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Communication between hospital doctors: Underaccommodation and interpretability

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ABSTRACT

We examined underaccommodation in hospital medical charts, with a focus on interpretability. In Study 1 147 hospital doctors completed a questionnaire including interpretations of chart entries from their own or another specialty. Study 2 used interviews with 10 doctors to explore interpretations of the same charts and perceptions of the writers. Results indicated that participants interpreted entries by ingroup doctors more accurately than outgroup ones. Interview findings indicated that doctors made excuses for their peers and cast patients as an outgroup. Results indicate that underaccommodation leads to lack of comprehension, which is generally excused by readers.

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1. Introduction

Hospitals are complex adaptive systems comprised of multiple-connected or interdependent subsystems (Institute of Medicine, 2001; Plsek and Greenhalgh, 2001). Safe and high-quality patient care is critically dependent on the interaction between these component subsystems, and communication failures are known to cause inadvertent patient harm (Sutcliffe et al., 2004). Communication within hospitals is a central social process, the sum of human interactions within it (Harris et al., 2007). Health care providers are required to cooperate and collaborate for patient care, but they belong to different subgroups, such as departments and specialties, with which they identify more strongly than their profession. In hospitals today more than in the past, care is spread across people and units, so that high-quality care depends increasingly on good collaboration between health professionals. Our research and the studies presented here have focused on communication between doctors during the care of patients requiring coordinated involvement from multiple hospital specialists and health professionals. This form of inter-specialty health communication has been infrequently studied, compared with that of more defined work teams in the operating theatre or intensive care unit (e.g., Lingard et al., 2004; Hawryluck et al., 2002; Bleakley, 2006a, 2006b).

A research focus on this area is important, given the fragmentation of patient care associated with the increasingly narrow specialization of hospital doctors and the prevalence of complex patient journeys. In this context, accommodative communication, and communication that meets the needs of other health professionals, is essential. One key function of communication between health professionals is to give precise and accurate information to each other, particularly across specialty and profession boundaries (e.g., between surgeons and internists, between doctors and nurses). This communication may be face-to-face, or it may be dispersed across time and place, as in the case of medical records. Thus, the use of terms and

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concepts that are not easily interpreted by others who may be treating a patient – in terms of Communication Accommodation Theory, underaccommodation – is a significant problem. The context for our research is the care of patients with upper gastrointestinal bleeding (UGIB), a common high-risk medical emergency that requires urgent and coordinated care by doctors from various specialty departments. We focus on the intergroup dynamics of communication in this context through written medical records.

1.1. Intergroup communication in hospitals

Like other contemporary organizations (cf. Jones et al., 2004), hospitals are intergroup contexts, with people from different professions (e.g., medicine, nursing), different specialties (e.g., emergency medicine, gastroenterology), and different levels (e.g., junior and senior doctors) acting and interacting together. Intergroup communication occurs whenever anyone in a social interaction defines self or other in terms of group memberships (e.g., Harwood et al., 2005). Intergroup communication may be deliberate or inadvertent, expressed in actual behavior or perceptions (or both), involve face-to-face or mediated interaction, and may be interpreted in more positive or negative terms (Giles et al., 1987). The present studies aimed to expand our earlier research on inter-specialty care coordination (e.g., Hewett et al., 2009b) through a close examination of communication in medical records. As we have shown (Hewett et al., 2009a, 2013), this form of written communication is stylized, but it is also an important arena of intergroup behavior, as our research has shown. Here we concentrate on the role of underaccommodation (via the strategy of interpretability) in doctors' written records.

1.2. Communication accommodation theory (CAT)

CAT is an intergroup theory of interpersonal communication that explains how individuals use language and strategic communication behaviors to negotiate social interactions between themselves and others (e.g., Gallois and Giles, 1998; Gallois et al., 2005; Shepard et al., 2001). CAT posits that interactants use various communicative strategies, tactics and behaviors to establish and maintain positively distinct ingroup identities.

Depending upon the sociohistorical context and the interpersonal history of the interactants, CAT posits that individuals adopt an intergroup or an interpersonal initial orientation to an encounter. Speakers are motivated to either accommodate (i.e., to use communicative moves that treat the interlocutor as an individual and show liking or solidarity) or to take a nonaccommodative stance (e.g., to communicate so as to maximize ingroup positive distinctiveness). Communicative strategies and behaviors are adapted, depending on salient group identities and the perceived behavior of the other. During intergroup conflict, nonaccommodation is often the prevailing stance, and strategies and behavior are used to maximize differences between group members.

CAT has been applied in health communication, although mainly to examine patient–practitioner communication (Coupland et al., 1988; Street, 2001, 2003; Street and Giles, 1982; Watson and Gallois, 1998, 1999, 2004). Our research, on the other hand, has concerned communication between health professionals of different groups. We have found that in both written and face-to-face interactions, hospital doctors consistently identify themselves and communicate with their medical colleagues as members of specialty groups. This identification is a source of difficulty when patients require the input of doctors from multiple specialties, as patients with UGIB do. Specialty identity is evoked and significant intergroup conflict occurs when there are ambiguous or contested responsibilities for patient care. Status and seniority facilitate inter-specialty communication, with factors such as interpersonal history and intergroup respect also mediating the impact of intergroup conflict (Hewett et al., 2009b, 2013). Despite its highly stylized format and apparent objectivity, we have found the medical record to be an active medium for displays of specialty allegiance and inter-specialty power plays, including counter-accommodative communication tactics and behaviors. In this paper, we take up recent calls (Gasiorek and Giles, 2012; Giles and Gasiorek, 2013) for more work into perceptions and attributions about nonaccommodation, using the stylized context of medical records.

1.2.1. Underaccommodation

Sometimes nonaccommodation is not intentional, but the result of lack of skill (e.g., empathy with the other person, linguistic competence in the other person's codes), lack of forethought, or lack of resources (e.g., when there are time or other constraints). This is particularly true in the case of underaccommodation – behavior that employs a speaker's own language and communication style, rather than attuning to the conversational needs and resources of others. For example, Coupland et al. (1988) found significant underaccommodation among frail elderly people, who talked about their own topics in their own style, even though younger interlocutors were uncomfortable with this behavior. As Giles and Gasiorek (2013) note, underaccommodation is probably more prevalent than the more frequently studied over-accommodation. Indeed, much behavior that in earlier research was glossed as divergence (a form of counter-accommodation) – for example, the failure to attune by switching to an interlocutor's language (e.g., Giles et al., 1991; Sachdev et al., 2012) – actually involves underaccommodation in the form of maintenance of one's own language. Furthermore, people with communication difficulties ranging from lack of communication skill to serious mental or physical disabilities typically underaccommodate, and others must interpret their behavior and react accordingly (e.g., Cretchley et al., 2010; Baker et al., 2014).

Despite its ubiquity, underaccommodation has not been studied a great deal. The research that has been done has mostly concerned two main arenas: firstly, work on inter-generational communication (e.g., Coupland et al., 1988; Giles et al., 1992), and secondly, in the case of maintenance in approximation (but see Gasiorek, 2013, for a study among young adults). In both contexts, this behavior has often been found to be interpreted in the same way as counter-accommodation (e.g., divergence; see Gallois et al., 2005; Shepard et al., 2001). In other words, underaccommodation may be interpreted as deliberate and negatively motivated, which may or may not be the case. In their model of nonaccommodation, Gasiorek and Giles (2012) and Giles and Gasiorek (2013) emphasize the important role played by perceptions in reactions and responses to non-accommodation by another person. Given that underaccommodation involves maintenance of one's own group behaviors rather than overt hostility, perceptions are likely to be especially important.

1.2.2. Interpretability, comprehension, and perceptions

In the studies reported here, we focused on the dimension of *interpretability*. This is a strategy where interactants utilize language strategically to enhance or diminish mutual understanding in an interaction, and to take more or less account of their interlocutor's conversational needs and resources (e.g., Coupland et al., 1988; Gallois et al., 2005). We reasoned that doctors from different specialties may underaccommodate in written medical record communication (either deliberately or unintentionally) by employing specialty-specific language that may not be easily interpreted or decoded by doctors from outgroup specialties. Their underaccommodation may or may not be recognized by other doctors and, if it is recognized, it may be perceived positively or negatively. In turn, ingroup and outgroup doctors may explain this behavior as motivated by positive or neutral factors (desire to do their job properly, lack of time to write in detail, other features of the context) or in terms of more negative intergroup motives (lack of interest in other doctors, desire to guard ingroup knowledge). Thus, both *comprehension* of medical records – which is crucial for good patient care – and *perceptions* about the doctors who wrote them are likely to be affected by underaccommodation and reactions to it.

1.3. The present studies

We aimed to explore medical records through the lens of communication accommodation theory. Earlier work by our team and others led us to predict that medical records would show evidence of underaccommodation; that is, charts would be written in the default language and style of the ingroup specialty, with technical language and ingroup concepts and practices that might make them difficult to understand by outgroup doctors.

We also aimed to explore ingroup and outgroup doctors' perceptions of underaccommodation in medical records and the ways in which these perceptions were expressed in conversation with another doctor (the first author). In line with Giles and Gasiorek's (2013) model, we expected that when underaccommodation was perceived in more positive or neutral terms (e.g., as a consequence of time constraints), it would be explained more positively than when it was perceived as negatively motivated (e.g., by lack of empathy or intergroup competition).

The two studies reported here were conducted in a large metropolitan teaching hospital. We chose to focus on upper gastrointestinal bleeding (UGIB), as it represents a common, high risk medical condition for which patients require rapid, coordinated input from a range of hospital specialists. Treatment of patients with UGIB typically begins when patients present to the Department of Emergency Medicine (DEM), where initial assessment, stabilization and fluid resuscitation are done. After hospital admission, patients usually require urgent upper gastrointestinal endoscopy (internal examination of the esophagus, stomach and duodenum), performed under anesthesia in the operating room or gastroenterology department. These tasks are performed by doctors from various specialty departments, including internal medicine (general physicians or internists) and gastroenterology and hepatology (gastroenterologists), with further input as required from intensive care doctors (intensivists), anesthesiologists and general surgeons. Timely coordinated communication between these different specialties is a challenging aspect of patient management. The issue of who has primary responsibility for the patient (patient ownership) is also a contentious issue (Hewett et al., 2009b).

Health professionals, including doctors, write their clinical findings and recommendations by hand in the medical record, on blank pages referred to as progress notes. In a teaching hospital, clinical documentation is primarily the responsibility of the resident medical staff (junior doctors – interns, residents, and registrars undertaking specialist training). Doctors use the medical record to document their clinical findings and recommendations during inter-specialty consultation (for example, when the contribution from another specialist or specialty team is sought). Medical records are, therefore, an important method of intergroup communication, particularly in situations like UGIB where patients are cared for by several doctors in different hospital departments.

2. Study 1: underaccommodation and comprehension

In Study 1, we used a questionnaire to explore how well doctors from different specialties could interpret the medical records of patients presenting with UGIB. We compared two charts: one from the emergency department, and one from gastroenterology and hepatology. In line with earlier research, we predicted that:

Hypothesis: Ingroup specialists understand medical records better than outgroup specialists.

2.1. Method

2.1.1. Participants and procedure

We offered participation in the survey to all doctors at the study hospital who were involved in the care of patients with UGIB. These doctors comprised all registrars and consultants from the Departments of Emergency Medicine, Internal Medicine, Gastroenterology and Hepatology, General Surgery, Anesthesia and Perioperative Medicine, and Intensive Care. In Australia, a registrar is a doctor undertaking specialist training (postgraduate years 3–8). Fully qualified hospital specialists (consultants) have overall responsibility for patient care and supervision of junior staff.

One hundred forty-seven participants completed the questionnaire, which constituted a 67% response rate. Ninety (61%) of the respondents were male. All specialties that contribute to the care of patients with UGIB were represented, the largest group being in general medicine (32%), followed by anesthesiologists (23%), emergency physicians (16%), gastroenterologists (14%), intensivists (10%) and general surgeons (5%). There were similar numbers of registrars (48%) and consultants (52%). Thus, we obtained responses from doctors in six specialties and at two levels of experience. The majority of respondents had been employed at the study hospital for over 1 year (85%).

We distributed the surveys electronically and by internal mail to all 220 physicians in relevant departments of the study hospital. Doctors were told that the survey was designed to gather important information about their experiences in the care of patients with UGIB. Respondents could complete the surveys electronically (SurveyMonkey.com) or on paper. Non-responders were followed up by email and directly. The Human Ethics Research Committees of the University of Queensland and the study hospital approved the interview and questionnaire studies through their normal processes.

2.1.2. Questionnaire

We evaluated participants' understanding of ingroup and outgroup doctors' chart entries for patients with UGIB using exemplar medical records. We selected two medical record extracts that were representative and illustrated significant ingroup language following interviews with doctors from the hospital. Because these interviews also contained rich information on perceptions and attributions about accommodation in the extracts, they were analyzed further via discourse analysis and are reported below as Study 2. The three extracts used in Study 1 were selected because, in the opinions of both ingroup (i.e., in the same specialty as the writer of the medical record extract) and outgroup doctors (members of other specialties who also treated patients with UGIB), they represented typical language and style from their fields and contained examples of technical language from their fields.

We assessed respondents' understanding of each chart entry by asking them to indicate their level of agreement with statements (described in the following paragraphs about each extract) about the patient's medical condition drawn from information recorded in the entry, and their recommendations for further care on the basis of information provided in the entry. Answers were made on 5-point Likert scales. After re-coding responses as incorrect or correct on the basis of the information contained in the entry, we constructed an overall score, with higher scores indicating more correct responses. Correct answers constituted correct interpretations of terms and recommendations that matched best practice from correct interpretations of the assessments in the charts.

Extract one was a handwritten chart entry from a gastroenterologist (specialist liver registrar) in response to a specific request for advice (a "consultation") from the treating general medical team about a patient with UGIB and advanced liver disease (see [Appendix](#) for the medical record entries and an interpretation in nonmedical language). Three items asked respondents about the patient's liver function, long-term prognosis and suitability for liver transplantation, one item asked whether the information recorded was adequate for ongoing patient care, and the final item asked respondents to indicate which of 12 potential treatment options would be appropriate for this patient (three were correct). This made a total of 7 items.

Extract two comprised a typed upper endoscopy procedure report by a gastroenterologist containing the diagnostic and therapeutic findings following an upper endoscopy for a patient with UGIB from a duodenal ulcer. Two items asked about details of the endoscopic procedure, and four items asked respondents about recommendations for further treatment (a total of 6 items).

Extract three was a handwritten entry from an emergency department registrar regarding a very unwell patient recently transferred from a regional center by air ambulance. One item asked about a specific component of the patient's history, one item asked about the patient's clinical status, and one item asked about treatment that was commenced (total of 3 items). A separate item sought respondents' interpretation of a specific abbreviation used by the emergency medicine physician (AVPU, a measure of consciousness that describes responsiveness as Alert or responsive to Voice, Pain, or Unresponsive).

The two handwritten extracts were rewritten by hand by another doctor, so that they were de-identified and legible, but still realistic.

2.2. Results

We assessed participants' understanding of medical records using the scale scores for correct interpretation of the extracts. The overall scores were extract one, $M = 4.53$ items correct (range 0–7, $SD = 1.28$), extract two, $M = 3.46$ correct (range 0–6, $SD = 1.37$), and extract three, $M = 1.27$ items correct (range 0–3, $SD = 0.85$). Means are reported in [Table 1](#) by specialty and level. We performed three 6×2 (specialty \times level) between-subjects ANOVAs to assess differences among specialists in their understanding of each medical record entry. The DV for each ANOVA was the number of items correct.

Table 1
Study 1, means and standard deviations by specialty and level.

Item (interpretation of chart extracts)	Specialty means (SD)						
	All	Anesthesiology	Emergency	Gastroenterology	General medicine	General surgery	Intensive care
Extract one – gastroenterology consultation for patient with liver disease (range: 0–7)							
All	4.53 (1.28)	3.88 (1.01)	3.96 (0.88)	6.30 (0.73)	4.70 (1.17)	3.75 (1.28)	4.31 (0.75)
Registrar	4.47 (1.28)	3.77 (0.93)	4.43 (1.13)	6.43 (0.79)	4.50 (1.26)	3.75 (0.96)	4.00 (0)
Consultant	4.58 (1.28)	3.95 (1.08)	3.75 (0.68)	6.23 (0.73)	5.06 (0.93)	3.75 (1.71)	4.50 (0.93)
Extract two – endoscopy report (range: 0–6)							
All	3.46 (1.37)	3.06 (1.52)	2.91 (0.90)	5.30 (0.80)	3.49 (1.14)	3.38 (0.52)	2.54 (0.88)
Registrar	3.52 (1.21)	3.38 (1.45)	3.43 (0.53)	5.00 (1.00)	3.44 (1.12)	3.50 (0.58)	2.40 (0.89)
Consultant	3.41 (1.49)	2.84 (1.57)	2.69 (0.95)	5.46 (0.66)	3.56 (1.20)	3.25 (0.50)	2.63 (0.92)
Extract three – emergency medicine entry (range: 0–3)							
All	1.27 (0.85)	1.47 (0.92)	1.91 (0.85)	0.90 (0.55)	1.14 (0.73)	0.63 (0.52)	1.08 (0.86)
Registrar	1.52 (0.78)	1.77 (0.73)	2.43 (0.79)	1.29 (0.49)	1.39 (0.69)	0.75 (0.50)	1.20 (0.84)
Consultant	1.06 (0.85)	1.26 (0.99)	1.69 (0.79)	0.69 (0.48)	0.69 (0.60)	0.50 (0.58)	1.00 (0.93)

Note: Higher scores indicate correct interpretation.

In the first ANOVA (extract one), there was a significant main effect of specialty, $F(5,128) = 16.80, p < .001$, partial $\eta^2 = 0.40$. The main effect of level (registrars vs consultants) was not significant, $F(1,128) = 0.09, ns$, nor was the interaction, $F(5,128) = 1.20, ns$. Post-hoc Tukey HSD tests showed that, as predicted, gastroenterologists (the ingroup for this extract) had significantly higher scores than all other specialty groups. There were no other significant differences.

For extract two, the main effect of specialty was also significant, $F(5,127) = 11.81, p < .001$, partial $\eta^2 = 0.32$. The main effect of level, $F(1,127) = 0.28, ns$, and the interaction, $F(5,127) = 0.91, ns$, were not significant. Post-hoc tests indicated that as predicted, gastroenterologists (the ingroup for this extract) had significantly higher scores than all other specialty groups, with no other significant differences.

In the final ANOVA (extract three), the main effect of specialty was significant, $F(5,128) = 7.76, p < .001$, partial $\eta^2 = 0.23$, as was the main effect of level, $F(1,128) = 11.10, p < .001$, partial $\eta^2 = .08$, but the interaction was not, $F(5,128) = .36, ns$. Post-hoc analysis revealed that emergency physicians (the ingroup), as predicted, had significantly higher scores for correct interpretation than gastroenterologists, general physicians and general surgeons. Furthermore, registrars across specialties scored significantly higher than did consultants. There were also significant differences in respondents' interpretation of the "AVPU" abbreviation between specialties, $\chi^2(5, n = 147) = 40.26, p < .001$. Results indicated that 92% of emergency physicians correctly interpreted the abbreviation, compared with 68% of anesthesiologists, 50% of intensivists, 30% of general physicians, 25% of general surgeons and 15% of gastroenterologists. Thus, the hypothesis received support.

In summary, the results of Study 1 indicate that specialty is an important factor in interpreting medical records and in patient care more generally. There was clear evidence of underaccommodation in terms of interpretability, in that ingroup doctors were better able to understand and interpret chart entries than were outgroup specialists. We explored this issue further in the second study.

3. Study 2: perceptions of underaccommodation

As Giles and Gasiorek (2013) point out in their model of nonaccommodation, responses to nonaccommodation are largely determined by how it is perceived and interpreted. Study 1 showed that there is underaccommodation on interpretability in medical records, but we did not explore perceptions of the charts or attributions of motives. Study 2, therefore, analyzed the interviews done to select the extracts, because these interviews were rich sources of perceptions and attributions about the charts. In addition, the context of the interviews – conversations between one doctor (the first author, a gastroenterologist) and other specialists with whom he was personally acquainted – provided a context that allowed subtle expression of interpersonal and intergroup relations. This study was qualitative, and used discourse analysis to explore the conversations. The results of Study 1 indicated that there would be few problems in interpretability for ingroup doctors (although this is always a possibility), but significant evidence of problems for doctors in outgroup specialties. Thus, we were guided by two research questions:

Research Question (RQ) 1: How do ingroup doctors interpret and explain colleagues' chart entries, and how are their interpretations related to their perceptions of the entries?

Research Question (RQ) 2: How do outgroup doctors interpret and explain underaccommodation in chart entries, and how are their interpretations related to their perceptions and attributions of the underaccommodation?

3.1. Method

3.1.1. Participants

We used purposive maximum variation sampling to select for interview doctors from specialties involved in the management of UGIB patients. Specialties included emergency medicine (DEM), general internal medicine (GM),

gastroenterology and hepatology (GE), general surgery, anesthesia and perioperative medicine, and intensive care (ICU). Participants were 3 men and 7 women, of whom 6 were consultants (including new, mid-career, and senior consultants) and 4 were registrars. Four of these doctors were gastroenterologists, two with subspecialization in hepatology, the area of extract 1 in Study 1, which was also analyzed here. Two were emergency medicine specialists, the area of extract 3. Finally, four participants were general physicians (internists), which was an outgroup for both extracts analyzed in Study 2.

3.1.2. Materials

Medical records of patients presenting with UGIB were obtained from the hospital and, as noted above, handwritten entries were copied out freehand by another doctor. All names and signatures were deleted to ensure anonymity of staff and patients. A selection of charts was presented to each participant. Two of these records had been selected for Study 1 (extracts 1 and 3) as typical exemplars of chart entries for different aspects of UGIB management.

3.1.3. Procedure

The interviews had a semi-structured format. First, participants read a chart entry and were asked to interpret it. The interviewer used a conversational format, and encouraged participants to expand their interpretations of the extract as if they were the next doctor treating the patient. We used convergent interviewing techniques (Dick, 1990; Driedger et al., 2006) to explore similarities and differences between earlier and later interviews. As they interpreted each entry, participants were also encouraged to give their perceptions and attributions about it and the reasons they thought it was written as it was. Interviews were recorded and transcribed for further analysis. Interviews lasted on average 56 min (range from 29 to 82 min).

3.2. Results

In this section, we present the results of our discourse analysis for each research question. Before addressing the RQs directly, we overview the context of the interviews, as CAT theorizes an important role for context.

3.2.1. Contextual factors

The interviewer aimed to give participants as much freedom as possible to describe and explain each chart entry in their own words and their own way. Nevertheless, because they were asked to read and interpret the entry, and because charts are normatively objective and factual documents, there was inevitably a testing situation within the interview. Although the interviewer (and his specialty) was known to each participant, and he told participants which specialty wrote each extract, he positioned himself as much as possible as an outgroup member with respect to the doctors who wrote the charts, using phrases like “*I just wondered... It seemed fairly specific. I wasn't sure* (extract 1, speaking to a general physician),” “*What does AVPU mean* (extract 3, speaking to an emergency physician, who was ingroup to the chart writer)?” Even so, some participants appeared to believe that there was a right answer which they needed to find. Doctors showed their lack of confidence with words like “I suppose,” “I guess,” as the following extract illustrates:

I guess it suggests that they're looking for ... presumably there's ... maybe the problem they've come in with is bleeding varices (Doctor 2, female consultant, general medicine)

This context, and particularly the implicit (albeit unintended) idea that there was a right way to interpret the charts, is likely to have influenced both the way that participants interpreted the charts and their impressions of the writers.

3.2.2. Interpretations and explanations of charts by ingroup members (RQ1)

When an ingroup doctor read a colleague's chart entry, the characteristic stance was one of confidence; the reader's knowledge and needs were being accommodated. For example, Doctor 1 began her reading of extract 3 (ingroup for her) as follows:

D1: *Lifeflight retrieval. Umm, upper GI bleed from [PLACE] with a date. Ah, excellent. A, B, C, D. [Laughter].*

I: *What does AVPU mean?*

D1: *Ah, alert, V – responds to voice, P – responds to pain. U is unresponsive. (Doctor 1, female consultant, emergency medicine).*

This doctor had shown some signs of discomfort with other charts earlier in the interview. In this case, the chart was speaking her language, and she could readily interpret the diagnosis (upper GI bleed), the fact that the patient had been flown in from a regional hospital, and the technical language (A, B, C, D: airway, breathing, circulation, disability, which are typical terms in resuscitation). Her laughter and the comment “Ah, excellent” indicate her comfort with this entry. When the interviewer asked about a very specific term in emergency medicine (AVPU), she interpreted it without difficulty. Overall, she appeared to be satisfied with this entry.

Ingroup participants were also able to make accurate inferences from the chart entries; these inferences required special knowledge and experience, because the chart entries were not explicit about them. For example, Doctor 5 (a liver specialist) began interpreting the chart 1 entry from his first statement:

D5: *So, umm, I would surmise from this that the patient may have been admitted with an upper GI hemorrhage and an endoscopy showing varices which are either bleeding or not bleeding and either treated or not treated endoscopically and umm, a liver consult has been sought and it appears from that although there's no full liver history there that the patient is an ongoing significant drinker ... he's had imaging which has shown cirrhosis but no portal vein thrombosis. With any patient with varices that's very important from our point of view.*

I: *Why?*

D5: *Umm, well ... if the imaging shows that they've got portal vein thrombosis and that they have further variceal bleeding which we can't control endoscopically then the next thing we'd consider is the TIPS procedure but that would be a relatively marked contraindication if they had portal vein thrombosis (Doctor 5, male consultant, gastroenterology).*

This doctor was able to interpret that the patient had an upper GI bleed that may already have been treated. In addition, he knew the potential consequences of the patient's problem, which had not been indicated in the entry, and was able to articulate a plan for future treatment (beyond what the writer had recommended). His switch from "I would surmise" in the first line to "from our point of view" and "we'd consider" later indicate that his specialty identity was activated.

Doctor 6, another liver specialist, went even further in her interpretation:

The implication from this first line is that ... the patient's been probably non-compliant with advice and has ongoing alcohol consumption therefore making them not a transplant candidate if that was ever something that was considered (Doctor 6, female consultant, hepatology).

This doctor knew that, because the patient did not have a portal vein thrombosis, he might be considered for a liver transplant, were it not for his ongoing alcohol consumption, which precluded this consideration. No outgroup doctor drew this inference from the chart entry, although other doctors did suggest that the liver registrar may have been concentrating on technical details in order to avoid legal trouble later (this refers to the secondary function of charts as legal records of treatment). Finally, Doctor 6 acknowledged her use of specialist experience in liver disease in interpreting some cryptic parts of the entry:

I can intuitively see what they're commenting on but for someone who ... weren't involved in liver management regularly then they probably would find it hard to extract the implications of this entry (Doctor 6, female consultant, hepatology).

Overall, ingroup doctors understood the technical language in the chart entries, and were able to draw extra implications from them. They explained the entries as accommodative, which from their perspective was the case. Even so, they did show insight into their use of specialist knowledge to do this, and some of them acknowledged that outgroup doctors might have difficulties; that is, that the charts were in ingroup language and code. Doctor 6, in her explanation, suggested that this might have been a deliberate strategy by the liver registrar, who was speaking in code for colleagues who might consider the patient for transplant. She was the only participant to make this kind of remark, although others did refer to doctors' use of specialist language in order to protect themselves from legal problems. That outgroup doctors could not make these kinds of inferences was clear from their interpretations of the chart entries, which are presented next.

3.2.3. Outgroup doctors' interpretations and explanations (RQ2)

3.2.3.1. *Underaccommodation perceived positively or neutrally: excusing the chart writer.* The interpretations of doctors in outgroup specialties differed markedly from those of ingroup members. These doctors struggled with technical language that they did not know, and missed cryptically written details. They had insight into the problem they were having, which seemed to be a familiar experience for them. For example, one general physician explained her initial reaction to extract 3:

So you get overwhelmed already by the language because this is not quite the same as I'm used to ... I don't know what AVPU means, and it's not the way I'd express it I suppose. ... This is language that would make sense to the emergency department so it's not necessarily a criticism of it ... there is a reason that this profile is used and that's to make sure nothing gets missed, and I think from that point of view, you know, you can't really argue with it (Doctor 2, female consultant, general medicine).

After noting that the chart writer is using unfamiliar terms (AVPU), she excuses the behavior on the grounds that this entry will be used mainly by people in an emergency department, who presumably will understand the terms. In this comment, she makes an inferential leap of faith – that this language will be familiar to ED colleagues – and signals her trust of this group. Later in the interview, she was more critical of the language.

Sometimes, outgroup doctors were able to understand details in the chart, but missed the larger picture. For example, an emergency doctor (Doctor 1) did not understand the gravity of the liver patient's condition until the interviewer pointed it out to her. In the extracts below, this doctor changes her mind completely about the chart, as a result of the intervention of the interviewer:

I: *...Can you sort of give me a summary of what do you think's wrong with him having read that entry?*

D1: *...Umm, the brief comment about the other factors like varices and clear clotting and comment about how to manage it, umm, it doesn't sound like that patient's unwell. It sounds more like it was an elective type thing ... I certainly don't get any impression that the patient is critically unwell or needs intervention or anything acutely ...*

The interviewer points out that this is a case of bleeding, and they discuss the details. The interviewer then probes for another judgment about severity:

- I: *What about the severity of the liver disease?...They haven't written severe liver disease or something because I'm just wondering how you'd know that?*
- D: *Well, I know that the PT ... I think twelve's probably the upper limit so that's not excessive...but, umm, varices are important and that suggests that there is a problem with ... it's reasonably severe cirrhosis [laughter] ... I'm getting confused.*

The interviewer then reveals that hepatologists have interpreted this chart as indicating that the patient might be considered for transplant, but would not be a suitable candidate because of his drinking.

- I: *OK. I'll tell you what I'm getting at...I've asked the liver guys what this all means... this guy with advanced cirrhosis... who doesn't have portal vein thrombosis... he's not a transplant candidate because he's still drinking.*
- D1: *Holy cow. OK...*
- I: *It's just, you know, would you have picked that up because no one else certainly has. They've seen a whole lot more in that entry than anyone else could have done.*
- D1: *Nope ... I know the comment about synthetic function, yeah, but it's not dramatic. And varices, yeah, that's important. That means that cirrhosis is reasonably severe but no they haven't got encephalopathy, they haven't got ascites, umm, no I would not have at all gleaned that...Sigh. You're making my brain hurt, David (Doctor 1, female consultant, emergency medicine).*

In spite of her significant lack of comprehension, this doctor does not criticize the chart or the writer. Earlier in her interview, she excuses the brevity of the chart entry by putting herself in the position of the consulting liver registrar, who in writing the chart entry is doing a very specific specialist consultation:

- D1: *... if I just read that I would assume that someone sent an ultrasound at some point and gone "Hmm, maybe they've got cirrhosis. We'd better get the liver reg to come and see the patient". The liver reg has come and seen the patient and done a brief history about risk factors (Doctor 1, female consultant, emergency medicine).*

Her perception of the underaccommodation seems to be neutral, even though it led her quite far astray.

3.2.3.2. *Underaccommodation perceived positively or neutrally: casting the patient as a member of a common outgroup.* In a number of cases, doctors were able to maintain a positive perception (or at least a neutral one) of underaccommodative chart entries by casting themselves and the chart writers against a common outgroup: the noncompliant patient. In doing this, they were very negative toward the patients, who they described as heavy drinkers. In the case of UGIB, excessive alcohol consumption is a common cause of liver problems (cirrhosis) that lead to bleeding (varices), so there was an obvious outgroup available to them. The writer of chart 1 had made the patient's drinking explicit. In chart 3, the writer did not mention the patient's drinking, but did refer to a disadvantaged community [PLACE], where alcoholism was well known to be a significant social issue. Outgroup doctors took advantage of this opportunity. The extract below illustrates this move:

- D3: *So this is an alcoholic...in the first line.*
- I: *It doesn't actually say alcoholic. How do you know that? are you presuming?*
- D3: *I'm just making a series of assumptions ... Shocking isn't it (Doctor 3, female consultant, general medicine).*

Later, this doctor excuses the cryptic and very technical writing in extract 3 on the grounds that the emergency doctors were obliged to do this for legal reasons:

- D3: *... I mean I know why the emergency department writes all this. They have to because they've got to write all this to justify what they've done on the flight and if there's ever a problem they need all that stuff.*
- I: *So, you don't mind all that stuff...it's sort of their ...*
- D3: *I don't care, I don't care at all (Doctor 3, female consultant, general medicine).*

This doctor admitted to not understanding most of the technical terms in the chart entry, but she was not worried about this because, in her opinion, she did not need to know it; she could ignore it. This doctor used the same strategy even more explicitly to interpret extract 1, where she was also struggling to understand the technical language:

- D3: *We've got cirrhosis with complications. ... but there's a sense, I get a sense of failure here. This is a complete waste of time and we'll just send it back to the liver clinic. They won't turn up because they'll be blotto. ...and you get the sense that this is a man who may have a lot of social issues, who may have turned to the bottle because he's got a terrible family situation. Who knows? (Doctor 3, female consultant, general medicine).*

Doctor 3 concentrated on social issues and the outgroup status of the patient virtually to the exclusion of medical issues. By indicating that this patient was not worth worrying about, she discounted the relevance of the clinical presentation, and noted that the technical content of the chart entry was not really necessary to her understanding.

3.2.3.3. *Underaccommodation perceived negatively.* In the main, outgroup doctors used excuses to maintain a positive, or at least neutral, perception of the underaccommodation in the charts; in addition, they cast patients as a common outgroup, and thus could minimize the importance of understanding the technical language in the extracts. In a few cases, however, they did express criticism of the chart writers. The most common way of doing this was to disengage from the chart, to indicate that it was not really important to them. Doctor 2 did this quite explicitly for the technical detail in extract 1:

- I: *If you had asked for the consult ... would you get enough information from that?*
 D2: *Look, I'd once again think it's a bloody waste of time for us in general medicine.*

This doctor indicated frustration with the highly specialized language in the chart entry. Her comment (“once again”) showed that she had seen this before, and likely reflects the frequent position of general physicians: that they need to ask for specialist consultations, and that they do not get satisfactory (i.e., accommodative) answers to their queries. Doctor 3 made a similar assessment of extract 3 when she commented

- D3: *A, B, C, D, E. I don't need to know any of that. They've done all sorts of things on the Lifeflight to keep him alive.*
 I: *So, you don't mind all that stuff ...*
 D3: *I don't care, I don't care at all (Doctor 3, female consultant, general medicine).*

In some cases, the kind of disengagement illustrated in the extracts above was accompanied by overt criticism of the chart entry. For example, a general physician commented that extract 3 would not be particularly helpful to him if he were treating the patient, but that it did not really matter to him. In doing this, he excused the emergency doctors because they are under stress and very busy:

- D8: *I don't even actually know how old the person is here. I know you get it on the label but normal entries start with the age of the patient and, umm, and some other collateral history hopefully ... which is excusable if the patient is haemodynamically very unstable and she was on arrival so it's appropriate to deal with it in that way and then stabilize the patient and then worry about the other history. So I think it's a reasonable entry...*

Doctor 2 made a comment along the same lines:

- D2: *So with a bit of thought I can interpret it but if I was busy on my consultant round and I looked at that I'd go “oh geez, so write a narrative for me” (Doctor 2, female consultant, general medicine).*

Stronger criticism came from another outgroup doctor:

- D5: *No, I've got no idea what DEAMPLE is. Umm, I've got no idea what AVPU is. So, there's a lot of cursory documentation in there and a lot of abbreviations that, you know, I wouldn't understand, a medical man wouldn't understand let alone anybody else (Doctor 5, male consultant, gastroenterology).*

Interestingly, this doctor invoked a larger social identity (“a medical man”) as an ingroup to which the emergency doctor who wrote the chart entry did not belong, at least at that moment. This hints at the intergroup rivalry that we and other researchers have seen in contexts of scarce resources, ambiguity in hospital policy, and conflict (e.g., [Hewett et al., 2009b](#)). Nevertheless, these criticisms were generally fairly mild, and surrounded by the assumption that everyone is doing a specific job. The doctors also acknowledged, as noted above, that everyone is guilty of writing too cryptically for an outgroup audience; the last extract above does this less than the others. Overall, these more negative perceptions still indicate a level of collegiality between the chart writers and their audience.

4. General discussion

These studies shed light on underaccommodation and reactions to it, in communication between doctors via medical records. Our previous work has suggested that hospital structural factors precluding shared patient ownership, combined with ambiguities in hospital policy and a lack of explicit rules, can generate and exacerbate intergroup conflict that affects patient care. The present studies illustrate the ubiquity of underaccommodation in everyday encounters through charts, which may be part of the bedrock on which conflict is built.

The aim of Study 1 was to examine the degree of accommodation on interpretability in written inter-specialty communication. We found that doctors maintained terms and concepts local to their specialty, even though they knew that the charts would be read by outgroup as well as ingroup members. Our findings support the hypothesis, and show that specialist doctors, when asked to contribute to the care of patients under the care of another specialty, underaccommodated when communicating their findings and recommendations for patient care to those treating specialists. This language did not convey the same depth of meaning to outgroup specialists, who scored significantly lower on understanding. Further, the lack of understanding by outgroup specialists translated into incorrect recommendations for ongoing patient care. In earlier research, we showed that despite the stylized nature of charts, doctors still inject an intergroup flavor, sometimes

emphasizing group differences in role, status and power through nonaccommodative strategies (Hewett et al., 2009b). These studies add to these findings by showing how language use, and consequent differences in interpretability, can differentiate outgroup members and reinforce specialty identity, either deliberately or inadvertently.

The second study explored ingroup and outgroup doctors' perceptions of the chart entries in some detail. We found the same problems in interpreting the chart entries as in Study 1, and we found that doctors were well aware of their difficulties. They did some conversational work to maintain positive evaluations of the colleagues who had written the charts, which moderated their criticism of the chart writers (cf. Giles and Gasiorek, 2013).

Two more positive ways of explaining the underaccommodation in the chart entries were making excuses and finding a common outgroup. Participants showed empathy for their colleagues, who were presumably dealing with crisis situations under time pressure, and who were doing a specific job. Thus, participants speculated that there may be little need for outgroup specialists to interpret their entries. In any case, some participants said that they might well ignore the chart entry and do their own examination for their own purposes. This common strategy by doctors could be a good way of maintaining collegiality while trusting only themselves or ingroup members (Hewett et al., 2013), but it is very frustrating for patients who undergo repeated questions and tests for the same problem, and it can be wasteful of time and resources. When a common outgroup was invoked, it was the patient. This perceptual strategy is common in many intergroup situations, and points to the dynamic and changing nature of social identities in communication. This strategy does maintain good intergroup relations, but once again it is at the cost of the patient, and may not lead to optimal care for him or her.

Sometimes, doctors were more negative about the chart writers. Their main ways of expressing negativity were by disengaging with the chart ("I don't need it anyway, I don't care") and by direct criticism ("It's a waste of my time"). There is frustration among hospital doctors about what they perceive as lack of care or empathy by other specialists, as our earlier research has found. This may be particularly true among general physicians, who often have responsibility for patients with complex problems, so that they must ask for help from a number of other specialists. As the general physicians among the interviewees in Study 2 commented, this can be a taxing experience.

The results of these studies also point to the importance of gathering information about perceptions in studies of accommodation (in this context underaccommodation, as Gasiorek and Giles have shown in their work). For us, this meant combining a questionnaire study with interviews, and gathering information about behavior (interpretations of the chart entries) and perceptions of the writer. Beyond this, our results reinforce the need to model both behavior and perceptions of it, as CAT does. To date, only a minority of studies about CAT have taken this seriously. It is important for future research into CAT to study the perceived motivations behind accommodation or nonaccommodation; this should be the rule rather than the exception. To do this, however, will require expansion of the methodological traditions in CAT, particularly by including more qualitative (and mixed-method) work, as we have done here. Fortunately, the number of qualitative studies exploring CAT is increasing (see Gallois and Giles, *in press*).

5. Conclusion

These findings add empirically and theoretically to Giles and Gasiorek's (2013) predictions about the impact of underaccommodation. Indeed, perceptions do influence interpretations and evaluations of this ubiquitous behavior. In the context of this study, speakers use a number of strategies to maintain good intergroup relations in the face of underaccommodation, but this is not always the case; it will be important to develop specific predictions about various contexts within health. As more research is done, CAT will – as it has for many years – accommodate new knowledge and detail.

The results of these studies also elaborate on the intergroup dynamics within the profession of medicine. Further research is now needed on interventions that seek to improve communication by recognizing that an intergroup climate including significant underaccommodation exists, and to create systems that highlight the ubiquitous presence of underaccommodation and that help to motivate health professionals to accommodate rather than underaccommodate (cf. Watson et al., 2012). Specialists underaccommodate in written communication by using specialty-specific ingroup language that is not correctly interpreted by doctors from outgroup specialties. The implications of this form of intergroup communication for patient care are significant. Lack of intergroup understanding translates into incorrect recommendations for subsequent patient care by outgroup specialists, which may influence patient outcomes and increase the risk of inadvertent harm. One new direction would be to develop a framework that examines how health professionals perceive and respond to underaccommodation. Accommodation in communication has consequences well beyond the borders of intergroup interactions, and it is important to use and evaluate its potential for the quality of patient care.

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Appendix A. Appendix

Extract 1:

- 1 8 Aug LIVER REG
- 2 Admits to 7 + SD/night (1 bottle of wine)
- 3 with longstanding intake > this/used to work as
- 4 publican
- 5 HCV+
- 6 currently working as pest controller
- 7 separated from wife
- 8 imaging suggests cirrhosis c°portal v. thrombosis
- 9 Alb 30 PT 13 (USS 7/8)
- 10 varices banded 3/7 ago
- 11 °encephalopathy
- 12 °ascites
- 13 → suggest ↑propranolol 20 mg bd
- 14 continue to encourage abstinence
- 15 OPD liver r/v
- 16 [signature]

This consultation entry by a gastroenterology (liver) registrar describes a male patient with risk factors for liver disease: chronic alcohol consumption (greater than 7 standard drinks [SD] per night, a measure of alcohol intake) and hepatitis C virus infection (HCV). Objective laboratory data are noted: an ultrasound scan (USS) performed on 7 August showing chronic liver disease (cirrhosis) but no evidence (°) of blood clots (thrombosis) in liver (portal) veins; laboratory tests of liver function are abnormal (elevated prothrombin time [PT] for poor blood clotting; reduced albumin [Alb], a liver protein). Examination findings include the absence (°) of signs of liver failure (hepatic encephalopathy: confusion or altered level of consciousness; ascites: accumulation of fluid in the abdomen). Finally, the registrar recommends (→) to the treating doctors that they: (a) increase the patient's dose of propranolol to 20 mg twice daily (a medication to lower portal vein pressure), (b) encourage complete alcohol cessation; and (c) refer the patient for review in the liver outpatient department (OPD) after discharge from hospital.

Extract 2

- 1 Gastroscopy Report
- 2 Date: 3 May Start: 0947h End: 1002h
- 3 Instrument: [number]
- 4 Medications: Midazolam 10 mg IV, Fentanyl 100 mcg IV
- 5 Indications: Melaena, Anaemia
- 6 Report Findings:
- 7 There was nothing precluding the gastroscopy on history or physician
- 8 examination. Informed consent for the procedure was obtained. The risks
- 9 and benefits were explained and the alternatives were outlined. The patient
- 10 tolerated the procedure well, and there were no complications.
- 11 OESOPHAGUS: The oesophagus was normal.
- 12 STOMACH: The stomach was normal.
- 13 DUODENUM: A chronic duodenal ulcer, 2.5 cm in diameter, located in the anterior bulbar region (with a visible vessel) was found.
- 14 Preliminary diagnosis: Duodenal ulcer
- 15 Procedures: Injection therapy on duodenum × 3 ml of adrenaline 1:10 000. Heater probe coagulation on duodenum: [probe name].
- 16 Disposition: Return to ward.
- 17 Post-operative instruction: nil by mouth overnight.
- 18 [signature]

This typed report describes the endoscopy findings in a patient with UGIB (melaena: passage of dark blood in the stool; anaemia low blood count). Medications: names of sedation drugs are given; implying endoscopist-directed sedation (no anaesthetist). The oesophagus (food pipe) and stomach were normal. In the duodenum (first part of the small intestine), there was a large ulcer in the duodenum, with signs of recent bleeding (visible vessel). The endoscopist administered combination injection (adrenaline 0.3 mg) and thermal therapy (coagulation) to the ulcer to reduce the risk of re-bleeding. Post-procedure, the patient is instructed to remain fasted overnight.

Extract 3:

1	14/10	[Air ambulance] Retrieval
2		UGI bleed from [PLACE]
3	A	✓
4	B	✓
5	C	90/40 cool limbs
6		AF 130
7	D	AVPU moving all limbs
8	E	glu 2.4 → glu N
9		T 36 ¹
10	A	NKDA
11	M	nil
12	P	MVR - noncompliant é anticoag ⁿ
13		- ?? ² RF
14		OH abuse?
15	L	?
16	E	1540h [NAME] Hosp 2 ^o palp ⁿ
17		HR 150-170
18		Given adenosine, verapamil 5mg
19		& digoxin 500mcg orally
20		+ LMWH

In this entry, an emergency medicine registrar documents the initial assessment of a patient with UGIB: airway (A) and breathing (B) intact (✓), circulation (C) unstable (low blood pressure 90/40 with rapid heart rate from atrial fibrillation, AF), impaired level of consciousness but responding to voice and moving limbs (disability, D using AVPU scale: Alert, response to Voice or Pain, Unresponsive), and exposure (E): low body temperature (36.1 ° C) and low blood glucose level (2.4 mmol/L) which normalized (N) with therapy. Standardized patient history: Allergies (A): nil known drug allergies (NKDA); Medications (M): nil; Past history (P): mitral valve replacement (MVR) possibly (??) secondary to (2^o) rheumatic fever (RF); patient is noncompliant with (é) blood thinning medication (anticoagulation); and consumes excess alcohol (OH); Last meal (L): unknown (?); Events: patient presented to a regional hospital at 1540h with palpitations (sensation of heart beating) and a heart rate (HR) of 150–170 per minute; medications were given to slow the heart rate (intravenous adenosine, verapamil and oral digoxin) and prevent blood clots (low molecular weight heparin, LMWH).

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