping them, and they considered the best PCTs to be those who won the affection of patients and treated patients with dignity and respect, especially when patients were in embarrassing situations: “You have to
do your work with heart, with love”; “Give the kind of care you’d want your mother to receive”; “It’s a heartfelt thing”; “You know when it’s genuine and they know too—the patients can tell.”

Differences in occupational values and beliefs often led nurses and PCTs at Huron to each perceive the other to be providing inappropriate care; nurses often referred to PCTs as “overly familiar” with patients while PCTs often referred to nurses as “cold.”

Nurses and PCTs on both units also displayed different occupational demeanors in their interactions with patients. Nurses often acted assertively with patients and used humor to speed up or avoid potentially emotionally-laden interactions for which nurses felt they did not have time given their many time-sensitive responsibilities (e.g., all patients had to have their medications administered within the same two-hour window). PCTs, in contrast, were reserved and quiet when interacting with nurses or in the presence of a physician, and often gave patients physical support and affection by holding their hand, stroking their hair, or touching them gently on the hand or arm when talking to them. These differences in occupational demeanor sometimes made it difficult for nurses and PCTs to understand and appreciate each other’s actions. Nurses on both units sometimes described PCTs as getting “walked over” by patients and were often impatient when PCTs were unavailable to help because they were spending “excessive” time in patient rooms; PCTs on both units often described nurses as being “too short” with patients.

**Cross-Occupational Differences in Expertise on Both Units**

Finally, nurses and PCTs at Huron faced challenges due to differences in occupational expertise. Nurses and PCTs on both units drew on occupation-specific bodies of knowledge, sources of information, and patient-care skills, and this often made it difficult for them to share their expertise with one another.

Nurses and PCTs used different bodies of knowledge in their work. We often saw nurses draw on the deep clinical knowledge of anatomy, medications, and medical tests and procedures
they had gained from their formal education. In contrast, the PCTs we observed usually diagnosed patients' problems using informal, concrete rules-of-thumb grounded in everyday practice such as comparing a patient's current state to the same patient's state on prior shifts on which these PCTs had worked. Since nurses privileged abstract, formal knowledge of diseases, medications and lab results in guiding their decision making, they often considered PCTs' knowledge to be irrelevant. PCTs often noted that nurses did not take seriously their concrete knowledge of subtle changes in patient states and idiosyncratic patient needs.

Regarding occupational skills and information, we saw nurses use computer skills and computerized information to track patients' detailed medical histories, test results, current medications, and overall care plans. In contrast, we saw PCTs rely primarily on sensory skills and information gained from directly interacting with patients in patient rooms. Nurses and PCTs often appeared to be unaware of the unique skills and information possessed by the other occupational group. There was a routine in place—"report"—where nurses were supposed to update PCTs at the beginning of the shift to ensure that PCTs had the basic care information they needed to begin taking vital signs, but nurses frequently ignored this routine, and PCTs often told us that waiting for nurses to give them report at the beginning of the shift slowed them down.

**Hospital Tools Designed to Facilitate Cross-Occupational Collaboration on Both Units**

The hospital provided several tools to facilitate collaboration between nurses and PCTs across these occupational differences. First, rules and routines were in place on both units that governed the order and timing at which certain patient care tasks needed to occur. For example, nurses and PCTs were expected to meet early in the shift for the nurse to provide "report" to PCTs on care needs of their shared patients. In addition, vital signs were expected to be taken on both units between 11pm and 1am, medications were expected to be given at midnight, vital signs of those on heart monitors were expected to be done at 4am, and documentation of patient
input and output was expected to be conducted by 6am. These routines were designed so nurses and PCTs could understand when the other group’s workload was heavy so they could offer assistance during these times in order to meet ongoing deadlines.

Second, boundary objects and representational tools existed to facilitate nurse-PCT collaboration. Computers, patient charts, nurse and PCT patient assignment templates, computerized patient repositories, call light phone technology, pagers and the paging system, and whiteboards in patient rooms were available on both units. Such boundary objects were designed so nurses and PCTs could be aware of when the other required help. The hospital also did not require nurses and PCTs to dress differently, thus minimizing status differences.

Finally, common spaces existed for collaboration. On both units, there was a reception desk containing the call light phone monitor and one computer terminal followed by rows of computer terminals with enough seating for all nurses and PCTs. Both units also contained similar enclosed spaces for use by both nurses and PCTs, including a locker room and break room, small kitchenette, two medication rooms, and a main supply room. These common spaces allowed for informal information sharing between nurses and PCTs.

**Different Cross-Occupational Collaboration Outcomes on Unit A versus Unit B**

Despite these similar barriers to and tools for cross-occupational collaboration on Units A and B, collaboration succeeded on Unit A and failed on Unit B. And collaboration between nurses and PCTs is imperative for delivering high quality patient care because many tasks require more than one person to complete. For example, bedridden patients need to be repositioned at least every two to four hours, a task that requires more than one person. In addition, the high workload on medical-surgical units and unpredictability of patient demands make it difficult for any one nurse or PCT to independently provide good care to all her assigned patients. Because nurses or PCTs can easily “get stuck” in patient rooms responding to
unanticipated problems, they need to cover one another’s assigned patients when this happens. In addition, PCTs have higher patient loads than nurses (1 PCT to 12 patients vs. 1 nurse to 6 patients), and when PCTs are busy, nurses are expected to pitch in and help with PCT tasks.

These differences in cross-occupational collaboration had a real impact on patient care. A vignette is helpful in describing what successful versus failed collaboration looked like in practice. One night on Unit A, Mr. Smith, a patient, lost control of his bladder and saturated his sheets with urine. Since Huron required visitors to leave each day at 8pm, no family member or friend was there to help him. When Jessica, the assigned nurse, came into his room a few minutes later to assess his wounds, she began right away to clean Mr. Smith. When Jessica realized that she could not do it on her own, she asked Anna, the PCT, for help. Anna said yes and came in as soon as she was done assisting another patient. Mr. Smith was cleaned within 10 minutes by Jessica and Anna.

Contrast this with a similar situation on Unit B. Another night, on Unit B, a different patient, Mr. Johnson, similarly lost control of his bladder. Jill, the nurse assigned to Mr. Johnson, came into his room a few minutes later to deliver medications. She cursed under her breath, and said defiantly, “I am not cleaning this up. Someone will get to it later.” Cara, the PCT assigned to Mr. Johnson, came in soon after and realized that helping Mr. Johnson was a two-person job. She asked Jill for help. Jill said yes, but then ignored her. An hour later, another nurse told Jill that the patient was calling again and requesting to be changed. Cara was busy just then, and Jill refused to start without Cara. Mr. Johnson ended up lying in his own urine for an hour-and-a-half before he was finally cleaned by Jill and Cara.

Incidents such as these occurred regularly on the respective units. On Unit A, there were more instances in which nurses helped with “PCT tasks” when PCTs were busy, fewer ignored
patient calls, fewer ignored heart monitor alarms, and fewer patient complaints than on Unit B (Table 3).

Thus, we have two units where nurses and PCTs faced similar challenges due to differences in occupational status, emotional scripts, meanings, and expertise, but in one case they collaborated successfully with one another and in the other case they did not. How do we account for this difference?

**KEY DIFFERENCE BETWEEN UNITS:**

**CROSS-CUTTING DEMOGRAPHICS WITHIN THE UNIT SOCIAL STRUCTURE**

Our analysis suggests that the high degree of cross-cutting demographics within the social structure of Unit A, but not Unit B, shaped the difference in cross-occupational collaboration outcomes. In this section, we compare Unit A to Unit B to demonstrate how the social structure on Unit A facilitated nurse and PCT collaboration through the use of shared social identities in their interactions. In the next section, we explain how nurse and PCT use of these shared social identities on Unit A broadened the status, emotion, meanings, and expertise tools available to nurse-PCT dyads and thus promoted successful cross-occupational collaboration.

**High Degree of Cross-Cutting Demographics on Unit A but not on Unit B**

Unit A was characterized by a high degree of cross-cutting demographics while Unit B was not. On the Unit A night shift, nurses and PCTs differed along occupational lines but were mixed in terms of the immediately visible identities of race, age, and immigration-status (immigration-status was visible because of accented speech). On Unit B (as well as most other hospital units at Huron and other shift times on Unit A) the demographic composition of the nursing and PCT groups was consolidated in terms of race, age, and immigration-status—occupational differences between nurses and PCTs coincided with other demographic
differences. Most nurses on Unit B were white, mid-twenty-year-olds who grew up in the US, while most PCTs on Unit B were minorities, older (40s-50s), and non-US-born (Table 4).

It was not simply occupational group membership aligning (or not) with demographic characteristics that shaped differences in the intergroup dynamics on the two units; it was also—more importantly—the extent to which demographic characteristics were associated with status differences that loosened the occupational identity and status order on Unit A and reinforced it on Unit B. On Unit A, the higher status nursing group had many members possessing traditionally devalued social identities in this context (non-white, older, and non-US-born), while the lower status PCT group had many members possessing traditionally valued social identities in this context (white, younger, and US-born). The mismatch in status between occupational identities and readily apparent other social identities loosened the occupational identity and status order on Unit A. On Unit B, in contrast, most members possessing higher status occupational characteristics also possessed higher status demographic characteristics—nurses were nearly all younger (20s and 30s), white, and US-born, while PCTs were nearly all older, non-white, and non-US-born—and this reinforced the occupational identity and status order.

Cross-Cutting Demographics on Unit A Facilitated Nurse and PCT Use of Shared Social Identities in Interactions

The cross-cutting demographics of Unit A promoted three kinds of intergroup dynamics between nurses and PCTs that created space for nurse-PCT dyads to draw on a shared, non-occupational social identity to guide their interactions with one another: 1) the valuing of

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3 In this context, being young (20s and 30s) was considered by members to be more valuable than being older (over 40), particularly on medical surgical units like Units A and B where computer-literacy and speed, quick reaction time, and physical fitness and stamina—all traits associated with the young—were prized among nurses and PCTs.

4 The loosening of the occupational identity and status order on Unit A did not lead to contestation over the general prestige and status ranking of the nursing versus PCT occupation on the unit. Members do not contest and protect the status order unless they believe that lower status members have the opportunity to move into the higher status group (e.g., George, Chattopadhyay, and Zhang, 2012; Bendersky and Hays, 2012). Here, PCTs had no opportunity to move into the nursing ranks without leaving Huron and going back to school for four years to train as nurses.
traditionally devalued identities and the building of relationships around them due to the presence of members in higher status positions with traditionally devalued identities (e.g., black nurses), 2) low occupational in-group pressure due to a high degree of intersecting group affiliations that exerted diverse and often counteracting identity pressures on nurses and PCTs, and 3) feelings of comfort and liking even between nurses and PCTs who did not share demographic characteristics with one another due to a high degree of homophilous cross-occupational contact.

**Valuing of traditionally devalued identities on Unit A.** Ely (1994; 1995) has shown that when traditionally devalued social identities are relatively equally distributed among the higher and lower status groups, they are often viewed positively. On Unit A, where the higher status nursing group had many members possessing the traditionally devalued social identities of being non-white, older, and non-US-born, members fondly referred to their shift as the “United Nations,” and nearly all noted that they viewed the diversity in age, race, and immigration-status in a positive light. For example, a young, white, US-born Unit A nurse related:

I like the diversity. We have older nurses and people from different nationalities and I like it better. When I float to other floors, it’s all white women in their 20s and 30s. It’s weird. We get patients here from all different countries so it helps that so many of our nurses and PCTs can speak another language.

On Unit A, the positive view of traditionally devalued social identities allowed nurses and PCTs to draw on these and other shared identities without fear of status loss. For example, a nurse on Unit A explained how she tried to overcome her traditionally devalued social identities when floating on other units but did not need to do so on Unit A.

When I float, I will sometimes name drop that I went to (a good college near the hospital that many nurses attended) so they (the nurses) don’t think I’m off the boat (a recent immigrant) ’cause I’m black and have an accent. Here (on Unit A), I don’t need to do stuff like that, since like half of us (the nurses) are black and have an accent.
While on Unit A, traditionally devalued social identities were viewed positively, on Unit B, the immediately visible association between occupational position, on the one hand, and race, age, and immigration-status, on the other, activated the use of common negative stereotypes about traditionally devalued social identities. We often heard Unit B nurses use common stereotypes about non-whites, older people, and members of certain immigrant groups to describe PCTs (e.g., “slow,” “lazy,” “incompetent,” and “can’t be trusted”), even though we observed the PCTs on Unit B to be just as industrious as those on Unit A. For example, a young, white, US-born nurse on Unit B related:

You can’t count on them (PCTs). Most are lazy and try to do the bare minimum so you really can’t trust them... they’ll take forever to do something that you ask.

And, in contrast to the nurses on Unit A, who looked highly upon staff who could speak another language, the Unit B nurses had little patience for PCTs’ accented-speech. One noted:

Language is an issue here since some (PCTs) aren’t fully versed in English and don’t feel comfortable. That always disturbs me because I think if you get to a certain position and you can’t speak English... I just don’t get it.

**Low occupational in-group pressure on Unit A.** Crosscutting demographics on Unit A also put nurses and PCTs at the intersection of many different group affiliations that exerted diverse and counteracting pressures, increasing their freedom by weakening the power any one particular group affiliation had on their thoughts, actions, and loyalties.

For example, nurses and PCTs on Unit A were less beholden to occupational dress norms typical of most other units (and other shift times on Unit A). While nurses and PCTs on Unit B dressed in a way that distinguished them from one another (with most nurses wearing plain, blue or subdued monochromatic scrubs and most PCTs wearing bright, colorful, matching patterned and cartooned scrubs), on Unit A they did not. On Unit A, nurses and PCTs wore a mixture of dress styles, and individual nurses and PCTs often mixed up their dress styles night-to-night.
In addition, on Unit B, nurses and PCTs sat in separate locations in the nursing station—with nurses forming a circle with their workstations in the center of the nursing station, while PCTs sat along the periphery. On Unit A, in contrast, nurses and PCTs sat interspersed in the nursing station.

The conversational topics of the Unit A nursing group were also highly accessible to people with diverse age, racial, national, and class backgrounds; Unit A nurses talked about the weather, work schedules, cleaning, vacations, and hospital or unit-related events. PCTs were included in these discussions as respected members of the team and gossip about other staff was rare. On Unit A, the low occupational in-group pressure also allowed nurses and PCTs to interact with one another without sanction in ways that conformed to the norms of shared social identities such as immigrant or mother rather than just to the norms of their occupational identities. As one first-generation Haitian nurse in her 30s explained:

Different shifts have different dynamics. It’s nice here that I have people like PCT5A and PCT10A here (both of Haitian descent). ... And it’s no big deal if I want to sit with PCT5A and talk about the earthquake (that devastated Haiti) or anyone (PCT or nurse) for that matter—no one’s going to blink an eye.

In contrast to Unit A, on Unit B, socializing was highly segregated by occupational group. Here, the nurses primarily talked about topics that aligned with their age, racial, national, and class backgrounds as young, white, Northeastern middle-class women. Their conversations revolved around dating, marriage proposals, wedding planning, pregnancy and getting pregnant, baby showers, vacation plans to places like “the Vineyard” (Martha’s Vineyard) and “the Cape” (Cape Cod), and music, movies, and television shows featuring primarily all-white, American casts such as Teen Mom, The Real Housewives of Orange County/New Jersey, Bachelorette and Mad Men. PCTs on Unit B socialized only with other PCTs.
In addition, we observed several situations on Unit B when nurses or PCTs attempted to act outside of the bounds of occupational norms and were reproached by their occupational group members. For example, one evening, Nurse23B on Unit B fielded a few calls for a busy PCT and was made fun of by the other nurses for acting like a PCT:

Nurse23B hangs up the phone and Nurse14B calls out loudly, “So you’re the new secretary now, huh?” She and the other nurses nearby laugh and Nurse23B looks embarrassed and makes a joke of it. Nurse23B does not pick up any more calls that night.

During the course of the study, only one nurse moved between units—Nurse16. Nurse16 was a young, white, US-born nurse who had recently graduated from a local nursing school near the hospital. She worked on Unit A for a few months before switching to Unit B. On Unit A, she collaborated well with most of the PCTs she worked with. We observed her make the transition from Unit A to Unit B.

During her first week on Unit B, she wore colorful and festive scrub outfits typical of those worn by both nurses and PCTs on Unit A, but only by PCTs on Unit B. During this week, we also observed her attempt to find commonalities with the PCTs she worked with, talking with one of the younger PCTs about a popular musical group. We saw her openly praise and thank one of the PCTs in front of the other nurses.

Unfortunately for Nurse16, her actions were condemned by the other nurses on Unit B. We saw the other nurses on Unit B gossip about the “inappropriate” behavior of Nurse16 and we saw them avoid helping Nurse16 in several situations even though they went out of their way to help other nurses. For example, when Nurse16 had to deal with a patient with an unexplained high heart rate at the same time that one of her other patients was bleeding, none of the Unit B nurses assisted her (even though this was their common practice with other nurses). During this first week, Nurse16 sat alone on the periphery of the nursing station, and the other nurses did not include her in social conversations.
Over the course of several shifts on Unit B, we saw Nurse16 distance herself socially from the PCTs. She also started conforming to the norms of her Unit B occupational group, and began exclusively wearing plain blue scrubs like the other nurses. When we left the field, Nurse16 was demonstrating occupationally-prescribed behavior and had gained acceptance from her fellow nurses on Unit B.

**Feelings of comfort and liking between nurses and PCTs on Unit A.** Finally, on Unit A, there were a high number of nurses and PCTs who shared at least one demographic attribute with members in the other occupational group, leading to higher levels of homophilous interaction and liking across groups. For example, 80 percent of observed nurse-PCT dyads on Unit A shared at least one visible social identity in terms of race (White, Black/African-American, Hispanic, or Asian), age (within 10 years in age), or immigration-status (US-born or non-US-born), compared with only 19 percent on Unit B. And more than half of the observed dyads on Unit A (52 percent) shared at least two visible identities, while none of the observed nurse-PCT dyads on Unit B shared two or more visible social identities.

Because nurses and PCTs on both units had a superordinate goal of providing patient care and hospital authorities supported collaborative nurse-PCT relations, this high degree of homophilous intergroup contact on Unit A had both a direct, interpersonal effect and an indirect, intergroup effect on the intergroup dynamics of Unit A. The direct, interpersonal effect was that, for members of the nursing and PCT groups who shared at least one demographic characteristic, positive affect and liking stemmed from having a meaningful social identity in common. For example, Nurse7A and PCT12A were both middle-aged, Hispanic immigrants who frequently communicated in Spanish with one another and expressed interpersonal liking:

Nurse7A steps out into the hallway and PCT12A comes over... Nurse7A says, “His vitals are done, okay? 62 is done, 64, 66, 68 also done, okay?” PCT12A replies, “Okay.” They
then start speaking in Spanish and Nurse7A is beaming as she puts her arm around PCT12A and hugs her.

The high degree of homophilous intergroup contact also had the indirect effect of enhancing nurse and PCT knowledge about the other group, reducing anxiety about intergroup contact, and increasing empathy and perspective taking across groups. This, in turn, led to increased feelings of comfort and liking even between members of the two groups who did not share any demographic characteristics.

For example, many nurses on Unit A were empathetic to the working conditions of the PCTs with whom they worked. As we will show in the next section, this led to good relationships even when nurses and PCTs did not share a visible demographic attribute with one another. One young, white, US-born nurse related:

PCTs, they have a heavy, heavy job. They need our help, just like we need it from them. ... It's definitely a give and take as they have a hard enough job....I've gotten to know some (PCTs) pretty well and honestly, their job is more exhausting and they are paid like nothing. Some work two jobs.

In contrast, on Unit B, few nurses and PCTs shared visible social identity characteristics. The consolidation of social identity characteristics with occupation led to intergroup dislike, discomfort and anxiety, and reduced empathy and perspective taking during cross-occupational social and work interactions. And many PCTs told us they felt uncomfortable approaching the nursing group in the nursing station, even when they had important questions. For example, multiple PCTs commented on the poor interpersonal relations between nurses and PCTs on Unit B. One stated, “No nurse is going to be your friend here. ...They don’t care about me or love me.” Another stated, “PCTs and nurses are not so close... we only have love for our own.”

Why was gender not used by nurse-PCT dyads as a shared social identity to draw on? In the context of two highly feminized occupations in which nearly all the nurses and PCTs at Huron were women, gender was not a salient social identity relative to other social identities in which there was variation (e.g., race, age, and immigration-status). Gender alone may also have been too broad to provide a platform as a meaningful commonality (e.g., some white women may want to connect on gender but some women of color resist because they feel their experiences are distinctive (Cole, 1986; hooks, 1984)).
In addition, nurses on Unit B, unlike Unit A, rarely greeted PCTs when seeing them for the first time during their shift. One PCT described this situation:

(Nurses) won’t even say hi to you. They pretend you’re not there or they come up to you and just give you an order or tell you something, being all business you know, without asking how you’re doing.

In sum, the cross-cutting demographics of Unit A promoted particular intergroup dynamics between nurses and PCTs that loosened the occupational identity and status order and created space for nurse-PCT dyads to draw on a shared social identity in their interactions with one another. Indeed, as we will show below, even in situations where there was no visible, common demographic identity around which to frame their interactions, we saw many nurse-PCT dyads on Unit A find a common, non-visible identity such as mother or grandmother to guide their interactions.

USE OF DYADIC TOOLKITS AND SUCCESSFUL COLLABORATION ON UNIT A BUT NOT UNIT B

On Unit A, the use of non-occupational social identities in interactions broadened the toolkit of status rules, emotional scripts, meanings, and expertise available to nurse-PCT dyads and allowed them to work with one another in non-traditional ways across occupational boundaries. In contrast, the consolidated demographics of Unit B inhibited nurse and PCT use of non-occupational social identities in interactions. Even the nurses and PCTs who shared social identities did not draw on them to help them collaborate. In addition, the many salient differences in social identities between nurses and PCTs on Unit B exacerbated collaboration challenges that stemmed from occupational differences, and collaboration on Unit B failed.

Please see the Online Appendix for a detailed listing of the characteristics, shared social identities, and use of dyadic toolkits of the dyads studied on Units A and B.

Collaboration across Different Occupational Status

Successful collaboration across different occupational status on Unit A. The cross-cutting
demographics on Unit A allowed nurses and PCTs to draw on shared social identities and successfully negotiate tasks and communicate across occupational differences in status.

For example, Nurse17A and PCT6A differed in occupation and race (Nurse17A identified as white while PCT6A identified as African-American), but were both older and US-born. In their social interactions with one another, they often drew on their common status position as older people to act according to prescriptions of older, hard workers even though doing so ran counter to occupational status rules. Nurse17A told PCT6A: “Once (a manager Nurse17A had in the past) wrote me up for being too conscientious, like it was a negative thing...I think there is just a different work ethic with this new generation and I'm old school.” And PCT6A noted to us: “I like a nurse who works as hard as we (PCTs) do and pulls their weight equally around here. If they have the same idea as me and want to come here and work hard and get the job done, I like that. That's just how I was raised—my generation is like that you know. Nurse17A is just like me in that way.” Nurse17A often emptied bedpans for patients when working with PCT6A even though this was considered to be “PCT work.” The occupational order was by no means overturned. When both Nurse17A and PCT6A were free, PCT6A did the “PCT work.” But, when PCT6A was busy, Nurse17A often helped by performing this lower status work:

It’s 3:20 AM. PCT6A is busy with a patient and Nurse17A responds to a call light where the patient asks to go to the bathroom. Nurse17A heads into the room saying, “How are you doing chief? ...Do you have to urinate?” and begins to ready the bedpan. PCT6A comes to help as soon as she can and takes over for Nurse17A, who then leaves the room.

In addition to drawing on shared social identities to perform tasks across jurisdictional boundaries, nurses and PCTs used the broadened dyadic toolkit provided by these shared social identities to communicate in non-traditional ways. For example, Nurse44A and PCT10A differed in occupation, but they shared a common identity as young, French-Creole speaking women
from families of Haitian immigrants. In social interactions, Nurse44A and PCT10A frequently spoke in French-Creole and talked about their relatives still in Haiti. They also followed egalitarian communication rules when socializing. For example, PCT10A initiated joking and socializing with Nurse44A, and they frequently touched each other on the shoulders or arms when they spoke, as is customary in Haiti.

When Nurse44A and PCT10A communicated with one another during work interactions, they drew on the social identity of two, equal-in-status Haitians rather than drawing on the social identities of a higher status nurse and a lower status PCT. For example, contrary to occupational communication rules, one evening when PCT10A was with a patient in a “contaminated” room, she initiated an order to Nurse44A (if PCT10A had left the room, she would have needed to put on new gear to re-enter the room):

PCT10A, who is dressed in full contact precaution attire (a disposable one-time-use yellow gown, gloves, and facemask), sticks her head out of a patient room. She calls out to Nurse44A, who is a little bit further down the hallway, “Nurse44A, can you get me some more towels?” Nurse44A replies, “Sure,” and runs to grab PCT10A some towels and brings them to her.

Failed Collaboration across Different Occupational Status on Unit B. In contrast, in Unit B’s consolidated social structure, nurse-PCT dyads did not draw on shared social identities in interactions, and they did not use a broadened dyadic toolkit to facilitate collaboration across occupational differences in status. For example, PCT3B and Nurse1B differed in occupation, race, and immigration-status but both were older. While, on Unit A, many of the nurse-PCT dyads who shared a common identity drew on it so that nurses were more willing to help with “PCT work,” Nurse1B did not help PCT3B with this work because she felt constrained by occupational in-group pressure. She said:

I’m from a generation that was trained in the old school way of doing everything for the patient—toileting, bathing, feeding—stuff the PCTs do now. Sometimes I miss doing
that stuff because you get more time at the bedside, but it doesn’t go over well with the girls here.

Indeed, the in-group pressure on Unit B was so strong that, on occasions when Unit B nurses did perform PCT tasks such as toileting, many demonstrated they knew this was counter-normative behavior by gagging, swatting the air in front of their faces, and plugging their noses.

The consolidated demographics on Unit B also meant that most nurses and PCTs at the dyad level did not share any visible social identities. In these dyads, status differences in race, age, and immigration-status frequently exacerbated occupational status differences. For example, Nurse7B and PCT4B differed not only in occupation, but also in terms of race, age, and immigration-status (Nurse7B identified as white, and was young and US-born while PCT4B identified as black and was an older Jamaican immigrant). One evening, PCT4B informed Nurse7B about a bleeding patient. Nurse7B listened to PCT4B, but did not go check on the patient. Later that evening, PCT4B attempted to handle this issue on her own, even though it was a matter that required assessment by a nurse. She said that she did not feel comfortable speaking up to challenge Nurse7B’s judgment and instead attempted to handle the issue herself. She explained:

I told Nurse7B, and she said it's not very much [blood], but she didn't even come look. But look—it's a lot of blood! She pulls up his Johnny (gown) and there is a large amount of dried blood on his leg as well as a trickle of bright red blood coming from his stomach. PCT4B takes a wash cloth and dries the blood up and finds the source on his stomach saying, “It's still bleeding—fresh blood. I'm gonna need to tape on some gauze.”

Collaboration across Different Occupational Emotion Rules

Successful Collaboration across Different Occupational Emotion Rules on Unit A.

Drawing on shared social identities helped nurses and PCTs relate effectively despite differences in prescribed occupational emotional rules and scripts, and helped them to constructively disagree with one another. For example, Nurse14A and PCT12A differed in occupation and age
(Nurse14A was young while PCT12A was older) but they shared the identity of black immigrants (Nurse14A was a Jamaican immigrant and PCT12A was a Honduran immigrant). They frequently chatted about planning long-awaited vacations home to visit their families abroad and expressed negative emotions such as frustration over their limited number of vacation days and rules regarding how much vacation they could take at once. They also challenged one another’s judgment about strategies for asking their manager for large chunks of time off and contested one another’s ideas in a playful manner by jokingly hitting one another when they disagreed.

When Nurse14A and PCT12A worked together, they drew on this broadened dyadic toolkit of feeling rules for expressing disagreement:

Nurse14A stops us in the hallway, touches PCT12A on the shoulder and says, “You know, we picked up two people in 45.” PCT12A seems confused and says, “What time? 11? It’s not on the paper.” She checks her notes and playfully pushes Nurse14A away, saying, “I don’t have them; they’re not on my paper!” Nurse14A smiles and pushes PCT12A back saying, “No I put them on at 11. You have 45. It’s on the schedule.” PCT12A playfully flicks her wrist and lightly hits Nurse14A on the arm and says, “No you didn’t.” Nurse14A smiles and laughs, “Yes, it’s on the schedule.”

Nurses and PCTs on Unit A also drew on shared social identities to forgive one another for mistakes. For example, Nurse45A and PCT6A differed in occupation and race (Nurse45A identified as white while PCT6A identified as African-American), but they were both older and US-born. They often drew on a broadened set of emotional scripts related to their shared identity as grandmothers who were thrifty shoppers to express emotions such as empathy toward one another in social interactions. For example, Nurse45A and PCT6A frequently sat next to one another in the nursing station clipping coupons during downtime while listening to each other’s problems (particularly related to their grandchildren and to feeling extremely busy with home responsibilities). During these coupon-clipping sessions, they provided one another with emotional support and advice.
They drew on this broadened set of emotional scripts in work interactions with one another. For example, even though nurses were often quick to express negative emotions toward PCTs when PCTs made mistakes, we observed Nurse45A be empathetic and forgiving with PCT6A one evening when PCT6A forgot to take a needed sample:

Nurse45A says to PCT6A, “Remember, we need to guaiac him too (take a sample).” PCT6A sighs and says, “Sorry, next time I will. There was just so much.” Nurse45A laughs and PCT6A laughs as well. Nurse45A says, “Don’t worry about it! Oh, and I did signs on 40 at 10 (took vital signs at 10pm), so don’t worry about that.” PCT6A smiles and replies, “Thanks!”

**Failed Collaboration across Different Occupational Emotion Rules on Unit B.** The consolidated demographics on Unit B did not facilitate nurses and PCTs relating effectively with one another. In fact, perhaps because of the strict enforcement of occupational norms on Unit B, even when Unit B nurse-PCT dyads did share a common identity such as mothers or older workers, we did not observe them drawing on this shared social identity in social or work interactions. For example, PCT2B and Nurse4B differed in occupation, race, immigration-status and age, but they were both mothers. One evening we observed PCT2B, a mother of three, attempt to relate effectively with Nurse4B, who was visibly pregnant with her first child, by talking about her own experience with pregnancy. Nurse4B rejected PCT2B’s attempts by responding with short, one-word answers:

PCT2B says to Nurse4B, who is seven-months pregnant with her first child: “My first used to kick me all the time at work. Does yours do that?” Nurse4B replies, “What? No.” Nurse4B quickly changes the subject and asks PCT2B whether a patient’s blood sugar has been taken yet.

While Nurse4B did not talk with PCT2B about her pregnancy, we observed Nurse4B talk at length to other nurses about it.

In addition to promoting negative dynamics between nurses and PCTs who shared visible social identities, the consolidated demographics on Unit B also meant that most nurse-PCT dyads
shared no visible social identities. In these dyads, the differences in emotion rules stemming from different non-occupational social identities exacerbated differences stemming from occupational identities. For example, Nurse37B and PCT18B differed in race, age and immigration-status. In addition to drawing on different occupational feeling rules, Nurse37B and PCT18B also drew on different feeling rules related to their non-occupational social identities. One evening PCT18B shared with us that, a few nights earlier, Nurse37B had left her mid-way through cleaning a patient right before the shift change so that PCT18B had to stay late to finish on her own. PCT18B explained that she hadn’t expressed her annoyance to Nurse37B, in part, because she was concerned about being labeled as having an “attitude” (a term associated with negative racial stereotypes for blacks) and being retaliated against:

(Did you say anything to Nurse37B?) You know me, I cooperate. I act like nothing happened. I never let her know. I didn't tell her because that would lead to more issues. She’d say I have an “attitude” if I tried fighting back.

**Collaboration across Different Occupational Meanings**

**Successful Collaboration across Different Occupational Meanings on Unit A.** Many nurses and PCTs on Unit A were able to successfully collaborate with one another by drawing on a broader cultural toolkit of shared meanings afforded by a common social identity at the dyad level. Drawing on these shared social identities helped nurses and PCTs respect one another’s beliefs and values. For example, Nurse9A and PCT21A were similar in age but differed in occupation, race, and immigration-status (Nurse9A was an Indian immigrant while PCT21A was a US-born, white woman). But, they had found the non-visible identity of mother to help frame their interactions with one another. They frequently talked about their children, and they often shared parenting philosophies, such as the importance of doing reading and writing exercises with their children at home in addition to sending them to pre-school, even though their children’s pre-school teachers didn’t consider these exercises to be age-appropriate. Nurse9A
and PCT21A’s demonstrated appreciation of one another’s beliefs and values about parenting sometimes spilled over into their work interactions, where we saw them indulge and appreciate one another’s occupation-related beliefs and values. For example, one evening, PCT21A explained her belief about speaking kindly to a comatose patient to Nurse9A, and Nurse9A, though initially not understanding, proceeded to go along with PCT21A, changing her interaction with the patient to suit PCT21A’s preferred style:

Nurse9A and PCT21A head over to room 75. PCT21A brightly greets the patient and says, “Hi Christopher!” Nurse9A looks at PCT21A quizzically and says, “He doesn’t respond. He’s completely dependent—a veggie.” PCT21A replies confidently, “I know but I like to say hi anyway.” PCT21A continues (to the patient), “We’re gonna reposition you now.” Nurse9A begins to copy PCT21A’s interaction style and says softly and sincerely, “Hi Christopher! I’ll clean your mouth, ok?” PCT21A and Nurse9A continue to talk to the patient as if he were sentient while they clean and change him.

Drawing on shared social identities also helped nurses and PCTs on Unit A adjust their demeanor to suit one another’s preferred patient interaction style. For example, Nurse72A and PCT26A were members of different occupations but they were both young, white locals. In their social interactions with one another, they often shared stories of their weekend escapades and drew on the common demeanor of young partiers as they assertively joked with one another. When interacting with Nurse72A, PCT26A often acted counter to the occupationally prescribed reserved and quiet PCT demeanor:

Nurse72A asks PCT26A, “How was your weekend? Did you end up going to that party?” PCT26A replies, “My weekend was good. I ended up staying out last night way later than I wanted to... I didn’t get home until 3 but I slept in.” Nurse72A laughs and then holds up in the air a plastic bag containing three pairs of underwear (which a discharged patient left behind in her room). She gestures toward PCT26A and jokes, “Are those yours? Do you want some new underwear?” PCT26A jokes back, “No, you should take them since you’re probably not wearing any.” They both laugh.

When Nurse72A and PCT26A worked together, they drew on this broadened set of demeanors to act assertively toward patients. For example, while the PCT occupational
demeanor prescribed acting reserved with patients when in front of nurses, we saw PCT26A openly joke with patients in Nurse72A’s presence:

We head into the room of a new admission to take vital signs. Nurse72A is in the room introducing herself to the patient saying, “My name is Nurse72A and I’ll be your nurse... (she sees PCT26A come in) and this is PCT26A. She's working with me.” PCT26A greets the patient warmly saying, “How are you tonight?” The patient replies, “I'm great, thanks.” PCT26A jokes back saying, “Then why are you here?” Nurse72A laughs and the patient replies, “Well I guess I could be better.” Everyone laughs.

Failed Collaboration across Different Occupational Meanings on Unit B. While the cross-cutting demographics on Unit A promoted intergroup dynamics that facilitated the use of shared social identities that helped nurses and PCTs collaborate across occupational differences in meanings, the consolidated demographics on Unit B did not. For example, PCT18B and Nurse23B differed in occupation, race, and immigration-status but both were older. While, on Unit A, we observed many nurse-PCT dyads draw on a shared social identity like age to judge the actions of members of the other group as appropriate even though doing so ran counter to traditional occupational meanings, we did not observe PCT18B and Nurse23B do this. Being older was a devalued identity in this context and, on Unit B, the immediately visible association between occupational position, on the one hand, and race, age, and immigration-status, on the other, activated the use of common negative stereotypes about traditionally devalued social identities. Perhaps for this reason, Nurse23B did not connect with PCT18B over this shared identity:

Nurse23B stands at the outside of the nursing station and stretches her back. PCT18B notices her and says, “My back hurts too. Guess we’re just getting old!” Nurse23B appears caught off guard, and as the other nurses turn to look at her, Nurse23B replies curtly, “My back is fine. You’re only as old as you feel.”

On Unit B, occupational meaning differences were also intensified by differences in cultural beliefs and values and identity-appropriate demeanors that stemmed from differences in visible social identities. For example, Nurse8B and PCT4B differed not only in occupation, but
also in race, age, and immigration-status. Nurse8B had grown up in the Northeast where the ethic of a fast-paced life oriented around efficiency was the norm, while PCT4B had spent more of her life in Jamaica, which she described as having a slower pace of life and as valuing relationships. PCT4B often interpreted Nurse8B’s quick pace as typical of “work-obsessed” Americans, and said she refused to let herself be rushed when Nurse8B was working rapidly to accomplish certain tasks: “People here (in the US) don’t know how to relax. Where I come from, it’s not like that. You know I work hard. But there’s no need to act like that (she points to Nurse8B who just ran by us, sighing and calling out behind her to another nurse). While PCT4B had difficulty appreciating Nurse8B’s demeanor, Nurse8B likewise had difficulty appreciating PCT4B’s “Jamaican” demeanor at work:

Nurse8B says to me, “I’m gonna page PCT4B. It will probably take her like 10 minutes to get in there (she rolls her eyes as she speaks). She goes over to the call light computer and sends her a text page that reads, “New admit in 9. Can you do (vital) signs?”

**Collaboration across Different Occupational Expertise**

**Successful Collaboration across Different Occupational Expertise on Unit A.** Finally, many of the nurse-PCT dyads on Unit A drew on broader toolkits of expertise afforded by a shared social identity, despite the fact that nurses relied primarily on computerized information while PCTs relied primarily on sensory information to do their work. For example, Nurse17A and PCT2A differed in race and age (Nurse17A identified as white and was older while PCT2A identified as black and was younger). But both were born in the US, and they shared social identities of locals who were raised in the surrounding area and were avid fans of their city’s sports teams. In their social interactions with one another they often discussed highlights from recent games and shared player statistics and their own feel for their team’s chances of beating rival teams and advancing to the playoffs. During these exchanges, Nurse17A and PCT2A often went to the computer to find out game updates. PCT2A acted outside of the bounds of PCT
occupational norms by using the computer, but the cross-cutting demographics on Unit A weakened occupational in-group pressure and PCT2A and Nurse17A appeared unconcerned about being sanctioned for their behavior; they were quite vocal in front of other nurses and PCTs about going to the computer to check scores.

When Nurse17A and PCT2A engaged in work interactions, they drew on the same routines they used for sharing information about player statistics and how their teams were performing. For example, one evening, Nurse17A asked for PCT2A’s sensory information about how a patient had been breathing the evening before, and Nurse17A shared with PCT2A some computerized nursing information and explained the medical reasoning around a care decision:

Nurse17A and PCT2A roll the patient so Nurse17A can assess his skin. ... The patient begins to wheeze violently. Nurse17A looks concerned and asks PCT2A, “Did he get like this yesterday?” PCT2A, “Yes, he was just like this.” Nurse17A tries to soothe the patient and listens again to his throat with the stethoscope. Nurse17A then says to PCT2A, “I think I’m going to get a humidifier for him, to help loosen the secretions in his throat.” PCT2A replies, “I think that’s a good idea.” Nurse17A adds, “And I checked the computer earlier, and he is at risk for a seizure, so he should have a green pad.”

Nurses and PCTs also drew on common social identities to share expertise despite differences in occupational knowledge bases on Unit A. For example, Nurse24A and PCT12A differed in race, age, and immigration-status, but we saw them use their common, non-visible identity of working mother to help frame their interactions. Nurse24A was a new mom and PCT12A was the mother of two older boys. In their social interactions with one another, Nurse24A often asked for advice about taking care of a newborn and PCT12A often provided Nurse24A with advice about being a working mom. In these interactions, they discussed both abstract expertise (e.g., different theories of mothering) and idiosyncratic, child-specific expertise (how to help this particular baby sleep):

PCT12A is sitting in the nursing station. Nurse24A comes by and pulls out her smartphone with the latest photos of her 5-month old son. PCT12A smiles and says, “He is so cute... but you are looking tired, mama.” Nurse24A replies, “I know—I am getting
no sleep. I know I should just let him cry, but I can’t. What if he really needs something? Did you let your kids just cry when they wouldn’t sleep?” PCT12A replies, “You have to. They’ll learn to go to sleep when you go, but you have to just let them alone. You’ll see; it will be okay.” Nurse24A: “I know you’re right.” PCT12A: “What does he do when you’re at work like tonight? You’re a working mama. He will adjust—my kids did.”

Since nurses privileged abstract, formal knowledge of diseases, medications and lab results in guiding their decision making, they often considered PCTs’ knowledge to be irrelevant. However, Nurse24A and PCT12A’s expertise-sharing routines around being working mothers carried over into work interactions where Nurse24A expressed interest in PCT12A’s occupational knowledge and expertise. For example, one evening, Nurse24A asked for PCT12A’s patient-specific expertise around a patient PCT12A had just attended to. And, Nurse24A shared with PCT12A her abstract expertise on interpreting this patient’s unusual behavior, even though most nurses did not spend time teaching PCTs the medical rationale behind their work:

Nurse24A and I leave the room and pass PCT12A, who had just attended to the bed alarm on a shared patient. Nurse24A says to PCT12A, “How is he? Is he acting up?” PCT12A says, “He’s confusing me. He says he wants to eat. So I ask him what he wants to eat and he says he wants a sandwich but now he’s saying no to a sandwich and he said he lost $50 and has to go get it.” Nurse24A replies sympathetically, “Well he came in drunk. The most dangerous thing having to do with withdrawal is withdrawing from alcohol, that’s why we have to keep watching him.”

**Failed Collaboration across Different Occupational Expertise on Unit B.** The consolidated social structure on Unit B prevented nurses and PCTs from drawing on non-occupational social identities to share expertise with one another across occupation-specific bodies of knowledge, sources of information, and patient-care skills. For example, PCT22B and Nurse11B differed in occupation, race, age, and immigration-status. Based on private conversations with them we knew they shared a common social identity as mothers of two boys, but they never discovered this commonality to our knowledge, perhaps because of the strong levels of dislike between occupational groups on Unit B. For example, one night Nurse11B
asked every nurse what type of frozen yogurt they wanted to order in, but did not ask PCT22B or any of the other PCTs working nearby.

The lack of cross-cutting demographics on Unit B not only promoted negative dynamics between nurses and PCTs at the unit-level, but also meant nurses and PCTs at the dyad level rarely shared visible social identities. Differences in occupational expertise were magnified by differences in cultural knowledge, proficiency with information technology, and assumptions about skills which stemmed from differences in race, immigration-status and age in addition to differences in occupation. For example, Nurse39B and PCT3B differed not only in occupation, but also in race, age, and immigration-status. Their occupational differences in fluency with computerized information were exacerbated by differences in life experience with computers which stemmed from their other differing non-occupational social identities. As a young, upper-middle class woman, Nurse39B had grown up with computers, owned a personal computer, and was extremely adept at using computers for work and leisure. In contrast, PCT3B had come from a farming family in Liberia before immigrating to the US and had never owned a computer.

One evening, Nurse39B related to us that she did not see the value in meeting to share information with PCT3B since “PCT3B can just check the computer.” Later that evening, we saw PCT3B trying to access Huron’s electronic patient management portal to review the basic care information on her patients. But, she had difficulty doing so (in part because the portal underwent multiple major updates during the course of the study). Giving up on accessing the computer to find out a new patient’s restrictions on taking blood pressure, PCT3B went to see the patient and asked him to tell her the arm on which he preferred to have his blood pressure taken. He said the left arm, and she began checking his blood pressure. Nurse39B came in, gasped, and said in an annoyed tone of voice, “PCT3B! Can you use the other arm? The IV is in
this one.” PCT3B replied calmly, “I know, but he told me this arm and I listen to them.” Nurse39B’s eyes got big and she huffed out a puff of air. Ignoring PCT3B, she turned to the patient and said, “PCT3B will take your blood pressure and I’ll be back.”

ADDRESSING ALTERNATIVE EXPLANATIONS
In sum, we argue that cross-cutting demographics between occupational groups on Unit A generated intergroup dynamics that loosened the occupational status and identity order. This created space for members of cross-occupational dyads to collaborate successfully by drawing on a shared social identity in their interactions with one another. However, there are other potential explanations for the successful cross-occupational collaboration we observed on Unit A. We address below two key alternatives—unit-wide culture and individual personality characteristics—and address additional alternative explanations in the Online Appendix.

First, can the successful cross-occupational collaboration on Unit A and its failure on Unit B be explained by unit-wide differences in culture or selection and retention processes? If this were so, we would have expected to see all nurse-PCT dyads on Unit A engage in successful cross-occupational collaboration, and we did not. Even though Unit A’s social structure was characterized by cross-cutting demographics, there were a handful of nurse-PCT dyads who did not collaborate well because they did not share or discover a social identity that enabled sufficiently strong identification to overcome their other differences. Two of these six dyads had no visible common social identity in race, age, or immigration-status; their life experiences stemming from their other social identities were extremely different and did not provide any common platforms for shared identification. The other four dyads on Unit A who did not collaborate well with one another did share at least one visible common social identity—one shared an immigrant identity (but differed in age and race), one shared an age identity (but differed in race and immigration-status), one shared a racial identity (but differed in age and
immigration-status), and one shared both age and racial identities (but differed in immigration-status). In each case, the dyad either had so many other social identities that differed (e.g., marital status, ethnicity, motherhood status, country of origin) that it was difficult for one commonality to overcome all their other differences and create a sufficient bridge across occupations, or their shared identity was not experienced as truly shared and so did not provide a sufficient platform for identification and connection (e.g., in one dyad, both members were “black” but had different ethnicities—one was African and one was African American, and they experienced their racial identities differently).

Second, was it individual personality characteristics that drove the uncollaborative interactions between these nurses and PCTs? Our data suggest that this is not the case. We observed members of each of these six Unit A dyads have successful social and working relationships with other nurses and PCTs with whom they drew on shared non-occupational social identities. For example, PCT2A and Nurse7A did not share or discover a common social identity and did not collaborate well with one another. However, they were each able to collaborate well with other staff with whom they had identified a shared social identity. PCT2A collaborated well with Nurse17A, Nurse18A, and Nurse5A, while Nurse7A collaborated well with PCT17A and PCT12A.

DISCUSSION

Cross-Cutting Demographics and Dyadic Toolkits

We use these findings to introduce the new concept of dyadic toolkits and to add to the current understanding of cross-cutting demographics. Differences in occupational status rules, emotional scripts, meanings, and expertise made it difficult for nurses and PCTs at Huron hospital to collaborate with one another even though the hospital had provided organizational collaboration tools for them to do so. However, the cross-cutting demographics on Unit A
facilitated nurse-PCT dyad use of shared, non-occupational social identities in their interactions with one another. Using their shared social identities to guide their interactions broadened the dyadic toolkits available to these nurses and PCTs and allowed them to successfully work with one another across occupational differences (Figure 1).

Unit A was characterized by a social structure in which occupational status was uncorrelated with demographic characteristics, meaning those who occupied a high level position in the occupational hierarchy (nurses) frequently did not possess only high status social identities (e.g., white, younger, US-born) and members who occupied a low level position in the occupational hierarchy (PCTs) frequently did not possess only low status social identities (e.g., non-white, older, non-US-born). The cross-cutting demographics on Unit A promoted three kinds of intergroup dynamics between nurses and PCTs: 1) the valuing of traditionally devalued identities, 2) low occupational in-group pressure, and 3) feelings of intergroup comfort and liking even among members who did not share visible demographic characteristics.

These intergroup dynamics loosened the occupational identity and status order on Unit A, thereby creating space for nurse-PCT dyads to draw on a shared social identity to guide their interactions with one another. Even though most dyads on Unit A differed on at least one visible demographic characteristic, most of these dyads drew on a shared identity in their interactions with one another. This shared identity provided them with a broadened dyadic toolkit which they used to successfully collaborate with one another across occupational differences.

On Unit B, in contrast, the consolidated demographics (the visible association between occupational position on the one hand, and race, age, and immigration-status on the other) activated the use of common negative stereotypes about traditionally devalued identities, led to strong occupational in-group pressure, and fostered discomfort and disliking between
occupational groups. Because nurses and PCTs on Unit B did not draw on shared social identities in interactions, they were not able to use broadened dyadic toolkits to collaborate across occupational differences. Indeed, the many differences in social identities between nurses and PCTs on Unit B exacerbated their occupational differences and led to poor collaboration.

These findings about cross-cutting demographics and dyadic toolkits contribute to both the literature on cross-occupational collaboration and the literature on demography and intergroup relations.

**Contributions to Our Understanding of Cross-Occupational Collaboration**

We make three contributions to the literature on cross-occupational collaboration. First, in terms of barriers to successful cross-occupational collaboration, prior studies have shown that differences in occupational status, meanings, and expertise make it difficult for members of different occupations to collaborate. The findings presented here demonstrate that cross-occupational collaboration difficulties can stem not only from occupational differences but also from demographic differences. In other words, the current literature may be overstating the occupational character of cross-occupational collaboration difficulties and understating their demographic character. Despite the long history of documenting the impact of demography in single occupations in the sociology of work and occupations literature (e.g., Turco, 2010; Blair-Loy, 2001; Vallas, 2003; Cech, Rubineau, Silbey, and Seron, 2011), no studies (to our knowledge) investigate the impact of demography on collaboration between members of different occupational groups. Demographic information is typically either not reported or not theorized about by cross-occupational collaboration scholars, even though demography may have shaped the collaboration they observed. For example, we are never told the demographic characteristics of occupational groups in the cross-occupational collaboration between Barley’s (1986) radiologists and technicians or Faraj and Xiao’s (2006) trauma team members. And,
while Kellogg, Orlikowski, and Yates (2006) and Bechky (2003a) refer to the demographic differences among members of the different occupations they study, they do not investigate the implications of these demographic differences for cross-occupational collaboration. Our findings suggest that previous studies may be attributing more to occupational differences than may be justified. We find that, in consolidated social structures (which occur frequently given strong occupational clustering by race, gender, age, and immigration-status), dyad-level differences in status rules, emotion rules, meanings, and expertise stemming from different non-occupational social identities can exacerbate differences in occupational identities.

Second, in terms of when successful cross-occupational collaboration can occur, the current literature demonstrates that it can occur when members have access to organizational tools provided by top managers such as rules and routines, boundary objects and representational tools, and common spaces (see Okhuysen and Bechky, 2009, for a review). However, even when such tools are available, collaboration often fails as members of higher status occupations use these very tools to enforce occupational boundaries to protect their privilege (Bechky, 2003a). Since nurses and PCTs on both units had access to the same rules and routines, boundary objects, and common spaces but collaborated differently, our research shows that the use of such collaboration tools to overcome or reinforce boundaries can be shaped by the degree of cross-cutting demographics in the social structure. Cross-cutting demographics at the unit level promote particular intergroup dynamics that loosen the occupational identity and status order and create the space for members of different occupational groups to draw on a shared social identity at the dyad level.

Third, in terms of how successful cross-occupational collaboration occurs, the current literature shows that it occurs when members use organizational tools to facilitate the negotiation
of status, translation of meanings, and communication of expertise across occupational boundaries (e.g., Bechky, 2003b; Kellogg, Orlikowski, and Yates, 2006). Our findings show that successful collaboration can also occur when members of different occupational groups draw on a shared non-occupational social identity that broadens their dyadic toolkit. This dyadic toolkit provides them with alternative status rules that allow them to successfully negotiate tasks and communicate across occupational differences in status, alternative emotional scripts that allow them to express disagreement and forgiveness with one another, alternative beliefs, values, and demeanors that allow them to understand and appreciate one another’s actions, and alternative bodies of knowledge, information, and skills that allow them to share occupation-specific expertise. In some ways, our finding about the importance of a shared social identity is akin to Bechky’s (2003b) finding about the importance of “common ground” to cross-occupational collaboration. However, while Bechky’s design engineers, technicians, and assemblers found common ground by coming into one another’s physical spaces, our nurses and PCTs found common ground by drawing on a shared, non-occupational identity in interactions.

Contributions to our Understanding of Demography and Intergroup Relations

This paper also makes several contributions to our understanding of demography and intergroup relations. First, in terms of the effects of demography, demography scholars have shown that occupational demography matters for individual outcomes such as members’ experience, access to advancement, and equity with regards to pay and other privileges (e.g., Tomaskovic-Devey, 1993; Fernandez and Fernandez-Mateo, 2006). We demonstrate that occupational demography also matters for organizational outcomes such as cross-occupational collaboration. Cross-cutting demographics promote positive identification experiences that provide dyads with an expanded toolkit of status rules, emotional scripts, meanings, and expertise to help them overcome occupational differences to successfully collaborate.
Second, in terms of how cross-cutting demographics promote positive intergroup relations, scholars of demography and intergroup relations have shown that cross-cutting demographics facilitate three psychological processes: the valuing of traditionally devalued identities because of the proportional representation of low status group members in high status positions (Ely, 1994; Ely, 1995), low in-group pressure because of a high degree of intersecting group affiliations that exert diverse and often counteracting identity pressures (e.g., Blau and Schwartz, 1984), and intergroup liking and trust via direct and indirect effects of homophilous cross-group interactions (e.g., Pettigrew and Tropp, 2006). We find that these psychological processes loosen the traditional identity and status order and create space for intergroup dyads who share a visible identity to draw on it in interactions. We also find that, for dyads who do not share a visible identity, the loosening of the traditional identity and status order creates space for them to discover a common, non-visible identity such as mother, sports fan, or grandmother that can serve as a source of connection, identification, and ultimately, collaboration.

Third, in terms of when intergroup contact facilitates positive intergroup relations, the current literature suggests that this occurs under a particular set of conditions—when the two groups are equal in status, when authorities support interaction between the two groups, when the groups share a superordinate goal (Allport, 1954), when the groups share a view of the teams’ learning environment as supportive (Ely, Padavic, and Thomas, 2012; Foldy, Rivard and Buckley, 2009), and when the groups share a perspective on workforce diversity in which cultural differences are valued (Apfelbaum, Sommers, and Norton, 2012; Ely and Thomas, 2001). The findings presented here demonstrate that positive intergroup dynamics can result even when the two groups are unequal in status (e.g., occupation) as long as there are cross-
cutting demographics so that other status-laden characteristics are equally distributed between groups.

**Future Research**

These findings raise several questions for future research. First, we have advanced a model of how cross-occupational dyads can use the dyadic toolkits provided by their shared social identities to successfully collaborate with one another, but we were not able to model the process by which dyads come to find these shared social identities. On Unit A, even dyads with no visible, common demographic characteristic often used a shared, non-visible identity such as mother, sports fan or grandmother to help frame their interactions. Future research could gather longitudinal data on cross-occupational dyads from when they first encounter one another to map the process by which dyads discover shared social identities.

Second, we show that cross-occupational dyads may fail to collaborate successfully even when they both work within a social structure with cross-cutting demographics and share a visible social identity. We suggest this happens when the dyads do not experience their common identities as truly shared or because there are too many other differences to overcome for the commonality to create a sufficient bridge. This is consistent with research on intersectionality which shows that it is imperative to examine all the ways different social identities interact. For example, important variation is missed when scholars lump together all “black people” without considering how their other social identities, such as age, nationality, gender or immigration-status, affect cognition and action (Collins, 1998; Acker, 2006; Holvino, 2010; Vallas and Cummins, 2013). However, since we only observed a handful of these cases of failed cross-occupational collaboration among dyads working in a social structure with cross-cutting demographics who share a visible social identity, we were not able to fully explore the mechanisms associated with their failure. For example, with our data, we cannot rule out the
possibility that these dyads failed to collaborate because of interpersonal issues or conflict within
the dyad rather than from identity differences. Future research could investigate these
mechanisms.

The implications of this research are clear, if difficult for organizations to accomplish. On
the one hand, our findings demonstrate that top managers who want to promote cross-
occupational collaboration should consider constructing a cross-cutting social structure so that
cross-occupational dyads can broaden their dyadic toolkits and use them to work across
occupational differences. On the other hand, in practice, given strong occupational clustering by
race, gender, age, and immigration-status, it may be difficult for top managers to do this. Thus, to
promote cross-occupational collaboration, top managers may need to use innovative selection
strategies not merely to attract occupation members with varying demographic characteristics,
but also to ensure they are evenly distributed across different areas and levels of their
organizations. The prescription here is not for top managers to “increase diversity” in general,
but for them to attend to issues of status and hierarchy by creating organizations with cross-
cutting demographics.

In sum, one of the great challenges associated with asking members from different
occupations to collaborate with one another is that differences in status, meanings, and expertise
across occupational groups make such collaboration difficult to accomplish. We demonstrate that
a social structure with cross-cutting demographics can create space for cross-occupational dyads
to draw on shared social identities to guide their interactions with one another. By drawing on
shared social identities, members can broaden their dyadic toolkits of status rules, emotional
scripts, meanings, and expertise and collaborate successfully across occupational differences. By
actively building a social structure with cross-cutting demographics, top managers in
organizations can facilitate the use of broadened dyadic toolkits and enable the successful cross-
occupational collaboration they strive so hard to achieve.
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<thead>
<tr>
<th></th>
<th>Unit A</th>
<th>Unit B</th>
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<tbody>
<tr>
<td><strong>Unit Type</strong></td>
<td>Medical-Surgical Unit</td>
<td></td>
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<tr>
<td><strong>Patient Mix</strong></td>
<td>Medical and surgical patients</td>
<td></td>
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<tr>
<td><strong>Staff-to-Patient Ratios</strong></td>
<td>1 nurse per 6 patients and 1 PCT per 12 patients</td>
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<tr>
<td><strong>Technology</strong></td>
<td>Same call light phone and pager technology systems</td>
<td></td>
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<tr>
<td><strong>Procedures</strong></td>
<td>Same protocols and procedures</td>
<td></td>
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<tr>
<td><strong>Collaboration tools</strong></td>
<td>Same rules and routines, boundary objects and representational tools, and common spaces (e.g., nursing station, medication room, supply room, break room)</td>
<td></td>
</tr>
<tr>
<td><strong>Reporting Structure</strong></td>
<td>Nurses and PCTs report to Unit Nurse Manager; Unit Nurse Managers not present during overnight shift; however, a rotating overnight manager covered both units.</td>
<td></td>
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<tr>
<td><strong>Hiring Practices</strong></td>
<td>Open positions posted on online site; Managers hire; Most nurses and PCTs blind on what co-workers will be like</td>
<td></td>
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<tr>
<td><strong>Unit Manager</strong></td>
<td>White, US-born women in 50s, ~4-5 year tenure</td>
<td></td>
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<tr>
<td><strong>Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>24 beds</td>
<td>36 beds</td>
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<tr>
<td><strong>Utilization</strong></td>
<td>Run at full capacity</td>
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Table 2: Occupational Differences between Nurses and PCTs at Huron

<table>
<thead>
<tr>
<th>Different Occupational Status</th>
<th>Nurses</th>
<th>PCTs</th>
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<tbody>
<tr>
<td>Occupational tasks</td>
<td>Administrative and clinical work</td>
<td>Dirty work (e.g., changing bedpans)</td>
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<tr>
<td>Occupational communication rules</td>
<td>Order giving and speaking up</td>
<td>Order taking and not speaking up</td>
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<table>
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<tr>
<th>Different Occupational Emotion Rules</th>
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<tbody>
<tr>
<td>Occupational feeling rules for expressing negative emotions with other staff members</td>
<td>Expressing negative emotions with nurses and PCTs</td>
<td>Suppressing negative emotions with nurses</td>
</tr>
<tr>
<td>Occupational feeling rules for expressing positive emotions with other staff members</td>
<td>Expressing positive emotions only with other nurses</td>
<td>Expressing positive emotions only with other PCTs</td>
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<thead>
<tr>
<th>Different Occupational Meanings</th>
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<th></th>
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<tbody>
<tr>
<td>Occupational beliefs &amp; values</td>
<td>Best Nurse: “OCD;” conscientious and accurate</td>
<td>Best PCT: “Angel;” treats patients like family</td>
</tr>
<tr>
<td>Occupational demeanor</td>
<td>Assertive and efficient with patients</td>
<td>Empathetic and attentive with patients</td>
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<tr>
<th>Different Occupational Expertise</th>
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<tbody>
<tr>
<td>Occupational knowledge bases</td>
<td>Abstract knowledge</td>
<td>Patient-specific knowledge</td>
</tr>
<tr>
<td>Occupational skills and information</td>
<td>Computer skills and information</td>
<td>Sensory skills and information</td>
</tr>
<tr>
<td></td>
<td>Unit A</td>
<td>Unit B</td>
</tr>
<tr>
<td>-----------------------------------------------------------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Nurses helping with “PCT tasks” when PCTs busy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Number of instances when a patient needed help with a “PCT task,” but PCTs were busy so nurses helped</td>
<td>84</td>
<td>15</td>
</tr>
<tr>
<td>• Total number of instances when a patient needed help with a “PCT task,” but PCTs were busy</td>
<td>90</td>
<td>153</td>
</tr>
<tr>
<td>• Percentage of instances when nurses helped</td>
<td>93%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Promptly answering patient bedside calls for help</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Number of promptly answered patient calls to the nursing station</td>
<td>119</td>
<td>85</td>
</tr>
<tr>
<td>• Total number of patient calls to nursing station</td>
<td>127</td>
<td>190</td>
</tr>
<tr>
<td>• Percentage of promptly answered patient calls</td>
<td>93%</td>
<td>45%</td>
</tr>
<tr>
<td><strong>Promptly attending to telemetry (heart monitor) alarms</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Number of observational sessions when telemetry alarms were promptly attended to</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>• Total number of observational sessions</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>• Percentage of sessions when telemetry alarms were promptly attended to</td>
<td>90%</td>
<td>24%</td>
</tr>
<tr>
<td><strong>Patient comments on responsiveness of their care</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Number of observational sessions when patients did not complain about responsiveness of care</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>• Total number of observational sessions</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>• Percentage of sessions in which patients did not complain about responsiveness of care</td>
<td>86%</td>
<td>38%</td>
</tr>
</tbody>
</table>

*These outcomes were selected because they directly or indirectly resulted from the quality of nurse-PCT collaboration. Totals were calculated using data collected from all 42 observational sessions. Responding promptly to a patient call is defined as a nurse or PCT answering the nursing station call light phone and speaking to the calling patient to find out what they need within the first few minutes of it ringing vs. ignoring the call and letting it ring off the hook for extended periods of time, typically until a PCT (or nurse) was free to answer it. Total patient calls includes some patients who called multiple times when their calls were ignored. Promptly attending to telemetry (heart monitor) alarms during an observational session is defined as a session in which telemetry alarms were generally responded to within the first few minutes by a nurse or PCT. On Unit B, there were many sessions in which telemetry alarms sounded nearly the entire observational session.
Table 4: Demographic Composition of Units A and B Night Shift Staff

<table>
<thead>
<tr>
<th></th>
<th>Unit A</th>
<th></th>
<th>Unit B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall</td>
<td>Nurses</td>
<td>PCTs</td>
<td>Overall</td>
</tr>
<tr>
<td>Caucasian</td>
<td>44%</td>
<td>53%</td>
<td>25%</td>
<td>69%</td>
</tr>
<tr>
<td>Non-Caucasian (Hispanic,</td>
<td>56%</td>
<td>47%</td>
<td>75%</td>
<td>31%</td>
</tr>
<tr>
<td>African American/Black, Asian)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young (20s or 30s)</td>
<td>56%</td>
<td>59%</td>
<td>50%</td>
<td>74%</td>
</tr>
<tr>
<td>Older (40s and over)</td>
<td>44%</td>
<td>41%</td>
<td>50%</td>
<td>26%</td>
</tr>
<tr>
<td>US-born</td>
<td>52%</td>
<td>53%</td>
<td>50%</td>
<td>71%</td>
</tr>
<tr>
<td>Non-US-born</td>
<td>48%</td>
<td>47%</td>
<td>50%</td>
<td>29%</td>
</tr>
<tr>
<td>Total Number of Staff</td>
<td>25</td>
<td>17</td>
<td>8</td>
<td>35</td>
</tr>
</tbody>
</table>
Figure 1: Cross-Cutting Demographics, Dyadic Toolkits, and Cross-Occupational Collaboration

Cross-Cutting Demographics in Workgroup Create Space for Use of Non-Occupational Social Identities
- Positive view of traditionally devalued identities
- Low occupational in-group pressure
- High degree of liking and comfort between groups

Drawing on Shared Social Identities Expands Dyadic Toolkits and Facilitates Collaboration Across Occupational Differences
- Negotiating tasks and communicating using an expanded set of status rules
- Relating using an expanded set of emotional scripts
- Understanding one another's actions using an expanded set of meanings
- Sharing knowledge using an expanded set of expertise

Positive Patient Care Outcomes
- Fewer unmet patient needs
- Fewer ignored patient calls
- Fewer ignored heart monitor alarms
- Fewer patient complaints

Consolidated Demographics in Workgroup Discourage Use of Non-Occupational Social Identities
- Negative view of traditionally devalued identities
- High occupational in-group pressure
- Low degree of liking and comfort between groups

Differences in Non-Occupational Social Identities Exacerbate Dyadic Differences and Impede Cross-Occupational Collaboration
- Failing to negotiate tasks and communicate across status differences
- Failing to relate across differences in emotional scripts
- Failing to understand one another's actions across differences in meanings
- Failing to share knowledge across differences in expertise

Negative Patient Care Outcomes
- More unmet patient needs
- More ignored patient calls
- More ignored heart monitor alarms
- More patient complaints

Same organization
Same cross-occupational challenges
Same organizational collaboration tools

Positive Patient Care
Outcomes

Negative Patient Care
Outcomes

Same organization
Same cross-occupational challenges
Same organizational collaboration tools

Cross-Cutting Demographics in Workgroup Create Space for Use of Non-Occupational Social Identities
- Positive view of traditionally devalued identities
- Low occupational in-group pressure
- High degree of liking and comfort between groups

Drawing on Shared Social Identities Expands Dyadic Toolkits and Facilitates Collaboration Across Occupational Differences
- Negotiating tasks and communicating using an expanded set of status rules
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Positive Patient Care Outcomes
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Differences in Non-Occupational Social Identities Exacerbate Dyadic Differences and Impede Cross-Occupational Collaboration
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- Failing to relate across differences in emotional scripts
- Failing to understand one another's actions across differences in meanings
- Failing to share knowledge across differences in expertise

Negative Patient Care Outcomes
- More unmet patient needs
- More ignored patient calls
- More ignored heart monitor alarms
- More patient complaints
REFERENCES

Abbott, A.

Acker, J.

Allport, G.

Anteby, M.


Apfelbaum, E. P., Norton, M. I., and S.R. Sommers

Bailey, D. E., P. M. Leonardi, and J. Chong

Bailyn, L.

Barley, S.


Barley, S. R., and B. A. Bechky


Barley, S. R., and G. Kunda


Barley, S. R., and P. S. Tolbert


Bechky, B. A.


Becker, H. S.

Bendersky, C. and N. Hays

Blair-Loy, M.

Blau, P. M., and J. E. Schwartz

Blumer, H.

Byrne, D. E.

Carlile, P. R.


Cech, E., Rubineau, B., Silbey, S., and C. Seron

Cole, J.

Collins, P. H.

Dougherty, D.

Ely, R. J.


Ely, R. J., and D. A. Thomas


Faraj, S., and L. Sproull


Faraj, S., and Y. Xiao


Feldman, M. S.

2000 "Organizational routines as a source of continuous change." Organization Science: 611-629.

Feldman, M. S., and B. T. Pentland


Fernandez, R. M., and I. Fernandez-Mateo


Foldy, E. G., Rivard, P., and T.R. Buckley

2009 "Power, safety and learning in racially diverse groups." Academy of Management Learning and Education, 8: 25-41.

George, E., P. Chattopadhyay, and L. L. Zhang

Glaser, B., and A. Strauss


Goffman, E.


Heimer, C.


Hogg, M. A., and D. J. Terry


Holvino, E.


hooks, b.


Kellogg, K. C., Orlikowski, W.J., and J. A. Yates


Kaplan, S.


Leonardi, P. M.

Levina, N., and E. Vaast

Lingo, E. L., and S. O'Mahony


McPherson, M., Smith-Lovin, L., and J. M. Cook

Nelsen, B. J., and S. R. Barley

O'Mahony, S., and B. A. Bechky

Okhuysen, G. A., and B. A. Bechky

Perlow, L. A.


Perlow, L. A., and J. Weeks

Pettigrew, T. F., and L. R. Tropp


Pettigrew, T. F., Tropp, L. R., Wagner, U., and O. Christ


Ranganathan, A.


Reagans, R.


Ridgeway, C.


Robbins, S. P.


Sauder, M.


Star, S. L., and J. R. Griesemer


Swidler, A.

Tsui, A. S., and C. A. O'Reilly


Turco, C. J.


Turner, J. C.


Vallas, S. P.


Vallas, S.P. and E. Cummins


Van Maanen, J.


Weiss, G. L., and L. E. Lonnquist


Williams, K. Y., and C. A. O'Reilly

1998 "Demography and diversity in organizations: A review of 40 years of research." Research in Organizational Behavior, 20: 77-140.
Appendix: Exploring Other Potential Explanations for Successful Cross-Occupational Collaboration within Many of the Dyads on Unit A

Below, we address other potential explanations for the successful cross-occupational collaboration we observed on Unit A but not Unit B:

1. **Better Staff on Unit A:** Were Unit B staff lower in quality than the staff on Unit A, and was it this quality difference rather than a difference in use of dyadic toolkits that explains the successful cross-occupational collaboration among many dyads on Unit A? Our data suggest this is not the case. First, nurses and PCTs on both units were observed to be equally industrious while performing what members of their occupation considered to be their “real work,” and nearly all staff on both units typically power-walked (and sometimes jogged) between rooms. Second, nurses on both units attended top nursing schools and needed to have had a strong record of academic accomplishment to obtain a nursing job at this prestigious hospital where nursing jobs were highly sought after.

2. **More Mature Staff on Unit A:** Were the older nurses on Unit A more mature than the nurses on Unit B, and was it this maturity difference that explains the successful cross-occupational collaboration among many dyads on Unit A? Our data suggest this is not the case. First, if older nurses were better collaborators, we would have expected to see better cross-occupational collaboration between older nurses and PCTs than between younger nurses and PCTs, and we did not. For example, on Unit A, in dyads where older nurses were paired with a PCT with whom they did not share a meaningful identity, they collaborated poorly. Similarly, young nurses were just as likely to establish collaborative relationships with PCTs as older nurses on Unit A, as long as they shared a non-occupational identity to draw on in work and social interactions.

3. **Better Hiring on Unit A:** One may wonder how Unit A’s unique demographic configuration occurred and whether the Unit A nurse manager made a special effort to hire and retain more diverse and more collaborative nurses and PCTs on the night shift. While we were not present when the observed demographic configuration of nurses and PCTs was first established on Unit A, the Unit A manager claimed she made no special effort to hire more diverse (or collaborative) nurses, and in fact, the two other shifts she manages on Unit A (day and evening shifts) have a demographic configuration more like Unit B (as does the rest of the hospital). Approximately three years before we began our study, the nurse manager, who had managed Unit A for several years at that point, needed to hire new nurses to replace some who had left to work in specialty units. The hospital staffing office sent her nurses who had more diverse backgrounds than the nurses who had previously been staffed on Unit A, and she hired them.

One PCT who was on Unit A two years prior to when the new nurses were hired explained that she perceived an improvement in nurse-PCT collaboration when these nurses entered:

Probably about 3 or 4 years ago, they were hiring... that’s when a lot of the foreign nurses like (she names 4 nurses) started here. [Have nurses and PCTs always had such good relations on this unit since you’ve been here?] It wasn’t as good when I started six years ago, but... things have improved since that big hiring when (she names two nurses) and all of them (the foreign-born nurses) were hired. It sort of goes in cycles. Since most don’t stay on a unit like this for more than a few years, it sort of depends on the batch of nurses coming through.
4. **Better Management on Unit A:** Was the Unit A manager better than the manager on Unit B, and was it this management difference that explains the successful cross-occupational collaboration among many dyads on Unit A? We did not observe variation in management styles on the two units. First, nurse managers were almost never present on either unit during the night shift because there was only one manager working overnight in the entire hospital. Second, the overnight manager position was a rotating position with a different manager working each night and we did not observe any of the night managers try to learn about the inner workings of either unit. Third, both of the full-time nurse managers responsible for day-to-day management on Units A and B had similar demographic characteristics (white, middle-aged, US-born women). Fourth, management practices were standardized so that all units were implementing similar initiatives at the same time (and no initiative centered on Nurse-PCT collaboration or diversity). For example, during the time of our study, the bulletin boards on both units displayed standardized, near-identical content.

5. **More Collaborative Staff Choosing to Work and Remain on Unit A:** Did more collaborative staff choose to work and remain on Unit A and is it this selection and retention difference that explains the successful cross-occupational collaboration among many dyads on Unit A? Our data suggest this is not the case. First, most nurses on Unit A reported that they had not been aware of the diversity or more collaborative nurse-PCT relations on Unit A before accepting the job. Second, it was rare for a medical-surgical nurse, once hired, to move to another medical-surgical unit; movement was usually out of the medical-surgical unit to a specialty unit, and nurse tenure rates were similar on both units. Third, nurses on Unit A were not more collaborative because more of them had been PCTs themselves before becoming nurses; a similar percentage of nurses on each unit had worked as PCTs prior to becoming nurses. Finally, the hospital studied is a prestigious teaching hospital with a reputation for high quality nursing; because of the hospital’s excellent reputation, nursing jobs there were highly sought after and nurses reported that they could not afford to be picky about the unit on which they worked. Nearly all of the nurses interviewed mentioned that their number one reason for choosing to work on a medical-surgical unit was because of the generalist training the job offered and the later mobility this training provided.

6. **Smaller Size of Unit A:** Unit A had fewer patient beds than Unit B (24 vs. 36 beds). Can the smaller size of Unit A explain the successful cross-occupational collaboration among many dyads on Unit A? Our data suggest this is not the case. First, the two units were staffed according to hospital-wide staffing guidelines so that patient-to-staff ratios were the same on each unit during each shift. Second, the research that exists on the relationship between team size and collaboration is inconclusive, but generally finds that teams over 12 members have greater difficulty performing well than do teams under 12 members (Robbins, 1992). On both Unit A and Unit B, there were never more than a total of 9 nurses and PCTs working together during any shift. Third, the greater number of staff on Unit B could have made it easier for the nurses to help PCTs since there were more bodies available to cover work during busy periods, but this is not what we observed.

7. **Better Overall Diversity on Unit A:** Unit A had more non-white, older, and non-US-born staff overall than Unit B. Was it the greater overall diversity of Unit A rather than the cross-cutting social structure of Unit A that shaped the successful cross-occupational collaboration among many dyads on Unit A? Diversity research suggests this is unlikely; it demonstrates that workgroups with greater overall diversity generally demonstrate worse communication and coordination than do less diverse workgroups (e.g., Williams & O’Reilly, 1998).
Dyad Characteristics, Shared Social Identities and Use of Dyadic Toolkits*

*Please note that dyads listed are only a subset of dyads observed working together. This subset (31 on Unit A and 43 on Unit B) were dyads for whom one or both parties of the dyad was shadowed one-on-one and saturation was reached on their typical social and work interactions. Please see the Methods section for more details.

Unit A: Social Structure with Cross-Cutting Demographics

<table>
<thead>
<tr>
<th>Dyad</th>
<th>Dyad Members</th>
<th>Shared Race</th>
<th>Shared Age</th>
<th>Shared Immigration Status</th>
<th>Shared Social Identity Drawn on in Social Interactions</th>
<th>Shared Dyadic Toolkit in Work Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyad 1</td>
<td>PCT12A &amp; Nurse7A</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Immigrants/Middle-Aged (Latin American Spanish Speakers)</td>
<td>Yes</td>
</tr>
<tr>
<td>Dyad 2</td>
<td>PCT12A &amp; Nurse23A</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Immigrants (Latin American)</td>
<td>Yes</td>
</tr>
<tr>
<td>Dyad 3</td>
<td>PCT17A &amp; Nurse7A</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Immigrants (Hispanic, Spanish Speakers)</td>
<td>Yes</td>
</tr>
<tr>
<td>Dyad 4</td>
<td>PCT17A &amp; Nurse23A</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Immigrants (Hispanic, Spanish Speakers)</td>
<td>Yes</td>
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<tr>
<td>Dyad 5</td>
<td>PCT12A &amp; Nurse11A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Immigrants/Mothers (Black, Middle-Aged Latin American)</td>
<td>Yes</td>
</tr>
<tr>
<td>Dyad 6</td>
<td>PCT5A &amp; Nurse25A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Immigrants (Black, French Speakers)</td>
<td>Yes</td>
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<tr>
<td>Dyad 7</td>
<td>PCT12A &amp; Nurse14A</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Immigrants (Black immigrants who have lived in the US for a decade)</td>
<td>Yes</td>
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<tr>
<td>Dyad 8</td>
<td>PCT10 &amp; Nurse44A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Haitian-descent (Black, French-Creole Speakers)</td>
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<td>Dyad 9</td>
<td>PCT6A &amp; Nurse31A</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Grandmothers (US-born, Older Workers)</td>
<td>Yes</td>
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<tr>
<td>Dyad 10</td>
<td>PCT6A &amp; Nurse45</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Grandmothers (Thrifty Coupon-Clipping)</td>
<td>Yes</td>
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<tr>
<td>Dyad 11</td>
<td>PCT6A &amp; Nurse17A</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Older Hard Workers</td>
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<td>Dyad</td>
<td>PCT21A &amp; Nurse9A</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Involved Parents</td>
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</tr>
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<td>-----</td>
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<td>-----</td>
<td>------------------</td>
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</tr>
<tr>
<td>Dyad</td>
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<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Involved Parents (White, US-born)</td>
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<td>No</td>
<td>Yes</td>
<td>Involved Parents (White, US-born)</td>
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<td>Yes</td>
<td>No</td>
<td>New Parents</td>
<td>Yes</td>
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<tr>
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<td>Yes</td>
<td>Yes</td>
<td>New Parents (Black, Haitian-descent, French-Creole Speakers)</td>
<td>Yes</td>
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<tr>
<td>Dyad</td>
<td>PCT2A &amp; Nurse17A</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Locals (Sports Fans)</td>
<td>Yes</td>
</tr>
<tr>
<td>Dyad</td>
<td>PCT2A &amp; Nurse18A</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Locals (US-born, Younger Workers)</td>
<td>Yes</td>
</tr>
<tr>
<td>Dyad</td>
<td>PCT10 &amp; Nurse72A</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Youth (Single Partiers)</td>
<td>Yes</td>
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<tr>
<td>Dyad</td>
<td>PCT26A &amp; Nurse72A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Youth/Locals (Single White Partiers)</td>
<td>Yes</td>
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<td>Dyad</td>
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<td>Yes</td>
<td>No</td>
<td>Youth (Single Concert-Goers)</td>
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<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Youth/Locals (Single Tech-Savvy City-Dwellers)</td>
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<td>Dyad</td>
<td>PCT12A &amp; Nurse24A</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Working Mothers</td>
<td>Yes</td>
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<td>Dyad</td>
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<td>No</td>
<td>No</td>
<td>No</td>
<td>Mother/Daughter</td>
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<td>No</td>
<td>No</td>
<td>No</td>
<td>Working Mothers (&quot;Clean Freaks&quot;)</td>
<td>Yes</td>
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<td>No</td>
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<td>No</td>
<td>No</td>
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<td>Yes</td>
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<td>Yes</td>
<td>No</td>
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<td>% Shared Race</td>
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<td>% Who Identified Shared, Non-Occupational Social Identity in Social Interactions</td>
</tr>
<tr>
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<td>--------------</td>
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<tr>
<td>29</td>
<td>Nurse8A</td>
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Unit B: Consolidated Social Structure

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| # of Dyads | % Shared Race | % Shared Age | % Shared Immigration Status | % Who Drew on Shared Non-Occupational Social Identity in Social Interactions | % Who Used this Alternative Identity in Work Interactions |
|------------|---------------|---------------|-----------------------------|-------------------------------------------------------------------------------------------------|
| 43         | 0%            | 12%           | 7%                          | 0%                                                                                               | 0%                                                                 |