A QUALITATIVE STUDY OF ATTENDINGS’ AND RESIDENTS’ PERSPECTIVES ON FEEDBACK IN PEDIATRICS CLINICAL SETTINGS

By

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Abstract

Although the role of context in various aspects of medical education has been highlighted as an area needing further research, to date few studies have explored how contextual factors shape feedback interactions within various clinical settings. Consequently, the purpose of this qualitative study was to explore how contextual factors shape feedback interactions within and across various clinical settings. In particular, this study explored the nature of feedback in inpatient and outpatient Pediatrics clinical settings from attendings’ and residents’ perspectives. Three research questions guided this study: (a) What are residents’ and attendings’ conceptions of feedback? (b) What contextual factors shape the nature of feedback interactions between residents and attendings? and (c) Which types of feedback interactions, if any, may be classified as dialogic feedback processes?

An embedded single case-study design was used to study feedback interactions in four Pediatrics clinical settings (i.e., Ward, NICU, Ambulatory Clinic, and General Pediatrics Clinics). Direct observations, interviews, and researcher memos served as data sources. Twelve Pediatrics physicians participated in the study including four residents and eight attendings. Data analysis involved a three-step process of data analysis and presentation that used coding techniques (i.e., open coding and axial coding) from Strauss and Corbin’s (1990) approach to Grounded Theory coupled with situational mapping from Adele Clarke’s (2003) Situational Analysis.

Findings suggest scheduling constraints, physical space, trusting relationships, and residents’ and attendings’ behaviours are contextual factors that can impact feedback interactions. Key contributions of this research include: (a) highlighting the relationships among forms of feedback, embedded feedback strategies, and existing models of feedback in medical
education; (b) exploring the role of physical space as a possible barrier to feedback; (c) highlighting that residents may have narrower conceptions of feedback than attendings; (d) highlighting the distinction between practices related to structured and embedded feedback; (e) suggesting that due to constraints within different clinical settings, there is space for all models of feedback to coexist to support residents’ competence development; and (f) filling a gap in Pratt and colleagues’ (2006) study that highlighted how various contextual factors influenced residents’ competence development.
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"It takes a village to raise a child."

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Chapter 1

Introduction

Within professional education programs, competence development in workplace settings is of utmost importance (Illeris, 2003b). Although it might be assumed that learners and instructors within the same professional education program share similar conceptions of competence, this is likely not true. Various conceptions of competence exist and as suggested by Velde (1999), “the conception of competence that one holds and ultimately interprets in workplace practice is vital, because it can either limit learning through a focus on discrete tasks, or extend learning through a more holistic relational and interpretative approach” (pp. 443 - 444).

For example, the original conceptualizations of competence, stemming from teacher education, focused primarily on the cognitive dimension of learning (Short, 1984; Velde, 1999). Specifically, in response to calls for adopting competency-based training and assessment, early conceptualizations of competence in American teacher education programs included: competence as behaviour or performance, competence as command of knowledge or skills, competence as degree or level of capability deemed sufficient, and competence as quality of a person or as a state of being (Short, 1984, 1985).

In contrast, in relation to medical education, Hager and Gonczi (1996) suggested an integrated conceptualization of competence that focused on cognitive and social dimensions of learning. They conceptualized competence “in terms of knowledge, abilities, skills and attitudes displayed in the context of a carefully chosen set of realistic professional tasks which are of an appropriate level of generality” (p. 15). Moreover, in response to criticisms that cognitive and integrated conceptualizations of competence were individual-oriented and did not sufficiently address social and emotional dimensions of learning, Velde (1999) proposed the interpretative-
relational conceptualization of competence. According to Velde (1999), “an interpretative-relational approach to the development of competence includes all elements of a workplace environment that impact on learning, i.e. the individual, the context, the different variations in competence and workplace relationships” (p. 444). The interpretative-relational conceptualization of competence advanced by Velde aligns with recent definitions of professional competence put forward in medical education literature. For example, in their definitions of competence, Epstein, Hundert, and Klass highlight the developmental, impermanent, and context-dependent nature of competence by noting that competence development involves the situational relationships among physicians’ abilities, their professional tasks, their colleagues and patients, and the health systems and clinical environments in which they complete tasks (Epstein & Hundert, 2002; Klass, 2007).

The three identified conceptualizations of competence (i.e., cognitive, integrated, and interpretative-relational) can be mapped to Askew’s (2000) framework for exploring different conceptions of feedback for learning as shown in Table 1. Based on this framework, if a learner, instructor, or educational program adopts the original (cognitive) conceptualization of competence, feedback is characterized as a “gift” from an instructor to a learner, thus resulting in a one-way communication process (i.e., transmission model of feedback). If a learner, instructor, or educational program adopts an integrated conceptualization of competence, feedback is characterized as a two-way, non-dialogic process in which feedback is used to help a learner make connections and explore understandings (i.e., integrated model of feedback). Finally, if a learner, instructor, or educational program adopts an interpretative-relational conceptualization of competence, feedback is characterized as a dialogic process in which “feedback and reflection become entwined, enabling the learner to review their learning in its context and related to
previous experiences and understandings” (Askew, 2000, p. 13). This last characterization represents a dialogic model of feedback. Overall, feedback is considered “one of the most powerful influences on learning” (Hattie & Timperley, 2007, p. 81).

Table 1

*Relationship among conceptualizations of competence, dimensions of learning, and feedback discourses*

<table>
<thead>
<tr>
<th>Conceptualization of competence</th>
<th>Dimensions of learning</th>
<th>Feedback discourse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original (cognitive)</td>
<td>Cognitive</td>
<td>Feedback is one-way process</td>
</tr>
<tr>
<td>Integrated</td>
<td>Cognitive and social</td>
<td>Feedback is a two-way, non-dialogic process</td>
</tr>
<tr>
<td>Interpretative-relational</td>
<td>Cognitive, social, and emotional</td>
<td>Feedback is a dialogic process</td>
</tr>
</tbody>
</table>

Within the growing body of research exploring the discourse of feedback as a dialogue (e.g., Carless et al., 2011; Nicol, 2010; Yang & Carless, 2012), a dialogic feedback process is defined as “an interactive exchange in which interpretations are shared, meanings negotiated and expectations clarified” (Carless et al., 2011, p. 397). Day-to-day dialogic feedback processes may play an important role in education because it is assumed that these processes encourage learners to become self-regulated and better able to monitor and evaluate their own learning (Carless et al., 2011; Nicol & Macfarlane-Dick, 2006; Nicol, 2010; Sutton, 2009; Yang & Carless, 2013).

Although dialogic feedback processes are believed to facilitate the development of self-regulation and encourage learner-instructor dialogues about learning, the socially situated nature of feedback coupled with learner-instructor power imbalances can hinder effective feedback.
practices (Nicol, 2010; Sutton & Gill, 2010). Effective feedback is often defined as feedback that is appropriate, timely, and suited to the needs of a given situation (Poulos & Mahony, 2008). Although attempts have been made to incorporate these aspects of effective feedback into higher and professional education programs (e.g., medical education), learners’ and instructors’ dissatisfaction with feedback practices remain prevalent (Carless et al., 2011; Eva et al., 2012; Joughin, 2009; Nicol, 2010; van de Ridder, Stokking, McGaghie, & ten Cate, 2008; Watling & Lingard, 2012).

**Statement of the Problem**

Feedback in medical education has been defined as “specific information about the comparison between a trainee’s observed performance and a standard, given with the intent to improve the trainee’s performance” (van de Ridder et al., 2008, p. 189). Within postgraduate medical education (PGME) programs, this type of information is important because: (a) feedback is essential for the development of competencies in clinical workplaces, (b) combining observation with feedback assists in the identification of inadequate performance, and (c) feedback encourages learners to think about their performance with the aim of reducing discrepancies between actual and desired performance (Bok et al., 2013). Although the definition of feedback put forward by van de Ridder and colleagues appears to capture these three important elements, the authors indicated that their definition was primarily focused on conceptualizing feedback as a one-way process. Furthermore, although van de Ridder and colleagues mentioned that three feedback discourses (see Table 1) existed in literature from fields such as medicine, communications, and social sciences, their rationale for a primarily cognitive definition was that within medical education literature the focus was primarily on feedback as a one-way process. Conversely, Archer (2010) argues that such definitions are limiting in that they
do not capture the importance of two-way processes in feedback interactions. Consequently, Archer proposed that researchers, instructors, and learners need to gain a more comprehensive understanding of the various feedback discourses that exist and their implications because “only feedback seen along a learning continuum within a culture of feedback is likely to be effective” (Archer, 2010, p. 102).

Promoting a culture of feedback can be challenging as educators must acknowledge the psychosocial needs of their learners while still ensuring that feedback supports learning and competence development (Archer, 2010). A further challenge for PGME programs is that their learners, referred to as residents, must constantly juggle responsibilities inherent in their dual status as learners and workers. As learners, residents must complete educational requirements outlined by their programs and accreditation bodies, including regularly moving from one clinical environment to another for clinical rotations; and as workers (physicians) employed by hospitals to perform essential service functions, residents have full-time work schedules (Houston, Conn, Rajan, & Sinha, 2011). Furthermore, although teaching, learning, and patient care are central activities in PGME programs, it has been suggested that patient care takes priority over other activities (Hoffman & Donaldson, 2004). As a result, PGME programs need to design their formal and informal learning activities, including feedback practices, such that residents are able to balance their responsibilities as learners and workers (Houston et al., 2011).

In order to encourage dialogic feedback processes, Baker and colleagues suggest that two elements, a learning continuum system and a trusting climate, must first be in place (Baker, Perreault, Reid, & Blanchard, 2013). A learning continuum system can be developed by promoting learning on a daily basis (i.e., through communication), encouraging team work, and by giving learners optimal challenges. A trusting climate can be developed by encouraging
communication within and across the hierarchical structures commonly found among learners and their clinical instructors (Baker et al., 2013). The successful development of these elements (i.e., learning systems, trusting climates, and dialogic feedback) is, however, influenced by context.

Although the role of context in various aspects of medical education has been highlighted as an area needing further research (e.g., Regehr, 2006; Teunissen et al., 2007), and research has begun to explore how contextual factors influence the development of learning systems and trusting climates (e.g., Hoffman & Donaldson, 2004; Pimmer et al., 2013). To date, few studies have explored how contextual factors shape the nature of feedback interactions within various clinical settings. In the medical education literature, context can refer to the learning environment (e.g., clinic or hospital) in which learning occurs (Koens, Mann, Custers, & ten Cate, 2005) or can refer to the “interactions (or processes) between individuals and their environments” (Pimmer, Pachler, & Genewein, 2013, p. 464). The latter definition by Pimmer et al. will be adopted for this study. The idea being that studying interactions between individuals and their environments may help us gain a better understanding of how contextual factors shape learning systems, trusting climates, and feedback processes within postgraduate medical education programs.

Purpose of the Study and Research Questions

The purpose of this study was to explore how contextual factors shape feedback interactions within and across various clinical settings. In particular, this study explored the nature of feedback in inpatient and outpatient Pediatrics clinical settings from attendings’ and residents’ perspectives. Three research questions guided this study: (a) What are residents’ and attendings’ conceptions of feedback? (b) What contextual factors shape the nature of feedback
interactions between residents and attendings? and (c) Which types of feedback interactions, if any, may be classified as dialogic feedback processes?

**Definition of Key Terms**

Three key terms used in this study are attending, context, and resident. To avoid confusion the following definitions are used:

*Attending* refers to a senior physician who assumes the role of clinical instructor or supervisor to a resident (Kennedy & Lingard, 2007).

*Context* refers to the interactions (or processes) between individuals and their environments (Pimmer et al., 2013). In particular, context refers to “the sets of conditions that give rise to problems or circumstances to which individuals respond by means of action/interaction/emotions” (Corbin & Strauss, 2008, p. 229).

*Resident* refers to a learner, enrolled in a postgraduate medical education program, who is also employed as a physician by hospital(s) to perform essential service functions (Houston et al., 2011).

**Delimitation**

Within Canada, the Royal College of Physicians and Surgeons of Canada (RCPSC), guides the accreditation of Canadian residency programs. The RCPSC uses four documents to guide Pediatrics residency programs: *Specific Standards of Accreditation for Residency Programs in Pediatrics*, *General Standards of Accreditation*, the *Objectives of Training*, and the *Specialty Training Requirements in Pediatrics*. Together, these documents guide all Pediatrics residency programs’: (a) administrative structures; (b) goals and objectives; (c) structure and organization; (d) resources (including teaching faculty, number and variety of patients, clinical services specific to pediatrics, and physical and technical resources); (e) clinical, academic, and
This study was conducted in a single Canadian institution, focusing on a single Pediatrics residency program, during a six-month period of time. Thus, although all Canadian Pediatrics residency programs must follow the guidelines set forth by the RCPSC, how these guidelines are operationalized can vary due to constraints (e.g., urban versus rural setting, teaching hospital versus community hospital) within an institution’s geographical location. Consequently, the transferability of study findings may be limited to institutions affiliated with teaching hospitals in mid-sized urban locations.

**Summary**

Although feedback is central to learning experiences, differing conceptions, perceptions, and dissatisfaction with feedback practices remain prevalent among learners and supervisors. Within professional education programs, given that competence development in workplace settings is of utmost importance, conceptions and perceptions of feedback may be influenced by the conceptualization of competence adopted by a learner, supervisor, or professional education program. Adopting an interpretative-relational conceptualization of competence and conceptualizing feedback as a dialogic, interactive process in which learners and supervisors share interpretations, negotiate meaning, and clarify expectations about clinical performance might help to address these concerns.

In the case of postgraduate medical education, programs need to design their formal and informal learning activities, including feedback practices, such that their learners (Residents) are able to balance their responsibilities as learners and workers (physicians). To achieve such a goal, these programs must be able to successfully develop three related elements, learning
continuum systems, trusting climates, and dialogic feedback processes. Although feedback interactions are context-dependent, to date, few studies have explored how contextual factors shape the nature of feedback interactions within various clinical settings. Consequently, the purpose of this qualitative study was to explore how contextual factors shape feedback interactions within and across various clinical settings. In particular, this study explored the nature of feedback in inpatient and outpatient Pediatrics clinical settings from attendings’ and residents’ perspectives.

**Outline of Dissertation Chapters**

This dissertation is organized into five chapters. In this first chapter, the statement of the problem, the purpose of the study and research questions, definition of key terms, and delimitations were presented. In the second chapter, a literature review is presented which highlights the theoretical and empirical background of the study. In the second chapter, the conceptual framework guiding the study is also presented. In the third chapter, the methodology that guided this qualitative study is presented. The third chapter includes a discussion of symbolic interactionism, the theoretical perspective that guided the choice of research methods, followed by a discussion of the study setting, the research design, data sources, and data analysis procedures. In the fourth chapter, the research findings are presented. Research findings are organized into three sections: conceptions of feedback, nature of case presentations and feedback interactions in clinical settings, and cross-case analysis of clinical settings. The final chapter presents a summary of the study, followed by discussions of findings related to the literature and limitations. The chapter concludes with recommendations for practice and future research.
Chapter 2

Literature Review

Introduction

This chapter begins with a brief description of a theory that serves as a common foundation to workplace learning research: Wenger’s (1998) social learning theory. This is then followed by a discussion of Teunissen’s (2015) experiences-trajectories-reifications (ETR) framework which was developed, using ideas of Wenger’s social learning theory, to guide research on practice-based learning in healthcare workplaces. Building on ideas from Teunissen’s (2015) ETR framework, the chapter then continues with an introduction to the conceptual framework that guided the study. The conceptual framework is then used as an analytical lens to explore existing literature related to competence development and the role of feedback in postgraduate medical education. To explore the role of feedback in residents’ competence development, findings from a scoping review of existing literature on feedback and competence in postgraduate medical education are presented. The findings from the scoping review are organized around three themes: (a) the feedback models referenced in articles, (b) the contextual factors highlighted in articles, and (c) the conceptions of feedback held by residents and attendings. The chapter ends with a summary and discussion of the identified methodological weaknesses in previous studies. These weaknesses were addressed in this study through methodological decisions that are highlighted in chapter three.

Wenger’s Social Theory of Learning

According to Wenger’s social theory of learning, competence development (i.e., learning and knowing) occurs through social participation (Wenger, 1998). This theory is based on four assumptions: (a) humans are social beings; (b) knowledge is a matter of competence; (c)
knowing is a matter of active engagement in the world; and (d) meaning is ultimately what learning is to produce. As a result of these assumptions, Wenger (1998) posits that learning in the workplace involves four interconnected ideas: community, identity, meaning, and practice (see Figure 1).

Figure 1. Components of Wenger’s social theory of learning

Within this model of workplace learning, community represents the social configurations present in a workplace environment; identity represents how learning changes a person; meaning represents how individuals talk about their experiences and interpret the world; and practice represents the shared historical and social resources, frameworks, and perspectives that individuals in a workplace environment use to sustain mutual engagement in action (Wenger, 1998). Furthermore, practice involves people engaging in actions whose meanings are negotiated.
using individuals’ complementary and overlapping competence and shared resources (e.g., routines, protocols, tools, or actions).

Learning, as a characteristic of practice, involves two dual processes: participation and reification. Participation is the process of taking part in workplace activities and involves relationships with people. Reification is the process of incorporating experiences from activities to solidify understanding of workplace practices. Learning in practice also involves professional identity formation. Professional identity formation, as an experience and form of competence development, involves negotiated experience of self through participation and reification, membership in a community of practice, and individualized learning trajectories (Wenger, 1998).

**Research Framework for Practice-Based Learning in Healthcare Workplaces**

Using the ideas of Wenger’s (1998) social learning theory, Teunissen (2015) proposed a three-level framework, the experiences-trajectories-reifications (ETR) framework, to guide research on practice-based learning in healthcare workplaces. According to Teunissen, the ETR framework provides researchers, educators, and clinicians a systems-based approach to understand the interrelated nature of workplace learning and practice. Specifically, the ETR framework consists of three interconnected levels; “[t]he first level [of analysis] focuses on how situations lead to personal experiences, the second level looks at strings of experiences that lead to multiple trajectories, and the third level deals with reifications arising from recurrent activities” (Teunissen, 2015, p. 843).

**Level 1: Experiences.** According to Teunissen (2015), when conducting research that focuses on understanding how situations lead to learners’ constructions of their personal experiences, often researchers artificially freeze sequences of activities in the workplace in order to focus on specific situations. For example, Teunissen and colleagues (2007) conducted a
qualitative study in an attempt to understand how obstetrics and gynecology residents learn in the clinical workplace. Using a sample of 51 residents from several hospitals in Netherlands, the researchers conducted focus groups and used a grounded theory approach to develop a framework to describe how residents learn through clinical practice. According to the developed framework, learning through clinical practice begins with participating in professional day-to-day tasks such as rounding and seeing patients in clinics. These professional tasks involve interacting with various people and protocols. Thus the types of information embedded in professional tasks can include information to assist residents to gain greater medical knowledge related to diseases or treatments or information to assist residents to gain greater understanding of how to interact and participate in various clinical environments (Teunissen et al., 2007).

To make sense of the information that is embedded in day-to-day professional tasks, residents go through processes of interpretation and meaning-making. Interpretation involves a resident interacting with individuals in a situation and reading a situation (including contextual cues) in order to develop a personal experience of the situation. Meaning-making is closely tied with interpretation and involves a resident constructing an understanding of their personal experience. Another important process that residents use to make sense of clinical practice is reflection. Reflection involves the use of prior personal knowledge and external input such as feedback to further guide interpretation and meaning-making (Teunissen et al., 2007). The processes of interpretation, meaning-making, and reflection espoused by Teunissen et al.’s (2007) framework are closely aligned to the dual processes of participation and reification proposed in Wenger’s (1998) social learning theory.

Within Canada, Watling and colleagues (2012) conducted a similar study with early-career attendings from a single large medical school. The 22 participants in the study came from
a range of medical and surgical specialty programs, including Pediatrics. Early career attendings were selected because it was believed they would benefit from having some reflective distance from their training while still being close enough to training to recall their experiences. The purpose of the study was to use discussions of retrospective experiences to identify how attendings learned from clinical practice during their residency training. Using one-on-one interviews and a grounded theory approach, the researchers identified the factors that were most influential for workplace learning. First, similar to Teunissen and colleagues (2007), Watling and colleagues (2012) found that participating in professional tasks was considered core to workplace learning. Second, participants identified several sources of information (referred to as learning cues) that facilitated their interpretation processes. These sources of information could include “feedback, role models, clinical outcomes, and patient or family responses” (Watling, Driessen, van der Vleuten, & Lingard, 2012, p. 194).

Although participants in Watling and colleagues’ (2012) study highlighted the importance of timely, constructive feedback from supervisors, many indicated that it was uncommon during their training. As alternatives, role models were used to provide an observable standard to aspire to and clinical outcomes were considered useful objective measures of a learner’s clinical performance. With regard to interactions with patients and families, reactions and responses of patients and families were used to guide learner performance and also used by learners to observe the utility of role models’ techniques. In relation to meaning-making processes, Watling and colleagues identified internal and external factors (i.e., learning conditions) that influenced a learner’s ability to construct an understanding of their personal experience. Internal factors included openness to learning and learners’ motivations and goal orientations. External factors
included attendings’ abilities to provide clinical autonomy to learners and learners’ perceptions of assessors’ credibility (Watling, Driessen, van der Vleuten, & Lingard, 2012).

As evidenced by these two studies, research that artificially freezes sequences of activities in the workplace in order to focus on specific situations can help us gain a better understanding of residents’ learning through clinical practice. Furthermore, in these types of studies, interviews (whether one-on-one or focus group) have been shown to be a useful means of gaining an understanding of (a) how situations lead to learners’ constructions of their personal experiences of clinical practice and learning, and (b) the types of factors that influence learners’ interpretation and meaning-making processes.

**Level 2: Trajectories.** According to Teunissen (2015), strings of personal experiences can combine to lead to multiple trajectories. Trajectories are defined as “combinations of personal experiences over time that result in personal development and impact the constant renegotiating of our identity” (Teunissen, 2015, p. 847). Trajectories of multiple individuals become intertwined during social interactions. For an individual, professional trajectories may be small, such as becoming proficient at history taking, or may be large, such as becoming a Pediatrics physician. Within the medical education continuum, trajectories are shaped by critical transitions including the transition from medical student to clerk, the transition from clerk to resident, and the transition from resident to independent practitioner (Teunissen & Westerman, 2011).

Teunissen and Westerman (2011) note that a transition is “not a moment, but rather a dynamic process in which the individual moves from one set of circumstances to another” (p. 52). To explore the role of transitions in the competence development of physicians, Teunissen and Westerman conducted a critical synthesis of medical education literature. The 73 identified
articles were categorized into three types of research: objectifying research that aimed to assess the level of change learners face during transitions; clarifying research that aimed to develop our understanding of how the transition process works; and justifying research that aimed to describe educational interventions aimed at helping learners cope with transitions along the medical continuum (Teunissen & Westerman, 2011). Pertaining to the transition from clerk to resident, Teunissen and Westerman found that studies covered a range of research designs, including qualitative (i.e., interviews), quantitative (i.e., surveys), and mixed-methods approaches (i.e., interviews and surveys). Earlier studies suggested that junior residents did not have adequate training in management aspects of clinical practice, such as prioritizing tasks or breaking bad news, whereas later studies suggested that junior residents did not have adequate training in technical skills such as prescription writing (Teunissen & Westerman, 2011).

For example, Prince and colleagues (2004) conducted focus groups with seventeen junior residents from Netherlands in order to explore residents’ perceptions of the transition from clerk to resident. The main themes that emerged were “changes in responsibility, workload and work content; relationships with patients and health care workers; preparation by undergraduate training, problems related to practical procedures and feelings of uncertainty; (formal) learning; and suggestions for making the transition less burdensome” (Prince, Van de Wiel, Van der Vleuten, Boshuizen, & Scherpbier, 2004, p. 326). Junior residents indicated that the transition involved increased responsibility and the ability to handle increased responsibility was dependent on a learner’s management and technical skills. Residents also felt that due to increases in evening and night shifts, they worked more hours than in clerkship. With regard to work content, residents felt they had greater responsibility for ensuring the organization and completion of clinical paperwork such as ordering tests or completing discharge summaries. The
transition from clerk to junior resident also resulted in longer rotations, which participants felt gave them time to build relationships with patients and other health care workers. Junior residents in this study felt that through their prior learning they had received adequate training in history taking, physical examination, and communication skills during their undergraduate training. The residents, however, felt they had not received adequate training in technical skills such as prescription writing. With reference to learning and the workplace learning environment, participants’ differing experiences resulted in different perceptions of learning in the workplace. In particular, two participants indicated that learning was an essential component of their residency training, whereas the other 15 residents felt that patient care came first and learning, if it happened at all, took second place. Finally, participants provided suggestions for improvement including providing graduated responsibility during clerkship in order to facilitate clerks’ involvement in management and clinical decision making (Prince et al., 2004).

Concerning the transition from resident to independent practitioner, Teunissen and Westerman (2011) found that there was a lack of research to develop our understanding of how the transition process from resident to independent practitioner works; instead research predominantly consisted of objectifying and justifying research. As a result of this gap, Westerman and colleagues (2013) conducted a longitudinal qualitative study to examine how new independent practitioners dealt with their on-call supervisory roles and which factors influenced this process. Eight novice internal medicine specialists were interviewed, at three time points over an eight-month period, while they were on call. Interviews focused on perceptions of their preparation for their supervisory role, actions they took to master their new role, and their progression over time in the new role (Westerman et al., 2013).
According to participants, prior clinical knowledge and experience with supervisory tasks during residency were associated with participants having greater confidence in their abilities to take on their new supervisory roles. Personal and environmental characteristics influenced the actions participants took to master their new supervisory roles. For example, beliefs about what constitutes good supervision were influenced by prior personal experiences (both positive and negative) during residency training. With reference to environmental characteristics, participants indicated that familiarity with the clinical environment was vital to their ability to fulfil their supervisory tasks. Participants also mentioned that similarity between the types of patients (e.g., demographics and case complexity) they dealt with during residency and those they dealt with as part of their new supervisory roles also helped participants gain greater confidence in their ability to take on these roles. Finally, with progression over time in the role, participants’ personal attributes influenced whether they took on proactive stances (e.g., seeking feedback to support their supervisory role) (Westerman et al., 2013).

**Level 3: Reifications.** According to Teunissen (2015), trajectories, formed by recurrent patterns of professional activities, can result in social and cultural reifications. Within a professional program, “many aspects of experiences and trajectories are shared between individuals and within groups, conventions develop, hierarchies are established, specific tools are invented, and people get to know ‘the way we do things over here’” (Teunissen, 2015, p. 849). For example, a medical education program’s guidelines, protocols, tools, schedules, expectations, and language evolve out of mutual engagement and joint enterprise by individuals within the program (Teunissen, 2015; Wenger, 1998). As a result, research conducted at the reification level is focused on understanding how learning environments evolve, how program changes happen, why changes arise, or how changes impact the people in the program. For example, an area of
interest at this level of analysis involves how social and cultural reifications result in different learning climates. Learning climates are of particular interest because they provide a means of evaluating the quality of training programs (Boor, van der Vleuten, Teunissen, Scherbier, & Scheele, 2011). Specifically, a learning climate:

- inform[s] us about the contexts residents participate in. It is a construct that relates to multiple facets of residents’ training. It reflects the way people in departments approach learning and it incorporates shared perceptions of these people on themes like atmosphere, supervision, and the status of learning. Learning climates are constructed through interactions of learners and other healthcare workers and are influenced by organizational arrangements and artifacts. (Boor et al., 2011, p. 820)

Barone and colleagues (2012), for example, reported on a program change that was instituted to an inpatient Pediatrics service at John Hopkins University in the United States. The program change was designed to improve the learning climate and was triggered by increasing patient volume and acuity and lack of ward attending availability. To support medical students and residents, two attending positions were redefined: a clinical ward attending to focus on clinical care and resident education and a teaching attending to focus on medical student education. Salary support and explicit expectations for duties and time commitments were created for each position. To examine the impact of the program change, Barone and colleagues used a pre-post study design to compare learners’ evaluations from the academic year prior to the program change to evaluations collected in two subsequent years. Residents evaluated their ward attending on several aspects including quality of bedside teaching, clarity of expectations, availability, feedback, timeliness, and communication skills with the team. As a result of the program change, residents’ perceptions of quality of bedside teaching, clarity of expectations,
availability, feedback, and timeliness all increased and continued to increase two years after the program change (Barone et al., 2012).

Boor and colleagues (2011), on the other hand, used a qualitative study of 40 residents from different specialty programs to develop an instrument to measure learning climates in postgraduate medical education. The instrument was based on the assumption that in an optimal learning climate, practice and learning would be integrated, involve a great deal of interaction with attendings, peers, other healthcare workers and patients, and be individualized to a resident’s needs. Using the findings of the qualitative study as a starting point, the researchers developed a 40-item instrument that ultimately became a 50-item instrument after a Delphi process involving medical educators, policymakers, residents, and attendings. The final 50-item instrument contained the following 11 subscales: supervision, coaching and assessment, feedback, teamwork, peer collaboration, professional relations between attendings, work is adapted to resident’s competence, attending’s role, formal education, role of specialty tutor, and patient sign out (Boor et al., 2011).

**Interconnections between levels.** As evidenced by the subscales in Boor et al.’s (2011) instrument, various factors are at play in a clinical learning environment and these should be considered when we aim to understand how residents learn from clinical practice. As Teunissen notes, “the influence of social and cultural structures on the nature of the situations people participate in and their impact on how situations are transformed into personal experiences is the link that closes the perpetual loop of the ETR framework” (Teunissen, 2015, p. 850).

**Conceptual Framework**

Teunissen (2015) suggested that often when research is conducted at one level of the ETR framework, the other levels fall into the background. Although this occurs, Teunissen calls for
researchers to keep all three levels in mind given their interrelated nature. Consequently, given that the purpose of this qualitative study was to explore how contextual factors shape feedback interactions within and across various clinical settings, the conceptual framework that guided this study was developed from Velde’s (1999) interpretative-relational conceptualization of competence coupled with Illeris’ (2003a, 2003b) theory of learning and Yang and Carless’ (2012) dialogic feedback framework. The resulting conceptual framework (Figure 2) was used to highlight the various contextual factors (from all three levels of the ETR framework) that could impact feedback and competence development, and the processes involved in meaning-making to support learning.

![Conceptual Framework](image)

**Figure 2.** Conceptual framework for this study

Velde’s (1999) interpretative-relational conceptualization of competence was used to take into account the cognitive, emotional, and social dimensions of learning (i.e., related to the individual, the situation, the different variations in experience, and workplace relationships);
Illeris’ (2003a, 2003b) theory of learning was used to describe how the various dimensions of learning interact within a workplace environment; and Yang and Carless’ (2012) framework was used to highlight how dialogic feedback, while influenced by interactions between dimensions of learning and elements in the workplace environment, can serve to stimulate the external interaction and internal acquisition and elaboration processes and thus promote meaning-making.

**Velde’s interpretative-relational conceptualization of competence.** According to interpretative approaches to competence development, when professional learners conceive of their work, they are actively involved in meaning-making processes. Furthermore, “the context in which a person works, the situation and their experience, cannot be separated from their conceived meaning of the world around them” (Velde, 1999, p. 444). Consequently, the interpretative-relational conceptualization of competence development is built on the idea that to understand competence development, one must take into account the various elements that can impact on learning; including the individual, the context, the various conceptions of competence held by members of the environment, and workplace relationships. According to Velde, if these elements are taken into account through an interpretative-relational conceptualization of competence, this can facilitate the notion of work as a vehicle for professional identity formation (Velde, 1999).

**Illeris’ theory of learning.** In response to modern conceptions of competence such as the interpretative-relational conception of competence, Illeris sought to develop a contemporary and comprehensive theory of learning (Illeris, 2003a). According to Illeris’ (2003a) theory of learning, all learning includes two interrelated processes and three integrated dimensions of learning. The two interrelated processes are (a) an external interaction process between a learner and their social, cultural, and physical environment and (b) an internal psychological process of
acquisition and elaboration in which new experiences are connected with results of prior learning. The three integrated dimensions of learning are cognitive (e.g., knowledge and skills), emotional (e.g., feelings and motivation), and social (e.g., communication and relationships) (Illeris, 2003a). Illeris posits that when it comes to workplace learning in professional programs, all external interaction processes between learners and their environment are social in nature due to the fact that they are dependent on the context, situation, and previous experiences of individuals present during an interaction. Furthermore, in relation to the internal process of acquisition and elaboration, Illeris notes that because learning is often motivated by desire, necessity, or compulsion, workplace learning also involves cognitive and emotional dimensions (Illeris, 2003b).

Yang and Carless’ dialogic feedback framework. If, as posited by Wenger (1998), learning in the workplace is a social process of negotiating new meanings, then dialogic feedback processes (i.e., interactive exchanges between learners and instructors in which interpretations are shared, meanings negotiated, and expectations clarified) should promote meaning-making. This is accomplished by stimulating the external interactions and internal acquisitions and elaboration processes. In order to achieve this, Yang and Carless (2012) propose a framework for using dialogic feedback to foster meaning-making. According to their framework, dialogic feedback practices are dependent on the interplay among cognitive, social, emotional, and structural (environmental) dimensions. For example, in order to promote dialogic feedback practices and support competence development, Yang and Carless suggest that professional programs ensure that (a) content of feedback aligns with learners’ knowledge and skills, (b) trusting relationships between learners and instructors are fostered, and (c) institutional policies and resources support flexible feedback provision (Yang & Carless, 2013).
Feedback and Competence Development in Postgraduate Medical Education

As highlighted earlier, if one takes an interpretative-relational perspective on competence in medical education programs, competence development involves the situational relationships among physicians’ abilities, their professional tasks, their colleagues and patients, and the health care system and clinical environments in which they complete tasks (Epstein & Hundert, 2002; Klass, 2007). To better understand how these elements interact to promote residents’ competence development, Pratt and colleagues (2006) conducted a six-year, longitudinal qualitative study of 29 residents from three postgraduate medical education programs: primary care, radiology, and surgery. These programs were selected in order to capture perspectives from generalists, specialists, and those with high and low degrees of patient contact. Using interviews, observations, and survey data, Pratt and colleagues examined residents’ competence development by tracking changes in residents’ perceptions of their professional tasks and identity as they progressed through their programs (Pratt et al., 2006). As a result of this pivotal study, Pratt et al. (2006) proposed a model to capture the interplay of work and identity learning cycles in residents’ professional identity formation (Figure 3).
The concepts of work, work-identity integrity assessments, identity customization, and social validation in this model can be used to highlight the interplay among various contextual factors of interest. Specifically, in Pratt and colleagues’ study, the process of external interaction was captured through residents’ perceptions about work (i.e., their perceptions of the content and processes required to complete professional tasks); the internal acquisition and elaboration...
process was captured through residents’ perceptions of work-identity integrity assessments (i.e., comparing who they were versus what they did), and the three dimensions of learning (i.e., cognitive, emotional, and social) were captured through detailed descriptions of how residents used identity customization techniques and social validation (i.e., feedback and role modelling).

For example, as primary care residents moved through their residency programs, although their professional tasks (e.g., physical exams, history taking, writing orders, and getting consults) did not change drastically, their perceptions of how these tasks influenced colleagues and patients changed over time (Pratt et al., 2006). Early in their programs, residents viewed professional tasks as a means of developing rapport with patients and supporting patient care, yet toward the end of their first year, some of these tasks (e.g., writing orders) were viewed as menial work that was needed to keep the health care system and clinical environments running. Interestingly, across all years, primary care residents’ perceptions of who they were versus what they did remained relatively stable – they considered themselves as patient advocates who coordinated their patients’ care (Pratt et al., 2006).

Surgical and pathology residents, instead, tended to experience severe work-identity integrity assessment violations (Pratt et al., 2006). For example, during their first year, both surgical and pathology residents found themselves doing tasks that they considered at odds with their perceptions of their professions. Surgical residents felt that professional tasks such as physical exams, history taking, writing orders, and getting consults, were menial work because they expected to be primarily working in operating rooms, while pathology residents spent most of their first year studying and shadowing senior residents rather than taking consults from other physicians (Pratt et al., 2006). In order to deal with the mismatch between their professional tasks and their perceived identity, surgical residents used an identity customization technique
described as *identity patching* to resolve this mismatch. Identity patching, drawing on previous clinical experiences from medical school, was used by surgical residents to ensure that they could successfully perform professional tasks such as physical exams, history taking, writing orders, and getting consults. Pathology residents, in contrast, adopted *identity splinting* as their identity customization technique. Identity splinting involved taking on a temporary identity (e.g., medical student role) that could act as a splint/support while developing another identity (Pratt et al., 2006).

Although Pratt and colleagues (2006) highlighted various contextual factors that can influence competence development, a major gap in their study was the lack of exploration of how feedback impacted residents’ competence development. This is somewhat surprising given that in their proposed model (Figure 3), social validation, through feedback and role modeling, served as a critical connecting element between residents’ understandings of their professional work and professional identity. In fact, the only examples of “feedback” highlighted by the authors were residents’ negative experiences with supervisors (e.g., being yelled at by supervisors or being told they were a weak resident in comparison to peers).

**Feedback Models in Medical Education**

Pratt and colleagues (2006) did not explore the role of feedback in competence development. Nevertheless, within the medical education literature there is a continually growing body of literature focused on feedback in workplace settings. Although three feedback discourses/models (Table 1) exist in the broader education literature (i.e., transmission model – feedback as a one-way process, integrated model – feedback as a bidirectional, non-dialogic process, and dialogic model – feedback as dialogue), only two models of feedback are described in detail in the medical education literature: the transmission model and the dialogic model. The
most commonly cited definition of feedback in medical education stemmed from a 1983 article by Jack Ende in which he stated that “feedback refers to information describing students’ . . . performance in a given activity that is intended to guide their future performance in that same or in a related activity” (Ende, 1983, p. 777). This definition is representative of a transmission model of feedback. While the transmission model operationalizes feedback as a one-way process that involves a message sent by one person (sender) to another person (receiver) with the intent of influencing the receiver’s behaviour (Bing-You, Bertsch, & Thompson, 1998), the dialogic model extends the transmission model by operationalizing feedback as a social, interactive, dynamic, and evolving dialogic process in which participants’ understandings and interpretations are informed by current and previous communicative interactions (Ajjawi, 2012).

**Transmission model of feedback.** The transmission model operationalizes feedback as a message sent by one person (sender) to another person (receiver) with the intent of influencing the receiver’s behaviour (Bing-You et al., 1998). The sender encodes ideas, feelings, and intentions into a message that is transmitted in some form (e.g., verbal, nonverbal, or written) through a channel (e.g., spoken, body language, or paper) to the receiver. This message must then be decoded and interpreted by the receiver. Although the receiver internally responds to the perceived message, they may or may not respond directly to the sender. Within this model, any element that interferes with the communication process is considered noise. Noise may occur in the sender (e.g., attitudes or orientations), the channel (e.g., contextual constraints), or receiver (e.g., frames of reference) (Bing-You et al., 1998). While much of the previous research has used the transmission model to focus on the content, the receiver, or the sender of feedback (e.g., Anderson, 2012; Bell, 2007; Crommelinck & Anseel, 2013), a growing body of research has begun to focus on the nature of the interactions among sender, receiver, and situation, and the
impact of these interactions on the value and use of feedback as a learning process (e.g., Ajjawi, 2012; Pelgrim, 2013; Watling, Driessen, van der Vleuten, Vanstone, & Lingard, 2012). This body of research tends to abandon a transmission model and adopt a dialogic model of feedback.

**Dialogic model of feedback.** The dialogic model extends the transmission model by operationalizing feedback as a social, interactive, dynamic, and evolving dialogic process in which participants’ understandings and interpretations are informed by current and previous communicative interactions (Ajjawi, 2012). During a new feedback interaction, participants’ previous communicative interactions and experiences (i.e., frames of reference) influence how they understand and interpret verbal (e.g., asking “What do you mean?”), paralinguistic (e.g., laughter), or nonverbal (e.g., frowning or nodding) messages (Ajjawi & Rees, 2008). Furthermore, during the feedback interaction, participants negotiate meaning by taking into account each other’s respective ideas, feelings, and points of view (Ajjawi & Rees, 2008). Within this model, feedback is considered a form of communication in which:

> [M]eaning is negotiated between individuals, taking into account their respective ideas, feelings and points of view. Communication [dialogic feedback] is thus based on dynamic and evolving processes involving relationships between participants with individual and overlapping frames of reference that are context-dependent. (Ajjawi, 2012, p. 1018)

**Feedback in Postgraduate Medical Education**

To explore residents’ and attendings’ perceptions of feedback in postgraduate medical education, a scoping review of literature related to feedback and competence development in postgraduate medical education was conducted. Using the PubMed database, a search was conducted for English language articles published from 1999 to present, using the following

The year 1999 was selected to coincide with Velde’s (1999) article in which the interpretative-relational approach to competence was first proposed. Initially 194 articles were found. After applying inclusion criteria (i.e., learners = residents AND setting = clinical environment) and exclusion criteria (i.e., learners = medical/dentistry students OR setting = classroom/simulation environment), 49 articles were retained. Of those, one was not accessible, resulting in a final count of 48 articles. A thematic analysis of these 48 articles (Appendix A) was conducted to explore (a) the feedback models referenced in articles, (b) the contextual factors highlighted in articles, and (c) the conceptions of feedback held by residents and attendings.

Feedback models referenced in scoping review. Forty two (88%) of the articles were empirical and the remaining six were categorized as commentary/conceptual papers. Out of this set of 48 articles, 34 (71%) used or referenced a transmission model of feedback, 2 (4%) used or referenced an integrated model, and 12 (25%) used or referenced a dialogic model of feedback. The majority of articles using dialogic feedback models (i.e., 9 out of 12, 75%) were published within the last five years. Table 2 provides examples of how the transmission, integrated, and dialogic models of feedback were defined or operationalized in articles.
Table 2

Examples of descriptions of transmission, integrated, and dialogic models of feedback

<table>
<thead>
<tr>
<th>Transmission</th>
<th>Integrated</th>
<th>Dialogic</th>
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<tr>
<td>“Multisource feedback is the objective systematic collection of data and provision of feedback about an individual’s performance from a number of raters from a variety of backgrounds (e.g., clinical colleagues, nurses, radiographers, and clerical staff) working with the individual.” (Bari, 2010, p. 15)</td>
<td>“[The feedback process involves a meeting] to assist the resident in identifying both important strengths and focal areas for improvement, and to provide guidance in the development of a performance plan including performance improvement goals and proposed activities to achieve each goal.” (Higgins et al., 2004, p. 14)</td>
<td>“Debriefing encompasses feedback and involves trainer and trainee engaging in 2-way dialogue to develop insights into performance, including what is good about it, where improvements are required, and how to go about achieving them.” (Ahmed, Sevdalis, Vincent, &amp; Arora, 2013, p. 434)</td>
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<td>“Performance feedback is an essential component of clinical education. Performance feedback is ‘the constructive and objective appraisal of performance given to improve skills’ and can be formative or summative.” (Ibrahim, Macphail, Chadwick, &amp; Jeffcott, 2014, p. 418)</td>
<td>“[During the feedback process] the attending made his comments based on the live cases. Then, once the attending’s text feedback was available for review, the fellow reviewed the important steps of each procedure with particular attention to identified areas of difficulty or technical challenge in a low-stress environment.” (Ghaderi, Auvergne, Park, &amp; Farrell, 2015, p. 72)</td>
<td>“In Archer’s (2010) words: ‘feedback must be conceptualised as a supported sequential process, rather than a series of unrelated events’ (p. 106). Mentoring by the same supervisor or mentor can help trainees to actively digest feedback and integrate it in their self-assessment (Driessen et al. 2008)’. ” (Driessen &amp; Schelle, 2013, p. 570)</td>
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<td>“Feedback is presented to the learner to promote reflection on performance, focusing both on what was done and what the consequences might be (Ende, 1983).” (Liberman, Liberman, Steinert, McLeod, &amp; Meterissian, 2005, p. 470)</td>
<td></td>
<td>“Interactive feedback includes self-assessment by the trainee and allowing the learner to react to the feedback provided. Interactive feedback should include an action plan where the trainee, with the guidance of the faculty, develops a behavioral plan to improve his/her clinical skills.” (Holmboe, Yepes, Williams, &amp; Huot, 2004, p. 558)</td>
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Contextual factors highlighted in scoping review. The distributions of contextual categories highlighted in the 48 articles were as follows: 33% of the articles highlighted cognitive factors, 27% highlighted emotional factors, 48% highlighted social factors, and 90% highlighted environmental factors. In the case of cognitive factors, 16 articles highlighted skills, 2 articles highlighted knowledge, and 2 articles highlighted attributes. In the case of emotional factors, 8 articles highlighted motivation, 6 articles highlighted emotions, and 4 articles highlighted goal orientation. Finally, for social factors, 20 articles highlighted relationships, 5 highlighted experiences, and 3 highlighted situations. The relatively large representation of environmental factors was due to the fact that 32 (67%) of the 48 articles were reporting on the development and use of various assessment tools or systems implemented in various postgraduate medical education programs (e.g., anesthesiology, pediatrics, and surgery). The other environmental factors that were highlighted included time constraints (17%), climate/culture (13%), policies and procedures (8%), patient characteristics (6%), and teaching vs. service commitments (6%).

Six of the 48 articles highlighted factors from all four contextual categories (i.e., cognitive, emotional, social, and environmental) (i.e., Ahmed, Sevdalis, et al., 2013; Delva et al., 2013; Dijksterhuis, Schuwirth, Braat, Teunissen, & Scheele, 2013; Sagasser, Kramer, & van der Vleuten, 2012; Sargeant et al., 2010; Weller, Jones, Merry, Jolly, & Saunders, 2009). These articles tended to involve interviews with attendings and residents to explore (a) perceptions of assessment and feedback practices or (b) interventions to support self-regulation or informed self-assessment. In these articles, the various contextual factors highlighted were often described under separate themes emerging from interview data without a discussion of how they were
interrelated. One exception was the article by Sargeant and colleagues (2010) in which the authors integrated the findings from interview data into a model of the processes and dimensions of informed self-assessment. This model, although focused on the concept of informed self-assessment, captured similar processes (e.g., interaction and interpretation) and dimensions of learning (e.g., cognitive, emotional, and social) as the conceptual framework (Figure 2) used in the current study. In reviewing this subset of articles, a critical gap, that was also present in the larger set of articles, was the lack of studies that used direct observations to explore the alignment between perceptions and actual practices. In fact, out of the 48 articles reviewed, only two included the use of interviews and direct observations to explore the alignment between individuals’ perceptions and actual practices (i.e., Ahmed, Sevdalis, et al., 2013; Ahmed, Arora, et al., 2013).

**Conceptions of feedback highlighted in scoping review.** Twenty four (50%) of the articles included discussions of conceptions of feedback held by attendings (n = 2), residents (n = 8), or both (n = 14). Of these articles, 15 used surveys and 12 used interviews. Surveys were predominantly used in studies that adopted pre-post designs in order to obtain users’ perceptions of new assessment/feedback tools or systems (e.g., Ahmed, Arora, et al., 2013; Dattner & Lopreiato, 2010; Humphrey-Murto et al., 2009). For example, Ahmed and colleagues developed a feedback protocol that was used to encourage surgical residents and attendings to move from a predominantly transmission model of feedback to a dialogic feedback model of feedback in operating room settings. The feedback protocol was developed after a series of observations and interviews (Ahmed, Sevdalis, et al., 2013) and the resulting pre-post survey design coupled with observations post-intervention were used as evidence of the success of the intervention (Ahmed, Arora, et al., 2013).
Surveys predominantly used rating scales to measure the impact of interventions in relation to: (a) increasing frequency of feedback (e.g., Dattner & Lopreiato, 2010; Humphrey-Murto et al., 2009); (b) promoting learning and reflection (e.g., Laughlin, Brennan, & Brailovsky, 2012; Mehta, Brown, & Shaw, 2013); and (c) clarifying expectations (e.g., Stark, Korenstein, & Karani, 2008; Weller et al., 2009; Wood et al., 2004). Although most interventions studies were documented as “success stories”, at least two studies (i.e., Higgins et al., 2004; Malhotra, Hatala, & Courneya, 2008) highlighted the challenges underlying adoption of new assessment/feedback systems. For example, Malhotra and colleagues conducted focus groups with 12 internal medicine residents to explore residents’ perceptions of a mini-Clinical Evaluation Exercise (mini-CEX) system that had been introduced in their institution to support assessment, education, and examination preparation. Although residents indicated that they recognized that observations and feedback were important for their learning, they also indicated that the use of the mini-CEX increased performance anxiety due to the presence of raters in the clinical environment (Malhotra et al., 2008).

In connection with general conceptions of feedback, findings from studies involving interviews with residents or attendings were organized around two themes: (a) purposes and content of feedback and (b) barriers to feedback.

**Purposes and content of feedback.** In general, residents indicated that the purpose of feedback was to provide informative, developmental feedback that highlighted what went well, what did not, and suggestions for improvement that could be used to formulate plans for improvement (Ahmed, Sevdalis, et al., 2013; Ghaderi et al., 2015; Haydar, Charnin, Voepel-Lewis, & Baker, 2014; Ibrahim et al., 2014; Jensen, Wright, Kim, Horvath, & Calhoun, 2012; Pelgrimm, Kramer, Mokkink, & van der Vleuten, 2012b). The content of feedback ranged from
technical skills to communication skills and professionalism (e.g., Burford, Illing, Kergon, Morrow, & Livingston, 2010; Gonzalo et al., 2014). Gonzalo and colleagues conducted a qualitative multi-institutional study to explore teaching and feedback practices of internal medicine attendings that supervised bedside rounding. Using a sample of 34 attendings from 10 US institutions, the authors obtained information related to the content and timing of feedback during and after bedside rounding. The findings from their study highlighted how bedside attendings switched the focus of feedback between an individual resident and a team depending on the stage of rounding. For example, during a bedside encounter, the focus of feedback for a resident presenting a case was on their physical examination skills and medical knowledge while the focus of feedback for the team was related to care delivery. After each bedside encounter, a resident’s feedback was focused on communication skills and medical knowledge, while team feedback remained focused on ensuring and optimizing care delivery. Finally, after bedside rounding, the focus was on individual members of the team. At this stage, residents tended to receive feedback on their communication, leadership, or teaching skills (Gonzalo et al., 2014).

**Barriers to feedback.** A commonly reported barrier to feedback was the disconnect between residents’ and attendings’ perceptions of feedback quality and delivery. While attendings believed they were delivering timely, quality feedback, residents perceived that attendings did not fully engage in the feedback process (Bose & Gijselaers, 2013; Delva et al., 2013; Dijksterhuis et al., 2013; Ehrenfeld, McEvoy, Furman, Snyder, & Sandberg, 2014; Jensen et al., 2012; Liberman et al., 2005). Other barriers to feedback that were highlighted included time/scheduling constraints, culture (i.e., institutional), competing teaching and service commitments, case complexity, communication and rapport (i.e., relationships), and credibility and experience of the assessor (Ahmed, Sevdalis, et al., 2013; Ibrahim et al., 2014; Mehta et al.,
The impact of these barriers is best highlighted in findings from Sargeant and colleagues’ (2010) multi-national qualitative study of undergraduate and postgraduate learners’ conceptions of informed self-assessment. Using focus group interviews with 85 undergraduate and postgraduate learners (i.e., residents) from Canada, United States, United Kingdom, Netherlands, and Belgium, the authors found:

Postgraduate learners valued formal and informal feedback from supervisors and senior peers. However, they also reported that feedback was sometimes conspicuous both by its absence and lack of usefulness. Lack of feedback left them feeling isolated, uncertain, and concerned that they might be unaware of inadequate performance. (p. 1215)

Summary

This chapter began with a brief description of Wenger’s (1998) social learning theory, followed by a discussion of Teunissen’s (2015) framework, the experiences-trajectories-reifications (ETR) framework, that uses the ideas of Wenger’s (1998) social learning theory to guide research on practice-based learning in healthcare workplaces. Next, using the ideas from the ETR framework, the conceptual framework which guided the study, was introduced. The conceptual framework was developed to better understand competence development and the role of feedback within a postgraduate medical education program. Specifically, the conceptual framework was developed from Velde’s (1999) interpretative-relational conceptualization of competence coupled with Illeris’ (2003a, 2003b) theory of learning and Yang and Carless’ (2012) dialogic feedback framework. Velde’s interpretative-relational conceptualization of competence was used to take into account the cognitive, emotional, and social dimensions of learning by highlighting the elements of a workplace environment that impact on learning; Illeris’ theory of learning was used to describe how the various dimensions of learning interact within a workplace
environment; and Yang and Carless’ framework was used to highlight how dialogic feedback, while influenced by interactions between dimensions of learning and elements in the workplace environment, can serve to stimulate the external interaction and internal acquisition and elaboration processes and thus promote meaning-making.

The conceptual framework was also used as an analytical lens in a scoping review of existing literature on feedback and competence in postgraduate medical education. Results from the scoping review highlighted the importance of considering the various contextual factors identified in the conceptual framework and how these factors could influence feedback and competence development. A methodological weakness that was identified was the lack of studies that used both interviews and direct observations to better understand the link between attendings’ and residents’ conceptions of feedback and their practices in clinical settings. To strengthen the current study, this identified weakness was used to guide the methodological decisions highlighted in the next chapter.
Chapter 3

Methodology

The purpose of this qualitative study was to explore how contextual factors shape feedback interactions within and across various clinical settings. In particular, this study explored the nature of feedback in inpatient and outpatient Pediatrics clinical settings from attendings’ and residents’ perspectives. This chapter presents the methodology that guided the study and the methods used to obtain and analyse the data. The chapter begins with a discussion of Symbolic Interactionism, the theoretical perspective that guided the choice of research methods. Symbolic Interactionism was chosen to study feedback interactions because this theoretical perspective focuses on human interaction and examines (a) how various elements influence human actions and (b) the dynamic nature of meaning-making during these interactions (Williams, 2008). The section on Symbolic Interactionism will then be followed by a description of my researcher positionality, the study setting, research design, data collection methods, and data analysis procedures that were used.

Symbolic Interactionism

Symbolic Interactionism (SI), as a perspective, aims to understand human behaviour by focusing on human interactions (Charon, 2009). The approach was introduced by George Herbert Mead (Mead, 1934) and later extended by his student Herbert Blumer (Blumer, 1986). Major influences on Mead included the philosophy of pragmatism and the behaviourism approach to psychology (Charon, 2009; Mead, 1934). SI was developed around four central ideas of pragmatism: (a) people do not respond to their environment, they interpret their environment; (b) knowledge is learned, remembered, and believed in relation to a person’s ability to successfully apply it; (c) objects that we notice are defined by us according to their perceived usefulness; and
(d) to understand people, “we need to understand their actions, the causes of their actions, the consequences of their actions, the perception of our own actions, and the perceptions of other people’s actions” (Charon, 2009, p. 31). As a behaviourist interested in social interactions, Mead (1934) believed that to study human social behaviour, because social behaviour includes actions that cannot be directly seen, observations alone are not enough. Hence researchers must also take into account that human action involves understanding, defining, interpreting, and meaning-making (Charon, 2009).

From an SI perspective, meaning-making and interpretation are essential human processes that are created and altered through interactions (Patton, 2002; Williams, 2008). Thus meaning is conceptualized as an emergent product shared by participants in an interaction. In SI, there are five interrelated concepts that are used to understand meaning-making processes: self, objects, action, social interaction, and joint action (Blumer, 1986). According to Blumer, self refers to the process by which an individual learns to understand themselves and the objects around them (i.e., self-reflection); objects refer to anything designated or referred to by an individual (e.g., physical objects—person, tool or abstract objects—words, emotions); and action refers to how an individual confronts and acts towards objects they choose to focus on (Blumer, 1986). These three concepts, together, highlight the personal processes that an individual goes through during an interaction. The last two concepts highlight the interactional processes involved in meaning-making. Social interaction is a process in which the perspectives of individuals involved in the interaction are collected. In particular, data are collected on how individuals (a) interpret each other’s actions and (b) respond to each other’s actions. In contrast, joint action is a collective form of action (e.g., collaboration), moving beyond social interaction to highlight the ultimate goal of developing shared meaning (Blumer, 1986). These five
interrelated concepts of SI (i.e., self, objects, action, social interaction, and joint action) were devised to support direct examination of the empirical social world (Blumer, 1986).

According to Blumer (1986), the methodological stance of SI is that of direct examination (i.e., naturalistic inquiry) and involves two phases: exploration and inspection. The purpose of the first phase, exploration, is to gain a clearer understanding of how a research problem is to be posed, to learn what are the appropriate data to collect, to develop ideas of what are significant relations between concepts (i.e., analytical elements), and to evolve one’s conceptual tools in light of what one is learning about an area of study (Blumer, 1986). During exploration, a researcher can use a variety of ethically allowable procedures to get a clearer picture of what is going on in an area of study; these procedures may include direct observations, interviews, listening to conversations, consulting public records, and arranging group discussions (Blumer, 1986). The purpose of the second phase, inspection (i.e., analysis), is to allow a researcher to use their empirical evidence to situate the research problem in theory so as to discover generic relations and formulate theoretical propositions (Blumer, 1986). Inspection involves examining the empirical evidence collected for a given analytical element (e.g., feedback interaction) and during this process:

One goes to the empirical instances of the analytical element, views them in their different concrete settings, looks at them from different positions, asks questions of them with regard to their generic character, goes back and re-examines them, compares them with one another, and in this manner sifts out the nature of the analytical element that the empirical instances represent. (Blumer, 1986, p. 45)
Researcher Positionality

I started my graduate training focusing on quantitative methods. Once I completed an MSc in Statistics, I wanted to extend my training by focusing on the application of quantitative methods to a specific setting, higher education. During my training in educational research, I endeavoured to gain a better understanding of qualitative methods, particularly phenomenology and grounded theory. My interest in these methods stemmed from my exposure to my mother’s doctoral studies and later her program of research in which she used grounded theory to explore various aspects of nursing education.

My research interests lie primarily in the development and use of assessment and evaluation information to support learning within higher education, and these interests led me to focus on literature that explored the nature of feedback in higher and professional education. This exploration led to a successful scholarship proposal and a conference paper related to the topic of feedback in higher education and an opportunity to work on a research project in medical education that closely aligned with my interests. A number of Queen’s School of Medicine residency programs were interested in redesigning their workplace-based assessment systems. As a result, they developed a multisource feedback (MSF) rubric designed to collect information about residents’ clinical performance in four domains: Communicator, Collaborator, Manager, and Professional. To investigate the validity of this approach to clinical assessment, the Queen’s University Postgraduate Medical Education (PGME) Office initiated a research project that received ethical clearance from the Queen’s University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board. As a research assistant on this project, I had the opportunity to interact with faculty, staff, and residents from the Pediatrics, Family Medicine, and Neurology residency programs.
Although I had no training in medicine and therefore little understanding of the language of medicine, this did not hinder my work on this project as my research was focused on collecting and analyzing quantitative and qualitative data that explored the use of assessment and evaluation information to support residents’ learning. Through my work, I interacted primarily with faculty, staff, and residents from the Pediatrics residency program. During my conversations with various individuals, including the Director of PGME Assessment and Evaluation, the program director, and the head of Pediatrics; they all voiced concerns about continued challenges that existed in supporting residents through feedback. Given their knowledge of my existing interest in feedback, I was encouraged to extend the ongoing research on the use of assessment and evaluation information by pursuing research on feedback in clinical settings. Due to my lack of training in medicine, as I conducted this study I relied on knowledgeable others (i.e., residents and attendings) during exploration and inspection stages in order to ensure the credibility of study findings. Guided by the symbolic interactionism perspective, I also attempted to uncover how existing literature applied to my research on feedback practices in a Pediatrics residency program.

**Study Setting**

During the preliminary exploration phase of the study, I had the opportunity to sit down on separate occasions with the program director and a resident of the selected Pediatrics residency program to gain a clearer picture of what happens in the program. I learned that the Pediatrics residency program is a four year program accredited by the Royal College of Physicians and Surgeons of Canada. Each year a maximum of five residents are accepted into the program (i.e., four Canadian and one International Medical Graduate). Residents in the program train to become general pediatricians.
The residents’ training includes core rotations (i.e., community/rural pediatrics, ambulatory pediatrics, inpatient pediatrics, developmental pediatrics, Pediatrics emergency medicine, Neonatal Intensive Care Unit, and Pediatrics Critical Care) and subspecialty rotations in areas such as Cardiology, Child Psychiatry, and Hematology/Oncology. Each rotation occurs in a 4-week block and the order in which rotations are completed varies by resident. As they progress through their program, residents often complete their Pediatrics Royal College specialty examination toward the end of their third year, and then choose to either continue as junior attending or become a fellow within a sub-specialty in their fourth year.

The clinical settings of interest for this study included outpatient settings (i.e., Ambulatory Clinic and General Pediatrics Clinics) and inpatient settings (i.e., Ward and Neonatal Intensive Care Unit [NICU]). The resident-attending configurations within the rotations varied. In the outpatient settings, there were six core attending physicians in the Ambulatory Clinic and four attending physicians in the General Pediatrics Clinics; their schedules were rotated to ensure at least one attending physician was on site each week to work with residents assigned to a given rotation. In the inpatient settings, there were four core attending physicians per setting; their schedules were also rotated to ensure at least one attending physician was on site each half-day or week, respectively, to work with residents assigned to each rotation.

Once I received ethical clearance from the Queen’s University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board (Appendix B), the Pediatrics program director sent out email recruitments to residents and attendings that included the study’s combined Letter of Information and Consent Forms (Appendix C); and I also met with residents during one of their academic half-day events for recruitment purposes.
Research Design

A case study design was used for this study because this research design is suitable for studies in which one wants to understand a real-life phenomenon in depth, particularly when such understanding encompasses important contextual conditions that are highly pertinent to the phenomenon of study (Yin, 2009). In particular, a qualitative, descriptive embedded single-case study design was adopted for this study. By definition a case can be an individual, organization, process, program, institution or event (Yin, 2009). In this study, the single-case of interest was the Pediatrics program and the embedded units of analysis were two inpatient (i.e., Ward and NICU) and two outpatient (i.e., Ambulatory Clinic and General Pediatrics Clinics) settings.

Data Sources

Within this embedded, single-case study design, following Blumer’s (1989) recommendation, I used a variety of ethically allowable procedures to gain a clearer understanding of feedback practices within the Pediatrics program. Primary data sources included direct observation data and semi-structured interviews. Table 3 represents the mapping of data sources to research questions.

Table 3

Mapping data sources to research questions

<table>
<thead>
<tr>
<th>Research questions</th>
<th>Data source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What are residents’ and attendings’ conceptions of feedback?</td>
<td>Interviews</td>
</tr>
<tr>
<td>2. What contextual factors shape the nature of feedback interactions between residents and attendings?</td>
<td>Interviews and Direct observations</td>
</tr>
<tr>
<td>3. Which types of feedback interactions, if any, may be classified as dialogic feedback processes?</td>
<td>Interviews and Direct observations</td>
</tr>
</tbody>
</table>
**Direct observations.** A series of questions were posed to the Pediatrics program director to help me gain a clearer picture of the nature of feedback interactions within Pediatrics clinical settings. The questions included: (a) who is involved during feedback interactions; (b) what would trigger a feedback interaction; (c) where do feedback interactions occur; and (d) when do feedback interactions occur. Responses from the director were used to generate an initial direct observation protocol (Appendix D) that was used in the pilot phase of the study. The protocol included seven categories and space for memoing. The seven categories were labelled composition (i.e., group or 1-1 interaction); sequence of interaction (i.e., learner initiated or supervisor initiated); location (i.e., private, semi-private, public), timing (i.e., before patient interaction, after patient interaction, or at end of clinic); materials used (i.e., learner assessments or patient charts); nature of interaction (i.e., one way or two way); and length of interaction. The space for memoing was expected to be used to record reflective notes about participants’ body language, facial expressions, and details about conditions in the setting (e.g., which other people were within earshot of the conversation). During the pilot phase in the ambulatory clinic, direct observations occurred primarily in the morning half of the day and involved observing at least three different attendings. As a result of this pilot phase, the direct observation protocol was modified to be used in outpatient settings (Appendix E). Furthermore, due to the team-based nature of inpatient settings, an inpatient observation protocol was also generated (Appendix F).

During the main phase of data collection direct observations in the various inpatient and outpatient settings occurred primarily from clinic opening hours or morning handover until noon, because “during the day, when there are many learners and teachers in the clinical site, is when most of the structured planned learning, teaching and working occurs” (Houston et al., 2011, p. 4). After each observation period, I wrote expanded field notes that recorded my reflective
thoughts about participants’ body language, facial expressions, and details about conditions in
the setting (e.g., which other people were within earshot of the conversation).

**Semi-structured interviews.** Blumer (1986) suggested that if a researcher “wishes to
understand the actions of people it is necessary for [the researcher] to see their objects as they
see them” (p. 51). Semi-structured interviews were therefore conducted, after direct
observations, with both residents and attendings to gain an understanding of their perspectives on
feedback and clinical practices. Interviews were approximately 30 minutes in length. To explore
participants’ conceptions of feedback, three parallel questions were posed to residents and
attendings (Table 4).

Table 4

*Questions related to conceptions of feedback*

<table>
<thead>
<tr>
<th>Attending questions</th>
<th>Resident questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What does the term “feedback” mean to you?</td>
<td>1. What does the term “feedback” mean to you?</td>
</tr>
<tr>
<td>2. In clinical settings, when do you give this type of feedback?</td>
<td>2. In clinical settings, when do you receive this type of feedback?</td>
</tr>
<tr>
<td>3. What role do you hope this type of feedback plays in supporting residents’ learning?</td>
<td>3. What role does this type of feedback play in supporting your learning?</td>
</tr>
<tr>
<td></td>
<td>4. What information do you actively seek to support your learning?</td>
</tr>
</tbody>
</table>

To explore the nature of feedback interactions in Pediatrics inpatient and outpatient
clinical settings, questions related to case presentations were posed to both attendings and
residents (Table 5).
### Questions related to case presentations

<table>
<thead>
<tr>
<th>Attending questions</th>
<th>Resident questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thinking about case presentations (related to consultations or during rounding); in general, the format I have seen is: Hx, Px, differential diagnosis, and then management plan.</td>
<td>Thinking about case presentations (related to consultations or during rounding); in general, the format I have seen is: Hx, Px, differential diagnosis, and then management plan.</td>
</tr>
<tr>
<td>1. When a resident presents a case to you, which parts of the case presentation dialogue, if any, do you use to support the residents’ learning?</td>
<td>1. When you present a case, which parts of the case presentation, if any, do attendings provide comments on?</td>
</tr>
<tr>
<td>2. Do suggestions that are made during a case presentation make it into written feedback that you give?</td>
<td>2. Do suggestions that are made during a case presentation make it into written feedback that you receive?</td>
</tr>
<tr>
<td>3. When you use strategies such as correcting, explaining, or clarifying information that a resident provides, do you consider these strategies as forms of feedback to the resident?</td>
<td>3. When attendings (or senior residents) use strategies such as correcting, explaining, or clarifying information that you provide, do you consider these strategies as forms of feedback?</td>
</tr>
<tr>
<td>Thinking about the other clinical settings in which you work, how similar/different are case presentations between clinical settings? [e.g., Minor Emerg, Clinics, NICU, Ward?] [Probes: Where do they happen? Who is present? Do learners have time to ask questions/clarifications?]</td>
<td>Thinking about the other clinical settings in which you work, how similar/different are case presentations between clinical settings? [e.g., Minor Emerg, Clinics, NICU, Ward?] [Probes: Where do they happen? Who is present? Do learners have time to ask questions/clarifications?]</td>
</tr>
</tbody>
</table>

Whenever possible, during interviews, I used the Critical Incident Technique (Chell, 2004). According to Chell (2004), the Critical Incident Technique is:
A qualitative interview procedure, which facilitates the investigation of significant occurrences (events, incidents, process, or issues), identified by the respondent, the way they are managed, and the outcomes in terms of perceived effects. The objective is to gain an understanding of the incident from the perspective of the individual, taking into account cognitive, affective, and behavioural elements. (p. 48)

This technique was used to probe participants' accounts of case presentations and feedback interactions that occurred during the course of direct observations. Specifically, participants were asked to recall the sequence of events related to specific physician interactions that occurred during a period of direct observation and were then asked to describe what happened during and after an interaction. The following generic questions were used to probe participants' descriptions of interactions: What happened next? Why did it happen? How did it happen? With whom did it happen? What did the parties involved feel? What were the consequences immediately and longer term? What tactics were used? (Chell, 2004). Permission to record interviews was received from participants prior to starting interviews.

**Timeline**

Within a qualitative study, data collection and analysis occur concurrently (Strauss & Corbin, 1990). As documented in Table 6, data collection (i.e., observations and interviews) occurred over a six-month period. Although data collection and analysis occurred concurrently during the six-month period, data analysis continued beyond this timeline. To support my exploration of feedback practices, participants and settings were chosen that “maximize opportunities to elicit data regarding variations along dimensions of categories” (Strauss & Corbin, 1990, p. 186). Consequently, junior and senior residents were recruited, and at least two attendings from each setting were recruited. The initial goal was to continue data collection until
I reached *theoretical saturation*. Theoretical saturation occurs when “(1) no new or relevant data seem to emerge regarding a category; (2) the category development is dense; (3) the relationship between categories are well established and validated” (Strauss & Corbin, 1990, p. 188).

Table 6

*Data collection timeline*

<table>
<thead>
<tr>
<th>Study Phase</th>
<th>Timeline</th>
<th>Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prior to November 2014</td>
<td>Ethics approval received, Recruitment of participants</td>
</tr>
<tr>
<td>Phase One</td>
<td>November 2014</td>
<td>Outpatient (Ambulatory clinic):</td>
</tr>
<tr>
<td>(Pilot testing initial observation protocol)</td>
<td></td>
<td>Direct observations (n = 5)</td>
</tr>
<tr>
<td>Phase Two</td>
<td>January – February 2015</td>
<td>Outpatient (Ambulatory and General Pediatrics clinics):</td>
</tr>
<tr>
<td>(Primary data collection)</td>
<td></td>
<td>Direct observations (n = 8)</td>
</tr>
<tr>
<td></td>
<td>March – April 2015</td>
<td>Inpatient (Ward):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Direct observations (n = 8)</td>
</tr>
<tr>
<td></td>
<td>May – June 2015</td>
<td>Inpatient (NICU):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Direct observations (n = 3)</td>
</tr>
<tr>
<td></td>
<td>January – May 2015</td>
<td>Attending Interviews (n = 8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resident Interviews (n = 4)</td>
</tr>
</tbody>
</table>
Data Analysis Procedures

Given the qualitative, descriptive nature of the study data analysis involved using coding techniques (i.e., open coding and axial coding) from Strauss and Corbin’s (1990) approach to Grounded Theory coupled with a mapping technique (i.e., situational mapping) from Adele Clarke’s (2003) Situational Analysis. Situational Analysis was developed to extend Strauss and Corbin’s coding approaches (Clarke, 2003).

The form of grounded theory associated with Strauss, Corbin, and Clarke emphasizes its roots in the pragmatism and symbolic interactionism (Chamberlain-Salaun, Mills, & Usher, 2013). Using the underlying assumptions of Strauss and Corbin’s form of grounded theory, Chamberlain-Salaun, Mills, and Usher (2013) mapped the various techniques of grounded theory to the four central ideas guiding symbolic interactionism: (a) people do not respond to their environment, they interpret their environment (meaning-making); (b) knowledge is learned, remembered, and believed in relation to a person’s ability to successfully apply it (action and interaction); (c) objects that we notice are defined by us according to their perceived usefulness (self); and (d) to understand people, “we need to understand their actions, the causes of their actions, the consequences of their actions, the perception of our own actions, and the perception of other people's actions” (perspectives) (Charon, 2009, p. 31). Building on Chamberlain-Salaun, Mills, and Usher’s work, Table 7 provides a summary of the grounded theory and situational analysis techniques used in the study and their relation to the four central ideas of symbolic interactionism (i.e., meaning, action and interaction, self, and perspectives).
Table 7

*Mapping symbolic interactionism ideas to data analysis techniques*

<table>
<thead>
<tr>
<th>Symbolic interactionism ideas</th>
<th>Data analysis techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning-making; action and interaction</td>
<td>Concurrent data collection and analysis</td>
</tr>
<tr>
<td>Meaning-making; action and interaction</td>
<td>Constant comparative analysis</td>
</tr>
<tr>
<td>Self; action and interaction</td>
<td>Theoretical sensitivity</td>
</tr>
<tr>
<td>Meaning-making; perspectives</td>
<td>Open coding</td>
</tr>
<tr>
<td>Meaning-making; action and interaction</td>
<td>Situational mapping</td>
</tr>
<tr>
<td>Action and interaction</td>
<td>Axial coding</td>
</tr>
<tr>
<td>Perspectives</td>
<td>Open coding</td>
</tr>
<tr>
<td>Self; action and interaction</td>
<td>Memoing</td>
</tr>
</tbody>
</table>

Strauss and Corbin (1990) refer to theoretical sensitivity as “the attribute of having insight, the ability to give meaning to data, the capacity to understand, and capability to separate the pertinent from that which isn’t” (p. 42). As highlighted in the researcher positionality section, due to my lack of training in medicine, I relied on knowledgeable others (e.g., program director) during exploration and inspection stages in order to ensure the credibility of study findings and I attempted to uncover how existing literature applied to my research on feedback practices in a Pediatrics residency program. As suggested by Strauss and Corbin (1990), one source of theoretical sensitivity is literature. Hence I used the conceptual framework and feedback literature to provide a set of sensitizing concepts and relationships that I checked against collected data during coding and mapping.
Coding was used to “represent the operations by which data are broken down, conceptualized, and put back together in new ways” (Strauss & Corbin, 1990, p. 57), and mapping was used to reveal “the key elements and conditions that characterize the situation of concern in the research project broadly conceived” (Clarke, 2003, p. 554). Coding and mapping were conducted by hand and in MAXQDA Version 11. In this study, the following coding and mapping techniques were used in a three-stage data analysis process:

1. Open coding,
2. Situational mapping, and
3. Axial coding

**Open coding.** Open coding is the analytical process of “breaking down, examining, comparing, conceptualizing, and categorizing data” (Strauss & Corbin, 1990, p. 61). In this process, concepts related to a phenomenon of interest (e.g., feedback) are identified and developed in terms of their properties (i.e., attributes or characteristics) and dimensions (i.e., location of properties along a continuum). By comparing and contrasting information found in interview transcripts and observation data, similar concepts were labelled and grouped to form higher order categories (Strauss & Corbin, 1990). According to Saldana (2009), this process required that I ask questions of the data such as: (a) How do members talk about, characterize, and understand what is going on? (b) What are people doing? (c) What are they trying to accomplish? (d) What specific means and/or strategies do they use? (e) What strikes me in the data?

Following further recommendations from Saldana (2009), open coding (also referred to as first cycle coding) involved the following coding processes: attribute coding, structural coding, provisional coding, descriptive coding, and process coding. Attribute coding for data
management involved coding the date and time of data collection, setting, participant characteristics, and data format (e.g., transcript, field note, or reflection memo) for each piece of study data. Structural coding, provisional coding, and descriptive coding were used primarily on interview transcripts and process coding on observation data. Structural coding involved matching interview questions to the study’s research questions and provisional coding involved using a predetermined ‘start’ list of codes based on the study’s conceptual framework and feedback literature (i.e., cognitive factors, emotional factors, social factors, environmental factors, feedback purpose, feedback content, and barriers to feedback). Descriptive coding was used to code sections of transcripts that referred to specific clinical settings (i.e., ambulatory clinic, general pediatrics clinic, ward, or NICU) as the primary topic of conversation. Finally, process coding was used on observation data to code actions that occurred during case presentations and feedback interactions in the clinical settings (e.g., presenting, diagnosing, questioning, explaining, clarifying, agreeing, or correcting).

**Situational mapping.** Situational maps are “visual representations of elements surrounding a phenomenon of interest and how they relate to one another” (Khaw, 2012, p. 140). As a form of concept mapping, situational mapping uses concepts identified during open coding to lay out the relationship among major human (e.g. individuals, groups, institutions), nonhuman (e.g., physical space, scheduling), material (e.g., assessment tools), symbolic/discursive (e.g., ideas, discourses, culture), and other elements in the research setting as framed by those in the situation and by the researcher (Clarke, 2003). Guiding questions in this analysis stage included:

(a) Who and what are in this situation? (b) Who and what matters in this situation? (c) What elements ‘make a difference’ in this situation? (d) How do the elements interact in this situation? (Clarke, 2003). For the purposes of this study, situational mapping was used to begin to identify
what contextual factors shape the nature of feedback interactions within selected Pediatrics clinical settings.

To assist in this mapping process, particularly in identifying how the various elements interacted, a conditional matrix was used (Figure 4). A conditional matrix is an analytic aid used to consider conditions and consequences related to a phenomenon of interest (Strauss & Corbin, 1990). For the purposes of this study the outermost level in Figure 4, the institutional/program level, represents a residency (postgraduate medical education) program. This level highlights the importance of considering how a program’s structure, rules, and culture may influence feedback processes and products. The sub-institutional level represents the clinical settings in which residents’ rotations occur. This level highlights the importance of considering the features of each clinical setting through which a resident rotates. Drawing from the performance appraisal literature, contextual factors at these outer levels include aspects of an organization that can directly affect learners’ and supervisors’ behaviours (Levy & Williams, 2004); examples include culture, policies, and resources (e.g., Hoffman & Donaldson, 2004; Pimmer et al., 2013).
Figure 4. Conditional matrix used in the study

The group and individual level highlights the need to consider the backgrounds, knowledge, and experiences of learners and supervisors, both individually and as representatives of a professional group (i.e., physicians). Finally at the center, the action/interactional level highlights how, during feedback interactions, individual and relational aspects can directly impact the feedback process (Levy & Williams, 2004). In postgraduate medical education, these factors can include learner motivation, supervisor affect, learner-supervisor relationships, and group dynamics on a clinical team (e.g., Mann et al., 2011; Teunissen et al., 2007; Watling et al., 2010). Within a conditional matrix, the path of analysis is used to track an event “from
action/interaction through the various conditional and consequential levels, and vice versa, in order to directly link them to a phenomenon” (Strauss & Corbin, 1990, p. 158).

**Axial coding.** Axial coding refers to “a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. This is done by utilizing a coding paradigm involving conditions, context, action/interactional strategies, and consequences” (Strauss & Corbin, 1990, p. 96). Conditions refer to the events that lead to or influence the occurrence of a phenomenon of interest; context represents the set of conditions within which action/interactional strategies related to a phenomenon take place; action/interactional strategies describe how participants manage, carry out, and respond to a phenomenon; and consequences refer to the outcomes or results of action and interaction (Strauss & Corbin, 1990). In relation to feedback interactions, evidence of conditions and context was sought in observation data and semi-structured interviews. Evidence of action/interactional strategies was sought in observation and interview data. Finally, evidence of consequences was sought in interview data.

Using the coding paradigm involved four analytic steps: (a) developing hypotheses of how categories can be used to highlight the relationships among conditions, context, action/interactional strategies, and consequences related to feedback interactions; (b) verifying hypotheses against data; (c) searching for additional properties and dimensions of categories; and (d) exploring variations in feedback interactions in order to identify different patterns in the data that could be used to develop a descriptive account of how contextual factors impact feedback interactions in Pediatrics clinical settings (Strauss & Corbin, 1990).
Ensuring Trustworthiness and Credibility

Trustworthiness in qualitative research is concerned with ensuring the credibility, transferability, and dependability of study findings (Given & Saumure, 2008). Credibility refers to the ability of a researcher to accurately and richly describe a phenomenon such that there is a high degree of agreement between participants’ words and researchers’ interpretations (Jensen, 2008). Transferability refers to the ability of a researcher to describe a study in enough detail to allow others to determine the applicability of study findings to alternative settings; dependability refers to the ability of a researcher to layout their data collection and analysis procedures in enough detail for others to collect data in similar conditions (Given & Saumure, 2008).

Beyond the data collection and analysis procedures already documented, to further ensure trustworthiness, memoing was used. Memoing is “the act of recording reflective notes about what the researcher (fieldworker, data coder, and/or analyst) is learning from the data” (Groenewald, 2008, p. 506). Written and graphic memos were used to capture my reflective notes as I proceeded through the study. Throughout data collection and during all stages of data analysis, memoing was used to record my thoughts and feelings and document concepts and categories that arose. These researcher memos also served as data sources for the study. Finally, as a form of member checking, participants were also given the opportunity to review findings from the study (Jensen, 2008).
Chapter 4

Research Findings

Introduction

The purpose of this qualitative study was to explore how contextual factors shape feedback interactions within and across various clinical settings. In particular, this study explored the nature of feedback in inpatient and outpatient Pediatrics clinical settings from attendings’ and residents’ perspectives. Three research questions guided this study: (a) What are residents’ and attendings’ conceptions of feedback? (b) What contextual factors shape the nature of feedback interactions between residents and attendings? and (c) Which types of feedback interactions, if any, may be classified as dialogic feedback processes? Data sources included direct observation protocols, semi-structured interviews, and researcher memos. Twelve Pediatrics physicians participated in the study. Participants included four residents (i.e., two junior and two senior residents) and eight attendings. For the purposes of this chapter, participants were numbered from 1 to 12 and identified as either an attending (A) or a resident (R). Although there were female and male participants in the study, in order to further protect the identity of participants, I do not identify the gender of any participant. The eight attendings comprised of at least two attendings from each of the four Pediatrics clinical settings where direct observations were conducted. Some of the attendings worked in more than one of the four Pediatrics clinical settings. Twenty four direct observations were completed across the four clinical settings (i.e., Ward, Neonatal Intensive Care Unit [NICU], Ambulatory Clinic, and General Pediatrics Clinics); with most direct observations (n = 20) occurring during morning hours. Only four observations, all in outpatient settings, occurred in the afternoon.
This chapter is organized in three sections, Sections 1 and 2 are predominantly descriptive, and Section 3 presents a cross-case analysis and interpretation of findings. In Section 1, I present findings from interview data only. In this section, I describe residents’ and attendings’ conceptions of feedback which are organized in three themes: forms of feedback, embedded nature of feedback strategies, and contextual factors that could impact feedback. It is important to note that although the identified themes and their related categories were not discussed by all 12 participants, I made the assumption that interviews provided a sampling of the kinds of topics that participants perceived to be important to feedback in clinical settings. Consequently, it was important to examine whether all these themes and their related categories would be observed in the various clinical settings.

In Section 2, I combine findings from interview and observation data to describe the nature of case presentations and feedback interactions in each of the four Pediatrics clinical settings where observations were conducted. In this section, themes and their related categories that emerged from interview data were used to describe the nature of feedback interactions in each setting. The inpatient Pediatrics settings were the Ward (including the Pediatrics Critical Care Unit) and the Neonatal Intensive Care Unit (NICU), and the outpatient Pediatrics settings were the Ambulatory Clinic and General Pediatrics clinics. In Section 3, I conclude the chapter by interpreting the findings presented in first two sections through a cross-case analysis of the four clinical settings.

**Bounding the study: The case presentation process.** Before presenting findings, it is important to note that there are multiple activities in a clinical setting wherein dialogic feedback practices might occur. For the purposes of this study, the primary focus was on feedback within the case presentation process. In relation to the case presentation process, participants explained
that Pediatrics residents’ competence development involves learning the processes and procedures involved in conducting a patient consultation and presenting the patient’s case to an attending physician. In general, patient consultations involve “getting background information . . . past medical history, family history, meds, allergies, immunizations, growth and development” (R9) from patients or parents and conducting a physical examination of the patient when necessary.

Presenting the patient’s case to an attending involves not only presenting background information obtained from a patient consultation, but also developing a differential diagnosis. As an attending explained, “when we do a diagnosis, [for example] you have this rash, it could be chicken pox, but it could also be two other viruses. And why you think it is one more than the other two . . . that’s called differential diagnosis” (A3). After developing a differential diagnosis, residents are expected to develop a management plan. A resident’s ability to move from presenting information through to formulating a management plan is an important part of their competence development because “assessment of their learning or the assessment of their understanding is really their plan” (A7). As another attending stated, a successful case presentation process involves a resident demonstrating competence development through “the ability to move from just telling me what they found with lots of errors, to having a comprehensive and efficient understanding of the story and being able to put together a proper complete plan of management” (A1).

**Section 1: Conceptions of Feedback**

In order to explore residents’ and attendings’ conceptions of feedback processes in clinical settings, interviews were used as the primary source of data. Interviews began broadly by asking participants about their conceptions of feedback in clinical settings before focusing in on
feedback in case presentation processes. Three themes emerged from interview data: forms of feedback, embedded nature of feedback strategies, and contextual factors that could impact feedback.

**Forms of Feedback**

In education, the overarching purpose of feedback is to support learning. Within clinical settings, supporting learners’ competence development through feedback can be achieved through various interrelated techniques (e.g., evaluating, praising, or coaching). In order to obtain participants’ perspectives on feedback in clinical settings, at the beginning of each interview, participants were asked three questions: What does the term feedback mean to you? In clinical settings, when do you give/receive this type of feedback? and What role does this type of feedback play in supporting resident/your learning? Three categories related to forms of feedback emerged from analyzing participants’ responses to these questions and were labelled using participant quotes: “giving information,” “reassurance,” and “guiding.”

**Giving information.** Within the objectives of training for Pediatrics (Royal College of Physicians and Surgeons of Canada, 2008), one competency that is expected of Pediatrics physicians is the ability to provide feedback to learners, patients, families, and other health professionals. As evidenced through excerpts from interview data (Table G1), all participants (i.e., eight attendings and four residents) spoke of feedback as providing information to a learner about their clinical performance. Specifically, within clinical settings, there was an underlying expectation that all attendings give “information to the learners . . . about how their performance was” (A6) on clinical tasks. In order to provide information/feedback, an attending would need to have “seen a trainee do something” (A7) in the clinical setting, in order to be able to “give back information that helps . . . [the resident] improve their performance” (A1). For example,
prior to a case presentation process, an attending may have seen “how they [residents] acquired the information from [the] patient and family, how accurate were they in the physical examination both in acquiring their information and how they went about it, [and] how good they were at communicating with the family” (A4). Residents also spoke of how this information/feedback could be used to highlight “how you are doing things and how you approach situations” (R1) and “for the goal of improving . . . performance” (R12).

Reassurance. This category highlighted another form of feedback, providing reassurance to learners that they were on the right track in their clinical performance. Three attendings and one resident spoke of and provided examples of phrases that could be used to provide reassurances to resident learners (Table G2). One attending commented that, “A lot of the feedback is, I feel like I’m just reassuring them” (A7). Other attendings gave examples of phrases that they used to provide reassurance to learners such as “I think you did very well in your physical exam, that’s great” (A3) or “Okay, good job” (A8). Finally, a resident captured the importance of these reassuring words to learners by noting “whenever at the end of a presentation like even if [a] simple thing like, ‘Okay, good. Let’s go see the patient.’ With that little good, I’m like, okay, all right. . . A little bit of reassurance” (R9).

Guiding. This category highlighted the idea that feedback could be used “in the context of mentoring and coaching relationship[s]” (R12). This category captured two-way communicative processes in which feedback could be used to support learner reflection and competence development. As one attending reported, “feedback is about giving people food for thought, so that they can be themselves, but be the best that they can be in being themselves” (A1). This same attending then went on to say, “feedback to me isn’t about telling someone do this because it’s the right thing and it’s because I think it’s the right thing; it’s about guiding and
allowing people to develop on their own” (A1). One resident reported a technique that attendings could use to guide learners’ competence development: “I like when they ask questions that make us think, that we don’t necessarily know the answers to. And then they bring us through kind of an invisible flowchart of ways of thinking” (R9).

Four participants (i.e., two of the eight attendings and two of the four residents) spoke of the idea of feedback for guiding and coaching during the course of their interviews (Table G3). As evidenced in their excerpts, these four participants highlighted the idea that an attending could actively make the choice to provide guidance and coaching to a learner. This type of guidance and coaching could be in the form of asking guiding questions, “giving people food for thought” (A1), or working closely with a resident learner within a clinical setting. As one attending commented, “I hope that it [feedback] helps them broaden their differential [diagnosis] and then hopefully they learn something about what kind of style they themselves would have as a future physician” (A5).

**Embedded Nature of Feedback Strategies**

Feedback strategies used in clinical settings to support learners’ competence development are often embedded within everyday activities such as case presentation processes. As one attending advised,

just being in medicine, it’s almost 100% hands on learning so therefore that feedback that occurs throughout that learning process just helps facilitate the learning and solidify learning that is ongoing. (A2)

Focusing in on case presentation processes, four categories of embedded feedback strategies emerged from the interview data and were labelled using participant quotes: “a form of teaching,” “probing a resident,” “what’s not said,” and “role modelling.” These categories
captured a range of feedback strategies embedded within case presentations, from those that might be perceived as direct strategies such as teaching and probing to indirect strategies such as non-verbal communication and role modelling.

It is important to note that although dedicated didactic teaching sessions occurred in all the clinical settings these sessions were not the focus of the study and often occurred outside of observation periods, thus teaching and probing do not refer to these activities. Teaching and probing as described below instead refer to embedded feedback strategies attendings used to support residents’ learning during patient case presentations, immediately following patient consultations.

**A form of teaching.** Four participants (i.e., three attendings and one resident) spoke of feedback as a form of teaching. This category highlighted the idea that during case presentations attendings used feedback to offer teachable moments to learners. An attending stated, “feedback . . . is really teaching – so it’s not that they are going to change something, but they don’t know something and I hope that they will remember what I told them” (A3). As evidenced in this excerpt, in relation to residents’ competence development, it would appear the primary purpose of these teachable moments was to expand residents’ knowledge. This knowledge transfer strategy could be categorized as direct and teacher-centered. Teachable moments could occur at various points during a case presentation. One attending pointed out that feedback as a form of teaching could occur “if you stop them [during a case presentation] and tell them something or at the very end if you give them a discussion into what they think or how they’re doing” (A2).

One attending suggested, “with us [Pediatricians] the teaching and the feedback are nearly clumped together. . . . It’s very mixed in” (A3). The challenge with teaching and feedback
being intertwined was that some learners had trouble recognizing this “less defined” (A5) feedback strategy. As evidenced in the following excerpt with one resident, not all learners initially recognized this feedback strategy (i.e., feedback as a form of teaching):

I would consider this [quizzing, correcting, explaining, or clarifying information] more a form of teaching than feedback, because feedback for me is more like improving your communication skills than really learning so I would classify this more as teaching but I guess, yeah, it is a [form of] learning feedback. (R11)

**Probing a resident.** Five participants (i.e., four attendings and one resident) spoke of probing a resident as a feedback strategy. Closely linked to the idea of feedback as a form of teaching, this category captured the idea of probing or questioning a resident as a feedback strategy used during a case presentation. In relation to residents’ competence development, probing a resident was a strategy used to expand residents’ clinical reasoning skills. This strategy could be categorized as direct and teacher-driven; involving a two-way process in which feedback was used to help learners make connections and explore understandings for the purposes of forming a differential diagnosis and management plan.

Probing a resident was a feedback strategy that attendings used to help guide residents through the case presentation process. As one attending remarked, “sometimes they’re presenting and you’re asking them questions, that in my mind, that’s giving them feedback . . . but then also at the end where maybe they’re summarizing and you’re saying ‘okay, what was your differential?’” (A6). Attendings could use questioning to ask for additional information, clarify information that was presented, or gain an understanding of a residents’ thought process during the formation of a differential diagnosis. One attending stated, “[a] person then is able to provide feedback when they correct, ask for additional information, clarify information” (A5). Similarly,
another attending commented, “it will usually be in discussion around the cases . . . I would probe with more questions. I’d say, ‘well, maybe you should consider this, maybe you should consider that’” (A7).

Although questioning was a common strategy that was observed during the course of the study, similar to the case of feedback as a form of teaching, attendings highlighted the challenge that existed with residents’ inability to identify questioning as a form of feedback. An attending suggested “it’s not maybe designated as feedback” (A5), and as a result another attending spoke at greater length of the challenges that arose when residents didn’t recognize probing as a feedback strategy:

It feels like if you’re probing a resident during a case presentation, they don’t always recognize that as feedback . . . Afterwards, if you said “hey, did you get lot of feedback during your clinic?” They’d say no. Even though every single case you go through you’re trying to ask them, “okay, why did you think that?” (A6)

Indeed, only one of the four residents talked about attendings’ use of questioning as a form of feedback. This resident reported that, “sometimes teachers quiz us and then either you have the answer or you don’t have it, so that is kind of feedback, in that you can learn from the quizzing” (R11). Although the focus in most participant interviews was primarily on feedback-giving strategies, another resident did suggest that residents could use questioning as a feedback-seeking strategy by “ask[ing] about the parts that you are confused about. . . . So you are not asking please give me feedback on my general functioning, but on this specific thing, please give me feedback” (R12).

**What’s not said.** The two previously mentioned categories highlighted feedback strategies that were dependent on verbal communication. Feedback, however, is “more than just
verbal information” (A1). Five participants (i.e., two attendings and three residents) spoke of non-verbal communication as a feedback strategy. This category highlighted an indirect, teacher-driven feedback strategy used during case presentations that was often linked to changing resident behaviour. Both attendings and residents highlighted various non-verbal forms of communication that served as feedback. These included body language, facial expressions, and tone of voice. With regard to body language, residents indicated that “it can be informal in the sense of if somebody’s body language is telling you that they’re displeased with you then that is feedback as well” (R10). Another resident remarked “with the teachers we have, like when you are not doing something that they like it is going to be really obvious in their body language so I am very attentive to this” (R11). In relation to facial expressions, attendings stated, “it’s how you look at someone; it’s what face you make when you say a thing” (A1) or “when they are presenting something in terms of even just how you’re listening . . . you have an expression on your face . . .” (A2). With respect to tone of voice, a resident pointed out that non-verbal feedback communication included, “the tone of voice in which your questions are answered” (R9). Finally, an attending suggested that the level of graduated responsibility offered to a learner was another non-verbal feedback strategy that attendings could use: “it’s how much more work or what other opportunities or even what freedom you give to do things on their own; is all in itself feedback on performance” (A1).

**Role modelling.** This category was linked to skills development. Three participants (i.e., two attendings and one resident) spoke of role modelling as a feedback strategy. Role modelling was an indirect, learner-driven or teacher-driven feedback strategy. For example, the resident reported, “there is a lot of role modelling in medicine. It is not explicitly given feedback but you watch someone whose style that you admire and compare it to yourself and you learn that way”
Furthermore, in relation to the case presentation process; after presenting a case to an attending including providing a differential diagnosis and possible management plan, often times, to continue to support a resident’s competence development, attendings returned to a patient’s room with the resident. The resident further remarked that during the time that an attending is in the room with a resident and patient,

They [attending] ask the questions you missed or they give their plan, and maybe it is different, and you get feedback that way, indirectly. Often that is a very gentle but still very helpful way of giving feedback that doesn’t feel, you know, doesn’t have that kind judgmental aspect to it, but still is very good for learning. (R12)

As suggested earlier, role modelling is an indirect, learner-driven or teacher-driven feedback strategy. This may help explain why, in speaking about role modelling during interviews, attendings did not speak of their own experiences as role models, but instead spoke of strategies that could be used to model certain behaviours for learners. For example one attending suggested, “Humility is important when you’re teaching and you’re giving feedback; just to realize you don’t always have the right -- the only way to do things” (A1). Another attending suggested that, “Being on the other end and giving feedback makes you realize actually how much informal feedback you get. . . . maybe by having learners do more of it [giving feedback] themselves they kind of pick up on that” (A5).

**Contextual Factors That Could Impact Feedback**

Contextual factors that participants felt shaped the nature of feedback processes were grouped into four categories: cognitive factors, social factors, emotional factors, and environmental factors. Cognitive, social, and emotional factors were person-dependent, whereas environmental factors were often structural, such as culture and scheduling.
Cognitive factors. Cognitive factors could include person-dependent aspects such knowledge, skills, and other personal attributes or characteristics. Eight participants (i.e., six attendings and two residents) spoke of cognitive factors that could impact feedback. These factors were attendings’ teaching, clinical, and communication skills and residents’ clinical skills and abilities to self-assess.

Attendings’ teaching, clinical, and communication skills were perceived to be important to feedback. One resident suggested, “It [feedback] depends on their skill at teaching. If you have someone who is a good teacher, you never feel bad when given feedback” (R12). Attendings also spoke of the skills they needed to possess in order to provide useful feedback. These skills included self-awareness of one’s own clinical skills and ability to observe learner performance and provide useful feedback. One attending suggested, “feedback gets easier the longer you do it. . . . it’s how comfortable you are in your own skill. If you are uncomfortable, then you tend to be over zealous and over confident in your feedback” (A1). Another attending also highlighted their personal challenge with observing learner performance and providing useful feedback. With regard to their comfort level to provide feedback, this attending remarked that when they observed a resident’s clinical performance, “the expectation is that I’m going to have something brilliant to say afterwards and so if I’m worried about it, [that] I’m not going to have anything brilliant to say” (A7).

Another important skill, particularly for attendings tasked with collating residents’ workplace-based assessment forms, was the ability to identify, manage, and collate colleagues’ idiosyncrasies when reviewing assessment information. In an attempt to reduce bias, one attending suggested: “You really have to know who marks how . . . if a certain person were to
give a comment and they never give comments, then that [performance] must have been very outstanding, either positively or negatively” (A2).

From attendings’ perspectives, residents’ skill levels also influenced the type of feedback attendings provided. Residents’ clinical skills and abilities to self-assess were perceived to impact feedback interactions. An attending stated, “[The feedback I provide] depends on the level of the learner because sometimes I have a more junior-senior or a more senior-senior” (A6). Learners’ skills were evident in how they provided a case presentation: “some of them start at the beginning and tell you basically every single thing they asked while others start off with saying, this patient is stable but here is what they have or like a summary” (A6). As a result, attendings often varied the type and timing of feedback to support residents’ competence development. Another attending stated, “if they’re doing a good job, I let them finish. . . . if there’s things that aren’t clear or if they’ve left out something that I think is important, I will stop them at each step of the way” (A8).

Although attendings may model certain skills or encourage certain behaviours, recognizing feedback strategies requires insight on the part of the resident learners. One attending explained that sometimes the insight occurs late if there is a delay in learner reflection:

I think until you think back, you kind of say, “Oh, I changed the way I did certain things because someone had once told me if you frame this question this way you’re more likely to get a better answer or a more clear answer.” And then you realize like that was feedback. (A5)

Finally, in order for residents to be able to use the feedback they received from attendings, they also needed insight into their own abilities. As a result one resident suggested, “if it [feedback] is something that is more generic, where you haven’t had guidance and you
don’t know how to do something then you might have to sit down and go why am I having trouble with that?” (R12).

**Social factors.** Closely linked to cognitive factors, social factors included person-dependent aspects that could influence feedback interactions. Eight participants (i.e., four attendings and four residents) spoke of social factors that could impact feedback. According to participants these social factors included learners’ experiences, attendings’ abilities to handle situations, and trusting relationships.

**Learners’ experiences.** Attendings and residents indicated that a learner’s experiences were often dependent on the learner’s stage in the program. The foci of feedback, therefore, also varied by stage in the program; specifically, junior residents tended to receive feedback on management plans and differential diagnoses, while senior residents received feedback on their skills as a team manager, particularly in inpatient settings. For example, participants explained that early in residency, attendings “may be focused on teaching you how to do a thorough history and physical” (R12), then as a resident progresses in their stage of learning, the focus moves “more [to] the management plan and the differential diagnosis” (R11). One attending reported that for junior learners (such as clerks), “if you can just remember that we need to give an antibiotic for this condition but you don’t know which antibiotic; fine” (A3). However, for senior learners (such as residents), this attending wanted a more detailed differential diagnosis and management plan from senior learners: “[as] a resident, I want you to give me the antibiotic, the dose, [and] the duration because you are at a level, different level of training” (A3). Finally, another attending reflected on their own experiences as a senior, final year Pediatrics resident by noting:
As a fourth year resident saying I want to be running the ward, the feedback to me that was the most useful was how am I managing the ward? . . . I feel like the focus for me was more, can I counsel the patients? Do they feel like they’ve got all the information? Do we have a good plan in place? (A5)

**Attendings’ abilities to handle situations.** From residents’ perspectives, opportunities for feedback were “very dependent on the preceptor” (R9). The variability in how attendings handled feedback situations was best summarized in the following resident quote:

People’s skill at giving feedback varies a lot. . . . you can get feedback for different reasons that may or may not be actually reflective of your underlying skill level. . . . Sometimes people will correct because they want you to use their exact style but there are often multiple ways of doing the same thing well. (R12)

Other residents focused on how the timing of feedback was dependent on attendings. For example, one resident suggested, “they might stop at the end of a clinic . . . then they orally give you feedback, and then they write it down because they are doing them together” (R12). Another resident pointed out, “some people are very deliberate about making sure that at the end of your time with them they have at least a brief chat to say ‘I think you’re doing well’ or ‘here’s areas that you can improve’” (R10). Overall, as one resident summed up:

Some give it as you go. . . . after each patient interaction, some give it at the end of the day, and some give it only really at the end of one month of being with them, the end of block. It’s also dependent on the type of block that you are doing. (R9)

While residents tended to discuss how timing of feedback was dependent on attendings, attendings focused on the content of feedback they gave. One attending indicated that during the
course of a clinic they tried to give feedback on an ongoing basis: “I try to at the moment say, ‘Okay, here is some feedback based on our interactions’” (A5), whereas another attending talked about how the content of feedback varied depending on if it was being provided verbally or in written format: “[Tasks] I think they do very well; I always try to put those on [feedback forms]. Things that I think are problematic; I like to verbally say it once or twice before I make an official statement on a form” (A2). According to this same attending, the rationale for the potential discrepancy between their written and verbal feedback was they liked to “give people the opportunity to redo it [tasks] . . . because it may be something that they just don’t know or they didn’t know how to do. . . . I’d like to give them the opportunity to change it” (A2).

**Trustling relationships.** The ability to form trusting relationships in order to support resident learning was important to both attendings and residents. As one attending explained, the content of feedback could vary depending on an attending’s perceived level of trust in a resident: “if I’m not trusting somebody or . . . we don’t see you enough to know one way or the other . . . to some degree I think it falls to whether you’re the pessimist or the optimist” (A7). This excerpt would suggest that length of time interacting with a resident could help promote trusting relationships. The importance of length of time in promoting trusting attending-resident relationships was also evidenced by a resident who discussed their feedback-seeking strategy: “If I am requesting feedback from somebody, I’m probably requesting it from somebody that I’ve worked with a bit more extensively” (R10).

Residents also spoke about trusting relationships influencing whether feedback would be used to reflect on practice and support their competence development. When there was a perceived lack of trust between residents and attendings, residents were less likely to incorporate feedback to support their learning. As one resident remarked, “I’m not going to ask for feedback
from somebody whose opinion I do not care about” (R10). Conversely, when this resident did trust and respect an attending, they stated: “I find I’m more likely to take what they say seriously. I’m more likely to do a more thorough self-assessment and I’m more likely to actually make changes based on what they’ve said to me” (R10). Another resident also commented on how residents went about sorting feedback from various attendings based on the absence or presence of a trusting relationship: “the person [attending] you don’t really care, just ignore what they say; the person you really care, see if it’s true and if it’s true, then yes improve yourself” (R11).

**Emotional factors.** Emotional factors included person-dependent aspects that could influence how attendings or residents dealt with feedback; these included emotions, motivation, and goal orientation. The only emotional factor that was highlighted by participants, particularly attendings, was learners’ emotions. Four of the eight attendings spoke of their concerns with how learners dealt with feedback. Attendings indicated concern that due to negative emotional reactions, residents were unable to internalize and use constructive feedback to support their competence development. For example, one attending commented that, “it feels like [residents] they’re probably not used to getting a lot of feedback that’s not ‘hey you’re perfect’” (A6). As a result, another attending suggested that “they may get dismayed, withdraw, and you have to recognize how that plays. You’re not just giving information. You’re giving things [feedback] with true emotional content” (A4).

Residents’ openness to receiving feedback and ability to use feedback was also resident-dependent. One attending suggested that “some of them [residents] are more open to feedback than others”, and went on to give examples of residents’ reactions to feedback: “Sometimes you get people who are very defensive . . . wanting to justify why they did what they did. Other residents seem apologetic and they want to change right away and already they’re incorporating
what you suggested” (A6). Another attending suggested lack of insight as a possible reason for these emotional reactions: “they don’t internalize a lot of things; they are also waiting for external feedback. . . . some kids [residents] are hard on themselves but they are really hard on themselves when we tell them they did something wrong” (A3).

**Environmental factors.** Environmental factors include elements, within the workplace environment, that may be beyond the control of individuals working in a given clinical environment. Environmental factors could include culture, scheduling constraints, and case complexity. Eleven participants (i.e., seven attendings and four residents) spoke of environmental factors that could impact feedback. Participants in this study focused primarily on scheduling constraints, paper-based feedback format, and culture as the environmental factors that they perceived as shaping feedback interactions in clinical settings.

**Scheduling constraints.** Only one attending spoke of scheduling constraints as a possible moderator of feedback interactions in clinical settings. This attending suggested that in order to support residents’ competence development through feedback, “sometimes you need to see them a few times and reflect on them and have them come back, but . . . our rotations are a bit choppy” (A1). As a result of scheduling constraints, residents often did not have opportunities for longitudinal rotations in which attendings could spend extended periods of time observing and providing feedback to a resident.

**Paper-based feedback format.** Within the program, paper-based feedback was often collected to support accreditation requirements. The assessment forms (i.e., encounter cards) used in the various clinical settings often included checklists or rubrics with a section for written comments (feedback) at the bottom of the form. Residents tended to talk about the format of the assessment forms. One resident remarked, “We get a lot of quantitative feedback in the form of
checkboxes” and then went on to say, “I often feel that those tick boxes mean different things to different people” (R9). Another resident also voiced their concerns about the format of the assessment forms by suggesting that because the assessment forms included checkboxes followed by a section for written comments, “unfortunately sometimes what effect that has is they [attendings] are taking the time that they would have used to give you feedback to check boxes” (R12). This resident, like several others, felt that “having actual narrative comments [is] always more helpful than a checkbox” (R12).

Attendings, in contrast, spoke of the generic nature of their narrative comments (feedback). One attending provided examples of statements that could be included in narrative comments: “Need to work on more complete or more organized or more concise presentations on rounds” or “outstanding clear, concise, well organized presentations” (A8). Instead of providing case-based, specific feedback, attendings often acknowledged that they condensed information when writing narrative feedback. For example, one attending stated that rather than writing down suggestions of “specific questions about infant feeding; [such as] how are they feeding, how often . . . you might sort of just have like a line in the written feedback that says, make sure that you’re getting detailed history about the feeding” (A6). Another attending also indicated they would never include case-specific information in a narrative comment. Instead they would write a generic narrative comment such as “you must remember to present a differential diagnosis for each kid you present” (A3).

**Culture.** Participants discussed how culture at three levels, professional, institutional, and programmatic, could impact feedback interactions. At the professional level, one resident suggested that the traditional hierarchical, perfectionist culture of medicine could influence teaching and feedback. In relation to teaching and feedback, the resident suggested, “if you don’t
specifically try to not have that [perfectionistic] culture in your teaching, it tends to leak in, so there is a lot of that where people are quite upset by negative feedback” (R12). As a result of this perfectionistic culture, one attending suggested that in Pediatrics training, in general, it was easier to deal with “the trainee [resident] who does well, who is motivated to learn, adapts, observes your behavior and uptakes good things in what you do, that very sophisticated or very mature person in terms of the thought process”, whereas when there was a resident in difficulty, a resident who needed more support, the attending stated, “it’s in [this] individual that struggles that we have major problems assisting” (A4).

**Institutional culture.** At the institutional level, institutional variations influenced how residents perceived feedback practices. If the institutional feedback culture of a residency program did not match the culture a resident experienced during medical school, dissonance could occur. As one resident pointed out, “in terms [of what] you look at [as] positive feedback, I think it really varies based on the place where you trained” (R11). As an example, another resident compared how their previous institution “ditched a lot of their comparative stuff and their end of rotation assessments [were] ‘you are functioning acceptability in everything and here is your feedback to improve’”; whereas within their current institution, they “heard people say . . . if you are giving feedback to a learner you should tell them, ‘I am giving you feedback now’” (R12). Given their past experiences, this resident went on to describe how this phrase felt awkward to them, and how they felt that feedback should be seamlessly integrated into everyday clinical practice, because residents want “specific feedback that is more like coaching” (R12).

**Programmatic culture.** At the programmatic level, a resident spoke of how structured feedback, embedded in workplace-based assessments, was built into the program. As a result of this structure, the resident indicated, “there are times that it’s expected, and that’s when I find I
receive feedback . . . when the staff know what’s expected of them; to give me feedback” (R10). Furthermore, it was also implied that within the program, the hierarchical culture influenced feedback interactions. Specifically, another resident explained, “The person who is your primary source of feedback changes depending on what role you are in, because it tends to be the person who is most immediately above you” (R12).

Within the program, weekly and end-of-rotation assessments were common. Both attendings and residents acknowledged the expectation that weekly assessments would be completed and perceived these as beneficial to residents’ competence development. As one attending stated, “it really forces you to give them some feedback each week. Because otherwise you can just give them nothing” (A8). One resident and another attending, however, highlighted the challenges surrounding getting attendings to complete assessment forms. The resident remarked, “you are supposed to have feedback at the end of the week but in reality it is not really happening” (R11). One of the reasons residents had difficulty getting attendings to complete the forms was highlighted by an attending who indicated that completion of the weekly assessment forms was “very driven by the resident putting that form in front of our face . . . if they don’t put it in front of my face I’m generally not chasing them down to do it” (A7). Due to the hierarchical nature of medicine, residents tended to indicate they were not always comfortable approaching attendings to request completion of weekly assessment forms.

At the end of each rotation, an in-training evaluation report (ITER) was to be completed for each resident. In inpatient settings “the final ITER that gets filled out is assigned to the attending that is on for the last full week” (A7) of the rotation; whereas in outpatient settings, a pre-determined attending completed the ITER. The attending who completed the ITER was supposed to collate information from weekly assessments and then meet with each resident to
give them feedback. Although this was the expected process, face-to-face meetings were not common; instead the ITER was often completed and transmitted online to a resident. The ITER was supposed to tell a resident “what are the things you are good at, what are the things you should work on” (R11). The lack of face-to-face meetings to discuss residents’ clinical performance was not the only challenge highlighted by participants. Another concern linked to the ITER process was identified by an attending who suggested, “If the person who completes the end of rotation ITER does not seek feedback on a learner from other attendings who also worked with a resident during a given rotation, this can lead to biased final assessment” (A4).

Section 1 Summary

This section presented findings from participants’ interview data. In relation to feedback to support residents’ learning and competence development, three themes arose from the interview data: forms of feedback, embedded nature of feedback strategies, and contextual factors that could impact feedback. Within forms of feedback were three categories: giving information, reassurance, and guiding. Four categories of embedded feedback strategies emerged from the interview data: a form of teaching, probing a resident, what’s not said, and role modelling. Finally contextual factors that participants’ perceived to impact feedback were organized into four categories: cognitive factors, social factors, emotional factors, and environmental factors.

Participants highlighted attendings’ and learners’ skills as the cognitive factors that could impact feedback. Participants described learners’ experiences, attendings’ abilities to handle situations, and trusting relationships as social factors that could impact feedback. With regard to emotional factors, learners’ emotions were the only emotional factor perceived to impact feedback. Finally, participants in this study focused primarily on scheduling constraints, paper-
based feedback format, and culture (at the professional, institutional, and programmatic levels) as the environmental factors they perceived impacted feedback interactions in clinical settings.

Section 2: Nature of Case Presentations and Feedback Interactions in Clinical Settings

The previous section highlighted the various themes that arose from interview data; including forms of feedback, embedded nature of feedback strategies, and contextual factors that could impact feedback. The previous section did not, however, involve situating the findings within the various clinical settings that observations occurred. Thus, due to the embedded single-case study design adopted for the study, in this second section, the nature of case presentations and feedback interactions in each of the four clinical settings (i.e., embedded units) is described. Data from interviews, observations, and memos are merged to provide detailed descriptions of how the various themes and categories appear within the four Pediatrics clinical settings of interest: NICU, Ward, Ambulatory Clinic, and General Pediatrics Clinics. To preserve participant confidentiality, participants will only be identified as either an attending (A) or a resident (R); numbering from 1 to 12 is not used in this section.

Inpatient Settings

In general, within inpatient settings such as the NICU and Ward, case presentations occurred within team-based bedside rounding. As described by one attending:

During rounds . . . the person who’s taking care of that patient is now telling the rest of the team and the family [about the case]. “So this is what this child has and this is my exam findings and this is my plan going forward . . .” And then the parents can then interject and say, “Well actually that’s not how things had happened” or “that’s not how it presented.” And then we can verify physical exam findings and then determine whether the plan is reasonable or not. (A)
The nature of the case presentations occurring during team-based rounding varied between the two inpatient settings, ranging from case presentations that involved one-to-many presentations to many-to-many presentations.

**Neonatal Intensive Care Unit (NICU)**

**Description of clinical setting.** The NICU was located in a secure section of the hospital. To access the NICU, a request for entry needed to be made to the NICU reception desk via a hospital phone outside the access door. Inside the NICU, the learners (i.e., residents and clerks) had a multi-purpose room with a computer terminal that was connected to the hospital’s electronic health record system. The multi-purpose room had shelves running along two walls; these shelves often held requisition forms and protocols and guidelines were tacked onto the wall behind computer terminals. The multi-purpose room was situated outside the immediate NICU which was split into three sections: a smaller room to hold cribs for healthier babies; a larger area with incubators for premature babies; and a secluded room, set to one side of the larger area, which could be used for special procedures. A NICU attending (i.e., neonatologist) indicated that in total, there were generally 25 to 26 patient “beds” in the NICU (NICU Memo, Day 1).

Although the multi-purpose room was available for learners to use during their NICU rotation, during observations, learners only congregated in the room when preparing to start bedside rounding. Due to scheduling constraints, only three days of observations occurred in this clinical setting.

**Nature of case presentations.** Case presentations within the NICU occurred during bedside rounding. Prior to team-based bedside rounding, learners (i.e., clerks and residents) were expected to have examined the patients they had been assigned for the day. As one attending explained, prior to bedside rounding, “it would be probably about an hour or so that they...
[learners] would do independent work, basically going to see their patients, checking with the nurse, preparing for rounds and then rounds would start, somewhere between 9:30 and 10” (A). In general, in the NICU, the composition of the team during bedside rounding consisted of “the [bedside] nurse, the charge nurse, the attending physician, the fellow, all the residents, the medical students, sometimes the dietitian, [and] the RT [respiratory therapist]” (R). As one resident indicated, the advantage to having a multidisciplinary team during rounding included expediting procedures. For example, if the respiratory therapist needed to adjust a piece of equipment, “because the RT was on rounds . . . they [would] know it needs to be done. You don’t need to tell them again that it needs to be done” (R). Similarly, “if you’re ordering blood work, again, the nurse who’s going to do the blood work was at the bedside. The orders are already written” (R).

On the first day of observations prior to starting rounds, the attending for the week explained to the clerks, who were new to the team, that parents were often present when moving around the beds; therefore it was important to be aware of what was being presented, especially if a sensitive case existed. As a result, one of the cases was presented in the corridor outside the main NICU area, out of all parents’ earshot (NICU Memo, Day 1). A resident described the general process for NICU case presentations as follows: “when it’s your patient, then you give your little case presentation and you give all the information and then you give your plan as to what you would like to do” (R). Nonetheless, during the week of observations in the NICU, three types of case presentations were identified: learner-led, parent-led, and bedside nurse-led.

Learner-led presentations involved learners referencing patient charts, electronic health records, and case notes during case presentations. The case presentations tended to focus on providing an up to date history, including information related to various patient vital statistics
(e.g., feedings, oxygen, bloodwork results, etc.) and generating a management plan (NICU Memo, Day 1). Often times, I did not hear discussions of differential diagnoses or results of physical examination findings. The reason for the lack of differential diagnosis discussion became apparent during the second day of observations when a new patient entered the NICU. As I stated in a memo: “Case presentation by senior resident was more detailed for a new arrival to unit. In this case, the resident went through the reason for admittance (i.e., diagnosis), patients’ vital statistics, and presented a management plan” (NICU Memo, Day 2). In the case of physical examinations, requests for the attending to conduct physical examinations during rounding were often triggered by bedside nurses’ comments and concerns.

Parent-led case presentations occurred as part of a study that was being conducted during the period of my observations. As an attending explained, for parents involved in the study, “we would always invite the parent to speak first” (A). Thus when a parent involved in the study was present, instead of the learner presenting the case; parents provided information about their baby’s history during case presentation. In these cases, other information (e.g., patient vital statistics) was often provided by a bedside nurse or charge nurse. Furthermore, although learners were still assigned to such cases, parents tended to ask the attending rather than the learner for the management plan.

Bedside nurse-led case presentations occurred when the learner assigned to a patient had not had a chance to examine them. The choice to allow bedside nurse-led case presentations was made by the attending. During the course of observations, on the first day, one learner had not had time to examine a patient. As a result the attending on duty indicated, “Okay, then the nurse looking after the baby can present this case” (A). The bedside nurse then gave the case
presentation and suggested the management plan. In these cases, the attending would then provide the assigned learner with a list of follow-up tasks based on the nurse’s information.

During the course of observations, the attending explained to learners that during rounding, they were expected to help the primary case presenter by taking notes of any orders in patient folders. A resident explained that patients tended to have two folders; one was mainly used by nurses to keep track of procedures and the other was used by medical staff to place orders and update charts (NICU Memo, Day 2). As a result, clerks on the team tended to be given charts to update orders as different learners presented.

During the course of observations, the entire bedside team was not always present during case presentations. Across observations days, the physician team consisted of at least four individuals; one attending, two clerks, and a resident. Within the course of morning rounding, it was common for rounding to be disrupted because “typically the Pediatrics residents would be carrying the pager for when they’re needed by the neonatal team to deliver, so they may be running to a delivery when they are on rounds or running to it in the afternoon” (A). During two of the three days of observations, the Pediatrics resident was called off to attend a delivery, thus putting a hold to morning rounding and case presentations (NICU Memo, Day 1; NICU Memo, Day 2).

**Nature of feedback interactions.** Opportunities for one-on-one attending-resident feedback interactions were rare in the NICU. As one attending commented, “if you want to talk about supervision, really the times that we ‘supervise’ them [residents] is really just on rounds” (A). As a result, one-to-many feedback interactions occurred primarily during bedside rounding and were predominantly focused on teaching within case presentations. During team-based bedside rounding, giving information was the main form of feedback identified. Probing learners
through questioning and teaching were the main embedded feedback strategies observed. For example, on one occasion, after a learner had completed their case presentation and provided a management plan, the attending suggested there were alternate reasons for the patient’s symptoms. The attending went on to probe the learner for other possible causes of the patient’s symptoms and turned to other learners in the team to ask for alternate management plans (NICU Memo, Day 2). No other forms of feedback or embedded feedback strategies were identified in this setting. Similarly, apart from scheduling constraints and verbal formats of feedback, no other contextual factors were explicitly identified in this setting.

Physical space was also identified as a possible implicit factor that could impact feedback during NICU observations. Due to the number of “beds” on the NICU floor and the close proximity of beds (i.e., cribs and incubators), often times it was difficult for the entire team to congregate around a single “bed” during a case presentation. This sometimes reduced the ability for various learners to participate in feedback as teaching moments.

**Ward**

**Description of clinical setting.** The ward and Pediatrics Critical Care (PCC) unit were located on one floor of the hospital. Access to the floor was requested through a phone outside the access door. The phone call was generally answered by an individual seated at the ward reception desk. Inside the ward, the reception desk and nurses’ station were located toward the middle of the floor. Across from the nurses’ station was a multi-purpose room; a dedicated space used by the ward physician team and consulting physicians. The multi-purpose room included two doors on either end and had a large window allowing physicians to look across to the nurses’ station. Inside the multi-purpose room were phones and a series of computer terminals which physicians used to access patients’ health records. Outside the multi-purpose room, patient rooms
ran along both outside walls of the ward floor. The PCC unit was located, in a separate area, toward the back of the ward floor. The ward physician team was also responsible for patients in the PCC unit. Eight observations occurred within this clinical setting; four observations a week, for two weeks. Each week, a different attending was in charge of the ward physician team. During the two weeks of observations, the number of patients on the ward ranged from seven to fifteen.

**Nature of case presentations.** Within the ward, case presentations were observed during handover, individual rounding, bedside rounding, and after a resident had returned from an emergency room consultation. Morning handover occurred about 7:30 am each day and involved two-to-many case presentations; from overnight call team to daytime team. Two residents from the overnight call team provided the daytime team with updates on the status of current ward patients and provided more detailed case presentations (including history, physical findings, and diagnosis) on new patients who had been admitted overnight. The daytime ward physician team consisted of one or two Pediatrics residents, one or two off-service residents, two clerks, and an attending. Although attending physicians did not attend morning handover, often times the ward charge nurse attended. After morning handover, a senior Pediatrics resident (referred to as ward senior or junior attending) allocated patients to other learners on the physician team (i.e., other residents and clerks); this process was referred to as “running the list” (Ward Memo, Day 1).

After patient allocation, learners had about an hour to conduct individual bedside rounding which involved getting updated histories and conducting physical examinations on their assigned patients. The attending physician for the week often arrived on the ward during learners’ individual bedside rounding. When the attending was not present during individual bedside rounding, the senior residents often served as proxy attendings for junior learners (i.e.,
junior residents and clerks). During observations, I noticed that, during this period, when learners returned to the multi-purpose room, often times they did not give a case presentation, instead interactions between junior learners and attendings (or senior residents) were “dependent on what the learner discovers when they go into a patient room for an examination” (Ward Reflection, Day 1). For example on Day 1, a junior resident had conducted a physical examination on a patient and wasn’t sure they had done it correctly. They sought the assistance of a senior resident who spent time explaining to the junior the different types of sounds they should be looking for. After the explanation, the senior resident offered to conduct the physical examination with the junior resident during team bedside rounding (Ward Memo, Day 1). On another day, when an attending was present, a resident asked for assistance on how to conduct interviews with teenagers. The attending spent time teaching the resident different interviewing techniques, then went to the patient room with the resident to role model interviewing (Ward Memo, Day 2). Finally, in another instance, a patient was being prepped for a procedure and the attending for the week went and conducted one-on-one rounding with the learner assigned to the patient, ahead of team rounding (Ward Memo, Day 6).

Team bedside rounding commenced at about 9:30 am each day. All the learners were expected to return to the multi-purpose room prior to the beginning of team bedside rounding. During one of the days, the attending used the time prior to team rounding to “talk to the learners about how to deal with potential sensitive issues so that when they’re in the room giving the bedside rounds, they wouldn’t say anything that would be taken negatively by the parents” (Ward Reflection, Day 5). As one resident explained, team bedside rounding occurred “in the room with the patients and the parents. . . . There’s virtually never anybody else aside from the medical team and the family” (R). Team bedside rounding was supposed to be family-centered. During
observations, an attending explained, “family-centered rounds are not just about the rounds being at the bedside, it’s also about ensuring that the type of language that’s used in presenting the patient’s case is in a language that the parents will understand” (Ward Reflection, Day 1). In general team rounding proceeded with the group entering the room, the attending would then introduce the physician team members and explain that the case presentation was about to occur, then the learner assigned to the patient would begin their case presentation (Ward Memo, Day 1). During the two weeks of observation, I noticed that bedside rounding proceeded differently under each attending (Ward Reflection, Week 2). The ward attending for Week 1 did not participate in team bedside rounding; instead the junior attending (a senior Pediatrics resident) led bedside rounding. On the other hand, the ward attending for Week 2 participated in team bedside rounding. As a result, a resident pointed out that on the ward “there is individual variation. . . . Staff to staff, and again senior to senior” (R).

During team rounding, patients were seen in a specific order: patients in the PCC unit were seen first, followed by patients awaiting discharge from the hospital, and finally all others were seen. In general, case presentations began with the assigned learner introducing the patient, before presenting the patient’s history, physical examination findings, diagnosis, and management plan. During the presentation, patients and parents would provide clarifying information when necessary. Patients and parents also often asked questions to seek clarification about the management plan. During Week 1, when the attending did not participate in the team bedside round, after team rounding had ended, the senior resident would spend time running the list with the attending in the multi-purpose room. The purpose of running the list at this time was to “ensure that everybody knows what the assignments are. . . . What the work is that needs to be carried out, who needs to be called” (R). Case presentations also occurred on a one-on-one basis
when residents returned from an emergency room consultation. Each day a Pediatrics resident would be given an emergency room pager so that they could respond to requests for consultations. Consultation requests occurred at different times during the course of the day.

**Nature of feedback interactions.** Multiple forms and embedded feedback strategies were observed in the ward. For example, during team bedside rounding, attendings and senior residents tended to use feedback strategies such as teaching and probing residents with questions to support a resident’s learning during their case presentation. As one attending explained, “I find feedback . . . based on their history is done usually right after they present it. And then physical examining goes right after” (A). Another attending indicated that feedback could be given to residents on “how they acquired the information from patient and family, how accurate were they in the physical examination both in acquiring their information, and how they went about it, how good they were at communicating with the family” (A). These types of feedback strategies were often used to give information to learners (i.e., residents and clerks) to support their competence development. During Day 6 of observations, I had the opportunity to watch a junior resident present an emergency room consult case to the attending and a senior resident. In this case, multiple forms and embedded feedback strategies were observed. The attending encouraged the junior resident to present the case to the senior resident and indicated that they would only provide suggestions after the senior resident had reviewed the case. The case presentation followed the common format of first presenting patient history, followed by physical examination findings, and differential diagnosis. The junior resident did not however provide a management plan. During the presentation, the senior resident asked the junior resident clarifying questions, such as the patient’s condition during the physical examination. After the presentation was completed the senior resident indicated that the junior resident had done a good
job on the history taking, but did not agree with the differential diagnosis options that the junior resident had presented. The senior resident then presented a series of alternative diagnoses before turning to the attending for suggestions. The attending also indicated that they were unsure about the patient’s diagnosis, explained why the differential diagnosis options presented by the junior resident were unlikely, and then modeled the differential diagnosis process by providing other possible diagnoses that fit with the patient’s case. The attending and senior resident eventually agreed on a management plan and the attending explained to the junior resident how to talk to the family when they returned to the emergency room. The junior resident, senior resident, and attending all went back to the emergency room together to see the patient and family. During this case presentation, I also heard the following words of reassurance, “Good job on steps done”, from the senior resident after the junior resident had presented the case (Ward Memo, Day 6).

Various contextual factors that could impact feedback were observed in the ward. The hierarchical culture of medicine was evident in the setting. An attending explained, “On the ward, you still have that kind of hierarchy as well because many times the junior will be presenting to the senior” (A). As a result of this hierarchical structure, learners’ experiences and skills were evident in how different senior residents dealt with each other and junior learners (i.e., junior residents and clerks). For example, when two senior residents were present on the same day, the “senior-senior” was designated the junior attending, while the “junior-senior” was designated the ward senior. When both individuals were present in the physician team, the ward senior would seek reassurances from the junior attending that their suggestions for management plans were sound. As an example of learners’ emotions influencing feedback seeking, during one of the rare days that an attending was present during morning handover, the ward senior sought
reassurances from the junior attending that they were managing the physician team well because the attending had questioned their management style (Ward Memo, Day 2).

Attendings’ skills and abilities to handle feedback situations were observed, through non-verbal actions, in the varying ways that attendings dealt with learners. The attending in Week 1 indicated that they purposefully chose to not attend team bedside rounding in order to give the junior attending the opportunity to gain competence in managing the physician team (Ward Reflection, Week 1). On the other hand, the attending in Week 2 indicated that they purposefully chose to attend team bedside rounding but allowed the junior attending to lead rounds on two of the four days of observations so that they would be able to provide the junior attending with feedback on their management style (Ward Reflection, Week 2). Verbal feedback was the most common feedback format that was observed. Although one resident indicated that “on the ward, the staff is meant to sit down with their juniors and give them feedback on a one on one once weekly basis” (R), this was not observed during the morning observation hours. It is possible that formal feedback sessions occurred during the afternoon periods when observations were not occurring, however the same resident went on to say, “I find that’s very hit or miss. Probably 30% of the time I get formal feedback from my staff at the end. . . . I find its very staff or senior dependent, how much of that you get” (R).

**Outpatient settings**

In general, within outpatient settings such as the Ambulatory Clinic and General Pediatrics Clinics, case presentations occurred on a one-on-one basis between learners (i.e., residents and clerks) and attendings. The format of the case presentation followed the general structure of presenting a patient’s history and physical findings, followed by a discussion of differential diagnoses and management plan. Although the Ambulatory Clinic and General
Pediatrics Clinics were located in the same area of the hospital, the location of the case presentations varied between the two outpatient settings. The case presentations occurred in public areas in the Ambulatory Clinic and in semi-private physician rooms in the General Pediatrics Clinics.

**Ambulatory Clinic**

**Description of clinical setting.** The Ambulatory Clinic was located on the ground floor of the hospital. This walk-in clinic handled minor Pediatrics emergencies. The clinic had separate entrances for patients and clinic staff. When patients and their families arrived to the clinic, they would enter the reception area where they would register. After registration the patient would be sent to a nurse for triage. The triage process involved nurses determining the order in which patients would be seen based on the severity of their conditions. After triage, the patients would wait in the reception area to be called into a patient consultation room.

Inside the main clinic area, the nurses’ station was located near the staff entrance. Within this setting, the nurses’ station was the main hub for clinic activity. At the nurses’ station, patient lists were posted, prescription pads were located, requisitions forms for bloodwork and x-rays could be found, consultation requests calls between physicians were made, and clinic staff (including nurses, physicians, and administrative staff) would converge to discuss clinic workflow. Some attendings also used the nurses’ station to listen to case presentations. Across from the nurses’ station was a learner room. The learner room, used by both residents and clerks, contained computer terminals connected to the hospital’s electronic health record system. Inside the learner room were medical reference books and the walls were filled with notices regarding various medical protocols and procedures and guidelines for medication dosing. On either side of the nurses’ station and learner room were patient consultation rooms and physician rooms.
Within the ambulatory clinic, each day different attendings were assigned for morning and afternoon sessions. Seven observations were conducted in this setting, two during afternoon sessions and the rest during morning sessions.

**Nature of case presentations.** Within the ambulatory clinic, learners (i.e., residents and clerks) signed up to see a patient and went in to a patient consultation room where their patient was waiting. During the patient consultation, the learners were expected to obtain a detailed history and conduct a physical examination where necessary. Once they returned from the room, they would present their case to the attending in charge or a senior resident. During all but one observation session, learners presented their cases to attendings. On one of the last days, a senior resident was present and the attending in charge informed clerks they would present their cases to the senior resident (Ambulatory Clinic, Observation 7). The decision to have a senior resident hear junior learners’ case presentations was dependent on the attending in charge and their perception of a senior resident’s skills. As one attending explained, “It depends on who that senior is. . . . And so sometimes it’s just a matter of division of labour . . . then I kind of will interact with that senior resident and I really don’t interact much with the junior” (A).

The case presentations were conducted in one of three areas: at nurses’ station, by the learner room entrance, or inside the learner room. The choice of case presentation location was attending-dependent. As one attending explained, “I prefer doing it in the learner room, not in the back of the learner room but just kind of in the front, where the books are. I prefer to do it there more for confidentiality purposes” (A). One resident also commented on how the public nature of the ambulatory clinic environment influenced case presentations: “a lot of times when we are giving case presentations, it’s in a very busy environment. . . . I notice I lower my voice a lot more because I don’t want the parents in the adjoining rooms to be able to hear” (R).
Typically, due to the busy nature of the ambulatory clinic, case presentations were heard in the order that learners returned from patient consultation rooms. Learners would initiate the presentation by providing the patient’s name, age, and gender, before proceeding to present the history and physical findings. Some learners would provide a differential diagnosis, while others would not. When a learner offered a differential diagnosis, the attendings would explain to the learner why their diagnosis was incorrect or correct. Attendings often referenced evidence-based literature and practices to guide learners through the decision-making process for differential diagnosis. When a learner did not provide a differential diagnosis, attendings would use probing questions such as “what do you think is happening?” to guide learners through the differential diagnosis process (Ambulatory Clinic, Observation 2). Some attendings would then ask the learners to suggest a management plan. As one resident indicated, “different preceptors do things differently and sometimes I will give a plan” (R).

During the course of my observations, the management plan was often determined by attendings for junior learners (especially clerks), whereas for residents, the attendings encouraged them to formulate a management plan. There were times, especially when the clinic was busy, where I would not hear a management plan during a case presentation. Such instances were best described by a resident who explained, “depending on . . . how busy it is, you may very well be talking on the fly. So, you start reviewing [with the attending] at the desk and you go walking towards the room and you’re still giving the story” (R). In majority of cases where I did not hear a management plan, this was the nature of the case presentation. After completing part or all of the case presentation process, the learner and attending would return to the patient consultation room. Once the learner and attending returned from the patient consultation room, if the patient needed to be sent for bloodwork or scans, the learner would complete the necessary
requisition forms at the nurses’ station and the attending would sign off to approve the request, otherwise the learner would move on to see another patient.

**Nature of feedback interactions.** Multiple forms and embedded feedback strategies were observed embedded within the case presentations. During case presentations, attendings used feedback strategies such as teaching and probing to provide information and guidance to support residents’ competence development. Apart from using probing questions such as “what do you think is happening?” to guide learners’ competence development around differential diagnosis, attendings also used certain patient cases to increase learners’ medical knowledge and skills. For example, during one case presentation where the resident indicated that although the patient had a history of nose bleeds the purpose of consultation was to find out whether patient could play contact sports, the attending explained that due to patient's existing condition, contact sports were not an option unless they opted for expensive treatment or spleen removal. The attending then went on to explain the rates of success with regard to treating a patient using a spleen removal option (Ambulatory Clinic, Observation 6). On another day, the attending in charge used a case to teach all learners present the relationship between puffers and the location of respiratory diseases (Ambulatory Clinic, Observation 4).

With regard to role modeling as a feedback strategy, during one of the observation sessions, the attending in charge modelled how to deal with cases where the diagnosis was unclear. The attending explained to a learner that immediate solutions were not always available, and then went on to role model the process of elimination required to determine possible causes/diagnoses before deciding next steps (e.g., observations, tests, scans). The attending also stressed the importance of having an idea of possible diagnoses to indicate on requisition forms that would be sent to other specialists (Ambulatory Clinic, Observation 3). In reference to
attendings’ skills and abilities to handle situations, one attending spoke of the challenge they had providing feedback in this busy environment. Due to the number and diversity of people (e.g., learners, patients, and parents) present in the ambulatory clinic during case presentations, “sometimes it is more difficult to be as probably open and candid as you would like to be regarding if there was a problem with that presentation . . . because there are other people listening” (A).

Verbal feedback within the case presentation process was the most commonly observed feedback format. I did, however, see blank assessment forms for residents in the learner room. One resident explained that within the ambulatory clinic, “at the end of each clinic you are meant to be giving [assessment] forms to your supervisor for them fill out” (R). Although residents were supposed to obtain at least two assessment forms a day, one from the attending scheduled in the morning and another from the attending scheduled for the afternoon, I did not observe this happening during my observation periods. The resident went on to explain that attendings often completed the assessment forms outside of the clinic, and as a result, “you usually don’t see those forms until you have your biannual sit down with your academic adviser” (R).

**General Pediatrics Clinics**

**Description of clinical setting.** The General Pediatrics Clinics were located on the ground floor of the hospital. These scheduled clinics were held in the same area as the ambulatory clinic. When patients and their families arrived for a scheduled appointment with one of the general pediatricians (i.e., attendings), they would enter the reception area where they would register. After registration the patient’s weight and height would be recorded by a nurse and the patient would be escorted by the nurse to a designated patient consultation room.
General pediatricians (i.e., attendings) often scheduled their clinic hours around their other tasks, including ambulatory clinic schedules. Inside the main clinic area, several physician rooms were available for use by the general pediatricians. These physician rooms were used for one-on-one case presentations with learners. Attendings did not have fixed physician rooms that they used every clinic. Instead, often times the physician room was selected, prior to a scheduled clinic period, such that three patient consultation rooms were close to a designated physician room. Given that patients were scheduled for general pediatrics clinics, a list of patients and the nature of their visit was provided in the designated physician room prior to the beginning of a clinic period. The number of patients seen during a general pediatrics clinic varied depending on an attending’s preference. During my observations sessions, the total number of patients seen during clinic periods ranged from eight to fifteen. Most physician rooms contained two computer terminals connected to the hospital’s electronic health record system and a filing cabinet that held medication samples. Some physician rooms had medical reference books and guidelines for medication dosing posted on the walls. Six observations were conducted in general pediatrics clinics, two during afternoon sessions and the rest during morning sessions.

**Nature of case presentations.** Two types of patient appointments occurred in general pediatrics clinics: follow-up appointments and referrals from family physicians. The type of appointment influenced the nature of case presentations. One attending indicated that in general, due to the nature of general pediatrics clinics, learners focused primarily on history taking activities (General Pediatrics Clinics, Observation 1). Furthermore, different attendings specialized in different types of cases, thus the types of cases seen ranged from constipation, sleeping issues, and growth concerns to developmental and chronic issues (e.g., attention deficit hyperactivity disorder).
In the case of follow-up appointments, learners had the opportunity to review patients’ records before entering a patient consultation room. Some learners reviewed cases immediately prior to entering a patient consultation room whereas others reviewed the cases the night before. When a learner returned from a patient’s room to the physician room, the case presentation to the attending was typically short and focused primarily on determining updated management plans. The learner would begin their case presentation by indicating the patient’s name and age followed by an updated history and results of a physical examination, if conducted. The learner would then indicate the reason for the current visit and suggest a management plan. I noticed during observations that discussions around the best management plan were often detailed and involved co-planning between learner and attending when the learner was a senior resident. After determining a management plan, the attending would return to the patient consultation room with the learner.

In the case of referrals from family physicians, learners would typically review the referral notes before entering a patient consultation room. Because these patients were new to the attendings, the learners were expected to take a detailed history and conduct a physical examination prior to following the traditional case presentation process of reporting history, physical examination findings, differential diagnosis, and management plan. After determining a management plan, the attending would return to the patient consultation room with the learner.

**Nature of feedback interactions.** Multiple forms of feedback and embedded feedback strategies were observed. Attendings used feedback strategies such as teaching, probing, and role modelling to give residents information and provide guidance to support competence development. For example, during one resident’s case presentation, the attending corrected the resident’s use of terminology. The attending explained to the resident that “feeding” was a term
used for infants while “eating” was a term to be used for children (General Pediatrics Clinics, Observation 5). Probing was often used to guide residents, particularly senior residents through clinical reasoning steps. For example, in one case the resident suggested a management plan that the attending did not agree with due to the patient’s history. The attending then used probing to encourage the resident to develop alternative management plans. In this particular case of a new patient referral, during the case presentation, the resident reported that patient had been having episodes of debilitating pain several times a year. The onset and reasons for onset were unclear, but the patient indicated they were unable to walk when an episode occurred. The resident also indicated that the patient mentioned they had previously seen an urologist but results were unclear. During the case presentation, although the resident briefly described the patient’s daily fluid intake as part of the case presentation, the attending probed for more information linked to fluid intake and episodes. The attending explained that the reason for their probing was they were concerned the patient was not taking in enough fluids. When asked for the management plan, the resident suggested seeing an urologist again, but the attending disagreed. The attending suggested the resident focus on examining fluid intake and explained an alternative differential diagnosis. The attending then suggested increasing the patient’s fluid intake and monitoring symptoms as an alternative management plan (General Pediatrics Clinics, Observation 6).

The interactions among attendings’ skills and abilities and learners’ skills and experiences were reflected in how one attending described the importance of trusting relationships. During an observation, an attending indicated that “trust in your learner is an important component in being comfortable with a learner and allowing them graduated responsibility” (General Pediatrics Clinics, Memo 1). This attending also spoke about how novice learners could slow the flow of consults. For example, during one of the observation days only junior learners (i.e., a clerk and
junior resident) were assigned to work in a general pediatrics clinic. The attending whose clinic it was, commented that the clinic would likely not run as smoothly given that learners were both juniors (General Pediatrics Clinics, Observation 5). Another attending suggested that within general pediatrics clinics, graduated responsibility was dependent on learners’ experiences or stages of learning:

First years are usually pretty good at we need medicine and this much. Whereas third years [senior residents] should understand we need medicine, here are the medicine options, here is the dosing range, here is how we adjust that, and here are all the non-medical parts of the management that need to go into this case. (A)

In relation to attendings’ interactions with senior residents, on multiple occasions I observed several attendings interact with a senior resident. When working with the senior resident, attending physicians would often spend time discussing cases in depth and co-planning management plans with the resident. Co-planning was particularly common when the senior resident’s suggested management plan did not match that of the attending. Often times in such cases, the attending and resident would return to the room before settling on a management plan. The reason for this was explained by one attending: “when they present to me . . . there’s always still a few questions in my head and when I go back in the room, generally, I elicit a bit more history and/or physical exam findings myself and sometimes my opinion changes” (A). After further consultation with the patient, attendings would either go with the resident’s management plan, if it was a viable option, or the final management plan would involve combining suggested management plans.

For example in one case of a follow-up appointment where the patient came in for chronic headaches, as part of developing the differential diagnosis the resident suggested that
they thought the headaches were linked to possible side effects of medication (i.e., sensitivity). The resident suggested that based on information from the patient the onset of headaches appeared to coincide with new medication dosage. As a possible management plan, the resident suggested lowering the medication. After the resident completed their case presentation, the attending explained to the resident that though the patient was sensitive to the medication they were concerned about lowering the dosage of medication because the patient needed it to control certain behaviours. This new information from the attending resulted in a longer back and forth discussion between the resident and attending about the benefits of dosage changes versus including new medication as possible management plans. During this discussion the resident elicited more background information about the patient from the attending. As a result of their discussion, the attending and resident, together, decided on changing the dosage of the current medication and including new medication before returning to the patient consultation. Upon returning from the consultation room, the attending and resident worked together to determine the correct dosage for the new medication (General Pediatrics Clinics, Observation 3). Verbal feedback was the only feedback format observed. Clinic-specific assessment forms for residents were not visible in any of the rooms though attendings did mention their existence during interviews.

**Section 2 Summary**

In this section, study findings were situated within the four Pediatrics clinical settings that observations occurred. The four clinical settings were: NICU, Ward, Ambulatory Clinic, and General Pediatrics Clinics. In this section, a description of each clinical setting was provided followed by descriptions of the nature of case presentations and feedback interactions in each of the settings. Data from interviews, observations, and memos were merged to provide detailed
descriptions of how previously identified themes (i.e., forms of feedback, embedded nature of feedback strategies, and contextual factors that mediate feedback) and their related categories appeared within each clinical setting.

**Section 3: Cross-Case Analysis of Clinical Settings**

In this section, I conclude the chapter by interpreting the findings presented in the first two sections through a cross-case analysis of the four Pediatrics clinical settings. The cross-case analysis was conducted to better understand commonalities and differences among the four clinical settings that residents rotated through during their program. Using results from Sections 1 and 2, the cross-case analysis involved four analytic steps: (a) developing hypotheses of how categories could be used to highlight the relationships among conditions, context, action/interactional strategies, and consequences related to feedback interactions; (b) verifying hypotheses against data; (c) searching for additional properties and dimensions of categories; and (d) exploring variations in feedback interactions in order to identify different patterns in the data that could be used to develop a descriptive account of how contextual factors impacted feedback interactions in Pediatrics clinical settings (Strauss & Corbin, 1990). This section begins with a summary of the characteristics of case presentations and observations across the clinical settings. Next, interpretations of findings are organized under three sub-headings: embedded nature of feedback, working within contextual constraints, and structured versus embedded feedback. Finally, the section ends with a summary of research findings.

**Characteristics of Case Presentations**

As shown in Table 8 below, the style, type, location, and volume of human traffic during a case presentation could vary within and across Pediatrics clinical settings. Within inpatient settings (i.e., NICU and Ward), one-to-many case presentations were common due to team-based
rounding. Furthermore, in both these settings, case presentations often involved patient updates that were presented at patients’ bedsides. Due to case presentations occurring at the patient bedside the volume of human traffic (e.g., physician team, nurses, and families) during a case presentation tended to be medium to high. In contrast, within outpatient settings (i.e., Ambulatory Clinic and General Pediatrics Clinics), one-to-one presentations of new patient cases were more common. Between the two outpatient settings, due to the location of case presentations, human traffic ranged from low (in physician room) to high (at nurses’ station).

Across settings, although case presentation styles and locations varied, the case presentation process was often similar when a resident was conducting a presentation on a new patient. In the case of a new patient, the resident would introduce the patient’s case to the attending, present a synthesized history, report findings of physical examinations, present their differential diagnosis, and finally develop a management plan. Conversely, in the case presentations involving patient updates or follow-up appointments (e.g., in Ward, NICU, or General Pediatrics Clinics) certain elements of the case presentation (e.g., differential diagnosis) would be briefly mentioned or minimized because the patients were already known to attendings. The focus in these case presentations was often on providing an updated patient history and management plan.
Table 8

*Characteristics of case presentations in each Pediatrics clinical setting*

<table>
<thead>
<tr>
<th>Clinical Setting</th>
<th>NICU</th>
<th>Ward</th>
<th>Ambulatory Clinic</th>
<th>General Pediatrics Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Style</strong></td>
<td>One-to-many, Many-to-many</td>
<td>One-to-many, One-to-one</td>
<td>One-to-one</td>
<td>One-to-one</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Patient updates (learner-led, parent-led, bedside nurse-led); New patients</td>
<td>Patient updates, New patients, ER consultation</td>
<td>New patients</td>
<td>Follow-up appointments, New patients (referrals)</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Bedside (NICU floor)</td>
<td>Bedside (patient room), Multi-purpose room</td>
<td>Nurses’ station, Learner room</td>
<td>Physician room</td>
</tr>
<tr>
<td><strong>Volume of human traffic (physical space)</strong></td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

Figure 5, below, provides a summary of observations in each Pediatrics clinical setting based on the themes identified from interview data. Commonalities and dissimilarities were examined in terms of forms of feedback, types of embedded feedback strategies used, and contextual factors that were observed to impact case presentations and feedback interactions. Results of these analyses were organized under three sub-headings: embedded nature of feedback, working within contextual constraints, and structured versus embedded feedback.
### Themes and categories

#### Forms of feedback

<table>
<thead>
<tr>
<th>NICU</th>
<th>Ward</th>
<th>Ambulatory Clinic</th>
<th>General Pediatrics Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giving information</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reassurance</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Guiding</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
</tbody>
</table>

#### Embedded nature of feedback strategies

<table>
<thead>
<tr>
<th>NICU</th>
<th>Ward</th>
<th>Ambulatory Clinic</th>
<th>General Pediatrics Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A form of teaching</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Probing a resident</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>What’s not said</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Role modelling</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

#### Contextual factors that could impact feedback

<table>
<thead>
<tr>
<th>NICU</th>
<th>Ward</th>
<th>Ambulatory Clinic</th>
<th>General Pediatrics Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendings’ skills</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Learners’ skills</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Social factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learners’ experiences</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Attendings’ abilities to handle situations</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Trusting relationships</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Emotional factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learner’s emotions</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Environmental factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduling constraints</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Paper-based feedback format</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Culture (professional, institutional, and programmatic levels)</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
</tbody>
</table>

**Figure 5.** Summary of observations in each Pediatrics clinical setting. *Note.* “✓” indicates categories that were observed and “✗” indicates categories that were not observed.

*aThe NICU had the least number of observations due to only one attending being observed.

Prior to presenting the results of the analyses, it is important to note that the NICU may be considered qualitatively different from the other clinical settings in that (a) observations were only conducted on one attending and (b) attendings working within the NICU were specialist
pediatricians (i.e., neonatologists) rather than generalist pediatricians. The attendings observed in the three other settings were primarily general pediatricians.

Embedded Nature of Feedback

The characteristics of general forms of feedback and feedback strategies embedded in case presentations are presented in Tables 9 and 10, respectively. Based on interview and observation data presented in Sections 1 and 2, giving information and reassurance were classified as one-way communication processes while guiding was classified as a two-way communication process. Giving information was observed across all settings whereas guiding was more common in settings where one-on-one case presentations were possible. Although four participants spoke of words of reassurance or encouragement as a form of feedback during interviews, these were rarely observed. The one exception was when a junior resident presented an emergency room consultation to a senior resident in the presence of an attending; during this case presentation, the following words of reassurance, “Good job on steps done”, were used.

Table 9

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giving information</td>
<td><em>Process:</em> One-way communication</td>
</tr>
<tr>
<td></td>
<td><em>Focus/Content:</em> Knowledge transfer</td>
</tr>
<tr>
<td>Reassurance</td>
<td><em>Process:</em> One-way communication with emotional aspect</td>
</tr>
<tr>
<td></td>
<td><em>Focus/Content:</em> Words of encouragement</td>
</tr>
<tr>
<td>Guiding</td>
<td><em>Process:</em> Two-way communication</td>
</tr>
<tr>
<td></td>
<td><em>Focus/Content:</em> Clinical reasoning, Skills development</td>
</tr>
</tbody>
</table>

Relationship between forms of feedback and feedback strategies. As a result of findings presented in Sections 1 and 2, feedback strategies embedded in case presentations were
classified under two forms of feedback based on their primary foci characteristics. Teaching and non-verbal feedback (i.e., what’s not said) were classified as forms of giving information and probing and role modelling were classified as forms of guiding. These groupings appeared to closely match transmission and integrated models of feedback. Specifically, feedback strategies involving giving information were predominantly classified as one-way communication processes involving attendings providing residents information to support their learning (i.e., transmission model of feedback), whereas feedback strategies involving probing and role modelling were predominantly classified as two-way communication processes in which feedback was used to help residents make connections and explore understandings. Only two instances of feedback interactions could be characterized as dialogic. These instances involved a senior resident working closely with two different attending physicians in General Pediatrics Clinics. The instances were triggered when resident’s and attending’s initial differential diagnoses or management plans differed. In these situations elements of the dialogic model of feedback (i.e., interactive exchange in which interpretations are shared, meanings negotiated, and expectations clarified) were observed via the detailed case discussions that led to co-planning management plans.

Table 10

*Characteristics of feedback strategies embedded in case presentations*

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A form of teaching</td>
<td><em>Nature</em>: Direct, teacher-driven &lt;br&gt;<em>Primary focus</em>: Knowledge transfer</td>
</tr>
<tr>
<td>Probing a resident</td>
<td><em>Nature</em>: Direct, teacher-driven &lt;br&gt;<em>Primary focus</em>: Clinical reasoning</td>
</tr>
<tr>
<td>What’s not said</td>
<td><em>Nature</em>: Indirect, teacher-driven &lt;br&gt;<em>Primary focus</em>: Behaviours/Actions</td>
</tr>
<tr>
<td>Role modelling</td>
<td><em>Nature</em>: Indirect, learner-driven or teacher-driven &lt;br&gt;<em>Primary focus</em>: Behaviours/Actions, Skills development</td>
</tr>
</tbody>
</table>
The dominance of transmission as opposed to integrated or dialogic feedback strategies appeared to be dependent on the clinical setting and case presentation type. For example, within a busy clinical environment where patients were already known to an attending, the focus of the case presentation was often on updating the attending on the status of the patient (i.e., history and management plan), thus removing the need for a discussion around differential diagnosis. In such cases, the attending would focus on whether the information provided was accurate or not and consequently feedback strategies tended to focus on teacher-centred feedback strategies such as teaching, thus limiting the interaction to a one-way feedback process (i.e., transmission model).

In contrast, when a clinical setting allowed residents and attendings time to discuss a patient case in a semi-private setting, this allowed for more detailed case presentations which could lead to feedback interactions that were predominantly integrated and in some instances dialogic (i.e., two-way communication processes). These types of feedback interactions were often observed when the case presentation was held in a semi-private location, away from the earshot of patients and families (e.g., the multi-purpose room in the ward, the learner room in the ambulatory clinic, or the physician rooms in the general pediatrics clinics). During a detailed case presentation, an attending could assess a resident’s competence development as it related to history taking and clinical reasoning skills. If a learner needed guidance in either of these areas, the attending had the opportunity to use various feedback strategies such as probing and role modelling to support the resident’s learning.

Furthermore, when a resident had difficulty obtaining a detailed history or developing a differential diagnosis, attendings would use feedback strategies such as probing and role modelling that not only provided the resident with information to increase their medical knowledge, but also guided them through the clinical reasoning process. Role modeling, as an
embedded feedback strategy, was also commonly observed in settings where one-on-one case presentation discussions were possible. During observations, role modeling was often used to guide residents’ clinical reasoning skills, particularly in relation to developing differential diagnoses and management plans.

Feedback as teaching or probing disconnect. A disconnect was identified between residents’ and attendings’ perceptions of two feedback strategies: teaching and probing. Although teaching and probing during case presentations were considered direct, teacher-driven feedback strategies by attendings, three of the four residents did not initially classify them as feedback strategies. As discussed earlier, one attending suggested that within Pediatrics clinical settings, feedback and teaching are “very mixed in.” Perhaps for this reason, attendings made the implicit assumption that residents would also classify teaching and probing as feedback strategies embedded in case presentations. Interviews with residents, however, indicated that this implicit assumption was not held by majority of residents. Residents, instead, tended to either (a) label direct, teacher-driven feedback strategies as primarily teaching only or (b) state that they hadn’t previously thought of the strategies in relation to feedback to support learning.

Although residents identified nonverbal communication (what’s not said) as an informal feedback strategy, another possible reason for the disconnect between residents’ and attendings’ perceptions of two feedback strategies was that residents generally had narrower conceptions of feedback than attendings. For example, early on in interviews, residents tended to describe the main feedback strategy used in clinical settings as structured, formal (sit down) evaluative discussions (often tied to completion of assessment forms) that were meant to occur at the end of a clinic, week, or rotation. Residents who spoke of these evaluative discussions as the primary source of feedback would often also mention how these types of discussions did not occur often
though they were apparently structured into the program. These residents would then initially conclude that they did not receive a lot of feedback during the course of their rotations through various clinical settings. However, during the course of interviews, as residents described what occurred day-to-day during case presentations, they would often later comment that they did indeed use embedded feedback strategies such as teaching and probing to support their day-to-day learning. Finally, two attendings also recognized the challenge that existed with residents’ inability to recognize teaching and probing as embedded feedback strategies. These attendings pointed out that because these feedback strategies were less defined, they would not always be designated as feedback by residents and as such could result in situations where “if you’re probing a resident during a case presentation, they don’t always recognize that as feedback” (A).

**Working within Contextual Constraints**

Within this study, the interpretative-relational conception of competence development (Figure 2) was used as the conceptual framework that guided the study. This conceptual framework was used to highlight the various contextual factors (i.e., cognitive, emotional, social, and environmental factors) that could impact feedback and competence development and the processes involved in meaning-making. Figure 6, below, highlights the contextual factors that participants perceived could impact feedback interactions.
**Figure 6.** Contextual factors identified in the study

**Working within scheduling constraints.** Across settings, scheduling constraints could impact feedback by preventing their occurrence. For example, in the NICU where all learners, regardless of stage of learning, were treated similarly, the main contextual factor that was observed to act as a constraint was scheduling. The Pediatrics residents in the NICU were assigned pagers for when they were needed by the neonatal team for deliveries. Often, when the pager would go off, case presentations would be put on hold thus limiting opportunities for embedded feedback. Furthermore, due to the large number of patients in the NICU during the period of observations, when possible the attending would continue case presentations with the remaining members of the team and use bedside nurse-led and parent-led case presentations to complete rounding. These two other forms of case presentations were also used when a learner had not had an opportunity to examine a patient prior to the start of team-based rounding.
To streamline the discussion of how attendings and residents worked within other contextual constraints, the remaining identified contextual factors were regrouped into five categories: culture; physical space; learners’ skills, experiences, and emotions; trusting relationships; and attendings’ skills and abilities to handle situations (Table 11). These new categories grouped together cognitive, emotional, and social factors for each participant group, while retaining the original categories of culture, physical space, and trusting relationships. Table 11 provides a summary of characteristics of each of the five new categories based on data from interviews, observations, and researcher memos, as presented in Sections 1 and 2.

Table 11

*Characteristics of contextual factors that could impact feedback*

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture (professional, institutional, and programmatic levels)</td>
<td>Feedback culture (i.e., What are the purposes of feedback? What forms of feedback are common? What feedback strategies are used)</td>
</tr>
<tr>
<td><em>Physical space</em></td>
<td>Semi-private or public, Human traffic (i.e., are patients and families present or not present)</td>
</tr>
<tr>
<td>Learners’ skills, experiences, &amp; emotions</td>
<td>Stages of learning, Ability to perform informed self-assessment, Openness to feedback (and resilience)</td>
</tr>
<tr>
<td>Trusting relationships</td>
<td>Developed over time through multiple attending-resident interactions, Learner-driven (perceptions of trustworthiness or credibility)</td>
</tr>
<tr>
<td>Attendings’ skills &amp; abilities to handle situations</td>
<td>Teaching skills, Communication skills, Clinical skills</td>
</tr>
</tbody>
</table>

*Note. Physical space was a category that emerged primarily during observations*
Working within cultural constraints. Within medical education, hierarchical structures are commonly found among learners and their clinical instructors. These hierarchical structures could impact feedback interactions by changing the source of feedback. During observations, the setting where this hierarchy was most prominently observed in relation to feedback interactions was the ward. The physician team in the ward was structured such that learners expected their primary source of feedback to be the person who was most immediately above them. This hierarchical structure was built into the rotation through titles such as “ward senior” and “junior attending”. One advantage of encouraging such a hierarchical structure to support feedback giving was that residents received feedback not only from near peers, but also had the opportunity to give feedback to more junior learners. In terms of residents’ competence development, an attending commented that they hoped the opportunity to practice giving feedback would help learners realize how much informal or embedded feedback they themselves received. Another advantage of such a structure was that learners had potentially more sources of feedback.

Working within spatial constraints. Across settings, the physical space (including volume of human traffic) could impact the nature of case presentations and feedback interactions by modifying residents’ and attendings’ behaviours. For example, within the ambulatory clinic, different attendings chose to conduct case presentations in different locations (e.g., nurses’ station versus learner room). Although the nurses’ station had a high volume of human traffic due to patients, families, and clinic staff passing by, two attendings indicated that they preferred listening to case presentations standing at the nurses’ station because it allowed them greater efficiency when multi-tasking (e.g., listening to case presentations and completing paperwork). Conversely, other attendings spoke of being sensitive to concerns about patient privacy and
preferred listening to case presentations, particularly those of a sensitive nature, in the learner room.

One resident spoke about adjusting their tone of voice during case presentations at the nurses’ station in order to ensure patient privacy while still meeting various attendings’ preferences. Some attendings also spoke of moving case presentations from the nurses’ station to the learner room when they considered a case to be of a sensitive nature. Two attendings working in different settings with high volumes of human traffic (i.e., Ambulatory Clinic and NICU) also commented on how the physical space affected their comfort with giving feedback during case presentations. They both indicated they were more comfortable providing feedback in semi-private than in public spaces.

**Working within learners’ constraints.** Across settings, learners’ stages of learning and skills impacted attendings’ expectations of case presentations and feedback interactions. For example, attendings expected junior residents to be able to synthesize information obtained during history taking and provide a possible differential diagnosis, whereas senior residents were expected to move beyond providing a differential diagnosis to developing a detailed management plan. These expectations influenced feedback interactions between attendings and residents. When working with a junior resident, it was common for embedded feedback strategies related to giving information (e.g., teaching and non-verbal communication) to be used, whereas with senior residents, embedded feedback strategies related to guiding (e.g., probing a resident and role modelling) were common.

Attendings also suggested that within stages of learning, there existed variability in residents’ openness to feedback and abilities to perform informed self-assessment. Attendings were concerned that when learners lacked resilience, they were not open to feedback. One
attending explained that feedback often involved an emotional aspect and as a result, residents’ abilities to handle their emotions likely impacted their ability to use feedback to support their learning. Residents, on the other hand, suggested that openness to feedback was dependent on their perceptions of attendings’ trustworthiness or credibility. Trusting relationships, developed through multiple attending-resident interactions over time, appeared to help residents to become more open to feedback. For example, residents indicated that if they worked with an attending for an extended period of time and perceived that attending to be trustworthy, they were more open to receiving constructive feedback from the attending and were also more willing to use that information to perform an informed self-assessment.

**Working within attendings’ idiosyncrasies.** Different attendings working in the same setting approached similar situations differently and residents were expected to be able to adapt to such attending idiosyncrasies. Although this potential contextual constraint was witnessed in multiple settings, only one resident spoke about how attendings’ idiosyncrasies could impact feedback. Specifically, the resident was concerned that in providing feedback, “sometimes people [attendings] will correct because they want you to use their exact style but there are often multiple ways of doing the same thing well” (R). Two attendings however stressed the importance of attendings and residents recognizing that they were multiple ways of doing the same task and residents needed to use feedback from these tasks to discover the “style they themselves would have as a future physician” (A).

One example of attendings using multiple ways to complete the same task was evidenced in the ward. During ward observations, one attending purposefully chose to not attend team-based rounding in order to give the junior attending (a senior resident) the opportunity to gain competence in managing the physician team without oversight, whereas the other attending
indicated that they purposefully chose to attend team-based rounds led by the junior attending so that they would be able to provide the junior attending with feedback on their management style. Furthermore, during the two weeks of observation in the ward there were a number of patient cases that spanned the length of the two weeks; in two of the cases, senior residents also had to deal with conflicting management plans being offered up by the two attendings (Ward Reflection, Week 2).

Structured versus Embedded Feedback

Though structured feedback, often triggered by assessment forms, was built into the program, residents indicated the timing of these feedback interactions was dependent on attendings’ preferences and the clinical setting. According to residents and attendings structured feedback included formal end-of-clinic, end-of-week, or end-of-rotation discussions between residents and attendings. Although I was present during a number of end-of-clinic periods in the outpatient settings, I did not witness any of these structured feedback sessions. One attending explained that it was often difficult to provide residents with feedback at the end of the day/clinic because the primary concern was making sure patients had all been dealt with and that all necessary documentation was collected (Reflection, Interview 6). As a result, attendings in the ambulatory clinic, for example, would often complete residents’ assessment forms back in their offices and either return the form to the resident to discuss clinical performance or place the form in a collection box. Towards the end of the rotation, the forms in the collection box would then be collated by the attending in charge of completing residents’ in-training evaluation reports (ITERs).

In the case of inpatient settings, attendings spoke of completing assessment forms for residents at the end of their scheduled weeks. Residents however indicated the occurrence of this
activity was very attending-dependent. Residents remarked that completion of inpatient assessment forms was not common and one attending remarked that unless a resident reminded them to complete the form, they did not complete them. The prevalence of this activity could not be corroborated through observations as attendings indicated that they often completed assessment forms during afternoon periods; thus, outside of my observation window. Across settings, structured feedback appeared to be predominantly dependent on paper-based feedback formats while embedded feedback strategies were predominantly verbal. This might help to explain why I did not observe the use of paper-based feedback formats during observations.

Finally, in interviews, residents also spoke of the challenges they experienced when institutional variations in the use of structured and embedded feedback existed. Learners’ prior institutional cultures influenced how they perceived practices in their current feedback culture. As one resident suggested, what residents identified as feedback varied based on the feedback culture of their prior training programs. Thus, in cases where cognitive dissonance occurred, residents looked for feedback strategies that aligned with their prior institutional culture and struggled to identify other feedback strategies that they could use to support their learning.

**Section 3 Summary**

This section presented results of a cross-case analysis conducted to better understand commonalities and differences among the four clinical settings that Pediatrics residents rotate through during their residency program. This section began with a summary of the characteristics of case presentations and observations across the clinical settings. Next, interpretations of findings were organized under three sub-headings: embedded nature of feedback, working within contextual constraints, and structured versus embedded feedback. Results of the analysis indicated that (a) in relation to residents’ competence development, when feedback strategies are
embedded within case presentation processes, they are used to primarily support the
development of residents’ medical knowledge and skills in history-taking and clinical reasoning;
and (b) feedback interactions are context-dependent and shaped by various elements including
feedback strategies, forms of feedback, case presentation types, and contextual factors (i.e.,
social, cognitive, emotional, and environmental factors) within a clinical setting (Figure 7).

Figure 7. Elements that shape feedback interactions in Pediatrics clinical settings

Summary

This chapter was organized in three sections, Sections 1 and 2 were predominantly
descriptive, and Section 3 presented a cross-case analysis and interpretation of research findings.
In Section 1, using interview data only, I described residents’ and attendings’ conceptions of
feedback which were organized in three themes: forms of feedback, embedded nature of feedback strategies, and contextual factors that could impact feedback. Although the identified themes and their related categories were not discussed by all twelve participants, the assumption was made that interviews provided a sampling of the kinds of topics that participants perceived to be important to feedback in clinical settings. Consequently, it was important to examine whether all these themes and their related categories would be observed in the various clinical settings. Thus, in Section 2, I combined findings from interview and observation data to describe the nature of case presentations and feedback interactions in each of the four Pediatrics clinical settings of interest.

In Section 2, themes presented in Section 1 were used to describe the nature of feedback interactions in each setting. The inpatient Pediatrics settings were the Ward (including the Pediatrics Critical Care unit) and the Neonatal Intensive Care Unit, and the outpatient Pediatrics settings were the Ambulatory Clinic and General Pediatrics clinics. Finally, in Section 3, I interpreted the findings presented in Sections 1 and 2 through a cross-case analysis of the four clinical settings. The cross-case analysis involved four analytic steps: (a) developing hypotheses of how categories can be used to highlight the relationships among conditions, context, action/interactional strategies, and consequences related to feedback interactions; (b) verifying hypotheses against data; (c) searching for additional properties and dimensions of categories; and (d) exploring variation in feedback interactions in order to identify different patterns in the data that could be used to develop a descriptive account of how contextual factors impacted feedback interactions in Pediatrics clinical settings.

Ten research findings emerged from this three-step process of data presentation and analysis. These ten findings are ordered chronologically, based on their appearance in this
chapter: (a) The volume of human traffic, location, style, and type of case presentation could vary within and across Pediatrics clinical settings; (b) The dominance of transmission as opposed to integrated or dialogic feedback strategies was dependent on the clinical setting and case presentation type; (c) A disconnect was identified between residents’ and attendings’ perceptions of two feedback strategies embedded within case presentations: teaching and probing; (d) Scheduling constraints could impact case presentations and feedback interactions by preventing their occurrence; (e) Hierarchical structures could impact feedback interactions by changing the source of feedback; (f) Physical space (including volume of human traffic) could impact the nature of case presentations and feedback interactions by modifying residents’ and attendings’ behaviours; (g) Learners’ stages of learning and skills impacted attendings’ expectations of case presentations and feedback interactions; (h) Different attendings working in the same setting approached similar situations differently and residents were expected to be able to adapt to attendings’ idiosyncrasies; (i) Structured feedback appeared to be predominantly dependent on paper-based feedback formats while embedded feedback strategies were predominantly verbal; and (j) Learners’ prior institutional cultures influenced how they perceived feedback practices and strategies in their current institutional culture. In the next chapter, these findings will be used to highlight major patterns in research findings and will also be used to generate recommendations for practice and further research.
Chapter 5

Summary and Discussion

Summary of the Study

The purpose of this qualitative, descriptive, embedded single-case study was to explore how contextual factors shape feedback interactions within and across various clinical settings. In particular, this study explored the nature of feedback in inpatient and outpatient Pediatrics clinical settings from attendings’ and residents’ perspectives. In each clinical setting, the feedback interactions were embedded within case presentation processes that occurred after a resident had completed a patient consultation. Three research questions guided this study: (a) What are residents’ and attendings’ conceptions of feedback? (b) What contextual factors shape the nature of feedback interactions between residents and attendings? and (c) Which types of feedback interactions, if any, may be classified as dialogic feedback processes?

Effective feedback is often defined as feedback that is appropriate, timely, and suited to the needs of a given situation (Poulos & Mahony, 2008). Although attempts have been made to incorporate these aspects of effective feedback into higher and professional education programs (e.g., medical education), learners’ and instructors’ dissatisfaction with feedback practices remain prevalent (Carless et al., 2011; Eva et al., 2012; Joughin, 2009; Nicol, 2010; van de Ridder et al., 2008; Watling & Lingard, 2012). Within postgraduate medical education (PGME) programs, feedback is important because: (a) feedback is essential for the development of competencies in clinical workplaces, (b) observation combined with feedback assists in the identification of inadequate performance, and (c) feedback encourages learners to think about their performance with the aim of reducing discrepancies between actual and desired performance (Bok et al., 2013). The challenge for PGME programs is that their learners, referred to as residents, must
constantly juggle responsibilities inherent in their dual status as learners and workers. Although teaching, learning, and patient care are central activities in PGME programs, patient care takes priority over other activities (Hoffman & Donaldson, 2004). As a result, PGME programs need to design their formal and informal learning activities, including feedback practices, such that residents are able to balance their responsibilities as learners and workers (Houston et al., 2011). Further, ongoing assessment and feedback must be conducted and provided such that they do not compromise patient care.

In order to encourage effective feedback practices, Baker and colleagues (2013) suggest that two elements, a learning continuum system and a trusting climate, must first be in place. A learning continuum system can be developed by promoting learning on a daily basis through encouraging team work and giving learners optimal challenges. A trusting climate can be developed by encouraging communication within and across the hierarchical structures commonly found in professional settings (Baker et al., 2013). The successful development of these elements (i.e., learning systems, trusting climates, and effective feedback practices) is, however, influenced by context. For the purposes of this study context refers to the interactions (or processes) among residents, attendings, and their environments. In particular, context refers to “the sets of conditions that give rise to problems or circumstances to which individuals respond by means of action/interaction/emotions” (Corbin & Strauss, 2008, p. 229).

Although the role of context in various aspects of medical education has been highlighted as an area needing further research (e.g., Regehr, 2006; Teunissen et al., 2007) and research has begun to explore how contextual factors influence the development of learning systems and trusting climates (e.g., Hoffman & Donaldson, 2004; Pimmer et al., 2013), to date, few studies have explored how contextual factors shape the nature of feedback interactions within various
clinical settings. To explore how contextual factors shape the nature of feedback interactions within and across various clinical settings, the single-case of interest was a Pediatrics residency program and the embedded units of analysis were two inpatient (i.e., Ward and Neonatal Intensive Care Unit) and two outpatient (i.e., Ambulatory Clinic and General Pediatrics Clinics) settings. Symbolic Interactionism served as the theoretical perspective that guided the choice of research methods. Direct observations, interviews, and researcher memos served as data sources. Twelve Pediatrics physicians participated in the study including four residents and eight attendings. Given the qualitative, descriptive nature of study, data analysis involved using coding techniques (i.e., open coding and axial coding) from Strauss and Corbin’s (1990) approach to Grounded Theory coupled with a mapping technique (i.e., situational mapping) from Adele Clarke’s (2003) Situational Analysis.

**Major findings**

As reported in Chapter 4, a three-step process of data analysis and presentation was followed for research findings. In Step 1, based on interview data only, residents’ and attendings’ conceptions of feedback were organized under three themes: (a) forms of feedback (i.e., giving information, reassurance, and guiding); (b) embedded nature of feedback strategies (i.e., a form of teaching, probing a resident, non-verbal communication, and role modelling); and (c) contextual factors that could impact feedback (i.e., cognitive, social, emotional, and environmental factors). In Step 2, I combined findings from interview and observation data to describe the nature of case presentations and feedback interactions in each of the four Pediatrics clinical settings of interest. In this step, themes and their related categories that emerged from interview data were used to describe the nature of feedback interactions in each setting. In Step 3, I interpreted the findings presented in the first two steps through a cross-case analysis of the
four clinical settings of interest. Ten research findings emerged from this three-step process of data analysis and presentation. Guided by existing literature, these 10 findings were reordered to form three major patterns of findings:

1. Feedback interactions are shaped by various elements including feedback strategies, forms of feedback, case presentation styles and types, and contextual factors within clinical settings, including physical space; learners’ skills, experiences, and emotions; attendings’ skills and abilities to handle situations; and trusting relationships. For example, research findings highlight: (a) the volume of human traffic, location of interaction, and case presentation style and type vary within and across Pediatrics clinical settings; (b) scheduling constraints can impact case presentations and feedback interactions by preventing their occurrence; and (c) physical space (including volume of human traffic) can impact the nature of case presentations and feedback interactions by modifying residents’ and attendings’ behaviours.

2. Culture at institutional, professional, or programmatic levels and perceptions of feedback culture appear to impact feedback interactions. In particular, findings suggest: (a) residents’ prior institutional cultures influence how they perceive feedback practices and strategies in subsequent institutional cultures; (b) the hierarchical structures commonly found among residents and attendings impact feedback interactions by changing the source of feedback; (c) structured feedback, mandated by the program, appears to be predominantly dependent on paper-based feedback formats while embedded feedback strategies are predominantly verbal; and (d) the dominance of transmission as opposed to integrated or dialogic feedback strategies appears to be dependent on the clinical setting and case presentation type.

3. In relation to residents’ competence development, when feedback strategies are embedded within case presentation processes, they are used to primarily support the development of
residents’ medical knowledge and skills in history-taking and clinical reasoning. Findings suggest learners’ stages of learning and skills impact attendings’ expectations of case presentations and choice of feedback strategies. Furthermore, different attendings working in the same setting may approach similar situations differently and residents are expected to be able to adapt to attendings’ preferences. In spite of their preferences, my findings suggest attendings do use similar embedded feedback strategies, including teaching, probing, non-verbal communication, and role modelling, to support development of residents’ medical knowledge and skills in history-taking and clinical reasoning.

To better understand the relationships amongst these major findings and existing literature, the following discussion is organized under three sub-headings: shaping embedded feedback interactions, culture in medical education, and the role of feedback in residents’ competence development.

**Shaping embedded feedback interactions.** As evidenced earlier, within clinical settings feedback interactions appear to be shaped by various elements including feedback strategies, forms of feedback, case presentation styles and types, and contextual factors. A body of prior research suggests that the primary purpose of feedback is to provide informative, developmental information that highlights what went well, what did not, and suggestions for improvement that could be used to formulate plans for improvement (Ahmed, Sevdalis, et al., 2013; Ghaderi et al., 2015; Haydar et al., 2014; Ibrahim et al., 2014; Jensen et al., 2012; Pelgrim et al., 2012b). In support of this purpose of feedback in medical education, my research expands on this body of work by highlighting how an attending’s decision to use a specific embedded feedback strategy is dependent on the type (i.e., patient update, consultation, or new patient referral) and style (i.e., one-to-many or one-to-one) of case presentation used in a given clinical setting and situation. For
example, when a case presentation involves a patient update reported in a one-to-many style such as in bedside rounding, attendings are likely to use teaching embedded in the case presentation as the main feedback strategy due to clinical constraints. In contrast, when a case presentation involves a consultation or new patient referral reported in a one-on-one style as is commonly the case in clinics, attendings will likely use multiple embedded feedback strategies such as teaching, probing, and role modelling during the case presentation process.

Guided by the conceptual framework (Figure 2), I propose that various contextual factors (i.e., cognitive, social, emotional, and environmental factors) could impact feedback interactions. As reported in the scoping review in Chapter 2, previous studies have highlighted factors such as skills, knowledge, motivation, emotion, goal orientation, relationships, experiences, and situations that may impact feedback. Factors that were identified to impact feedback interactions in my research included scheduling constraints, physical space (including volume of human traffic), relationships, and residents’ and attendings’ behaviours. Although prior research (e.g., Ahmed, Sevdalis, et al., 2013; Ibrahim et al., 2014; Mehta et al., 2013) has highlighted similar factors, a gap that was identified in the existing literature was the lack of studies that explored physical space as a possible barrier to feedback. The lack of prior exploration around physical space as a potential barrier to feedback may be due to (a) residents and attendings in previous studies not considering it to be a barrier or (b) physical space being an implicit barrier that is not always highlighted when interviews with attendings and residents are the only source of data.

For example, prior to observations, none of my initial questions in the attendings’ and residents’ semi-structured interview guides dealt with physical space as a possible barrier to feedback. However, after physical space was identified as a possible barrier to feedback during
observations, this contextual factor was explored in greater detail during interviews that occurred after the observation periods.

In prior studies, a commonly reported barrier to feedback was the disconnect between residents’ and attendings’ perceptions of feedback. While attendings believed they were delivering timely, quality feedback, residents perceived that attendings did not fully engage in the feedback process (Bose & Gijselaers, 2013; Delva et al., 2013; Dijksterhuis et al., 2013; Ehrenfeld et al., 2014; Jensen et al., 2012; Liberman et al., 2005). In my research, attendings appeared to be engaged in the feedback process. However, while attendings considered teaching, probing, non-verbal communication, and role modelling as embedded feedback strategies, residents initially tended not to categorize teaching and probing as feedback strategies embedded within case presentations. This finding would suggest that another possible reason for the disconnect between residents’ and attendings’ perceptions of feedback is that residents tend to have narrower conceptions of feedback than attendings.

**Culture in medical education.** Based on my research findings, culture at the institutional, professional, or programmatic levels appears to impact feedback interactions. In relation to culture at these three levels, Pimmer and colleagues’ (2013) helped to highlight how experiences in differing institutional, professional, or programmatic cultures can influence the types of interactions learners have with their instructors and how learners perceive practices. Using interviews and observations collected from 17 physicians (including 4 attendings and 13 residents) across a range of residency programs and hospitals, Pimmer et al. (2013) explored the relationship between contextual factors and competence development in day-to-day physician-physician consultations within emergency room settings. Pimmer and colleagues found that residents in larger institutions had opportunities to work closely with attendings to support their
learning, whereas in smaller institutions, residents treating patients independently was more common. Moreover, communication and learning were shaped by the different cultures within and between residency programs. In programs that stressed a hierarchical structure, there was less opportunity for learners to interact with attendings. In contrast, programs “characterised by a communicative open culture and a less hierarchical structure, were linked to intensive participation and the deliberate teaching of less experienced doctors” (Pimmer et al., 2013, p. 469).

Building on Pimmer and colleagues’ (2013) work, my findings highlight that even within a single residency program, hierarchical and non-hierarchical structures may be present within the different clinical settings residents work. Additionally, when hierarchical structures are present, feedback interactions can indeed be impacted by changing the source of feedback. In most residency programs, residents will rotate through different clinical settings or institutions. As a result, residents are likely to experience multiple structures and cultures. As evidenced in my findings, in order to make sense of these cultures, learners are likely to use their prior experiences and perceptions to compare prior and subsequent cultures in an attempt to better understand feedback practices and strategies.

In their research focused primarily on how programmatic culture could impact feedback, Ahmed and colleagues (2013) used observations and semi-structured interviews with 10 surgical residents and 10 attendings to identify features of effective debriefing (feedback) in the operating room. These participants suggested that their current programmatic culture concentrated on completing assessment forms over promoting dialogue; thus limiting opportunities for effective feedback interactions between attendings and residents. These participants’ perceptions appear to highlight the challenges that exist when we conflate structured feedback (linked to assessment
forms) with embedded feedback that occurs during day-to-day activities. In comparison, in my research, a distinction was made between practices related to structured feedback versus embedded feedback. Specifically, structured feedback appears to be predominantly dependent on paper-based assessment and occurs at the end of a set period (e.g., week or rotation) while embedded feedback strategies appears to be predominantly verbal and in situ.

**The role of feedback in residents’ competence development.** Prior studies report that the content of feedback ranges from technical skills to communication skills and professionalism (e.g., Burford et al., 2010; Gonzalo et al., 2014). I found that when feedback strategies are embedded within case presentation processes, they are used to primarily support the development of residents’ medical knowledge and skills in history-taking and clinical reasoning. These findings are similar to those reported by Gonzalo et al. (2014) who highlighted how attendings in inpatient settings changed the focus of feedback depending on the stage of team-based bedside rounding. Specifically, through their qualitative multi-institutional study to explore teaching and feedback practices of 34 internal medicine attendings that supervised bedside rounding, Gonzalo and colleagues found that during a bedside encounter, the focus of feedback for a resident presenting a case was on their physical examination skills and medical knowledge while after a bedside encounter, a resident’s feedback was focused on communication skills and medical knowledge (Gonzalo et al., 2014).

My research also helps to fill a gap in Pratt and colleagues’ (2006) study that highlighted how various contextual factors influence residents’ competence development. Pratt et al. (2006) proposed a model (Figure 3) to capture the interplay of work and identity learning cycles in residents’ professional identity formation. Although Pratt and colleagues’ model indicated that feedback is an important component that links work and identity learning cycles, they did not
explore how feedback impacted residents’ competence development. In relation to work learning cycles, my findings help to highlight how transmission models of feedback operationalized through feedback strategies such as teaching and non-verbal communication help residents to gain information from attendings about expectations for work content and processes. In particular, learning through clinical practice begins with participating in professional day-to-day tasks such as rounding and seeing patients in clinics. These professional tasks involve interacting with various people and protocols. Thus, as evidenced by the current study findings, the types of information embedded in these professional tasks can include information to assist residents to gain greater medical knowledge or information to assist residents to gain greater understanding of how to interact and participate in various clinical environments (Teunissen et al., 2007).

Regarding identity learning cycles, my findings help to highlight how integrated models of feedback operationalized through feedback strategies such as probing and role modelling can help residents construct their professional identity.

**Relating Research Findings to the Study’s Conceptual Framework**

The conceptual framework that guided my research was developed from Velde’s (1999) interpretative-relational conceptualization of competence coupled with Illeris’ (2003a, 2003b) theory of learning and Yang and Carless’ (2012) dialogic feedback framework. Velde’s interpretative-relational conceptualization of competence was used to highlight the contextual factors in a workplace environment (i.e., cognitive, emotional, social, and environmental factors) that could impact on individuals’ meaning-making processes. Illeris’ theory of learning was used to describe how the various contextual factors interacted through the interrelated processes of external interaction and internal acquisition and elaboration to support learning and competence development. Finally, Yang and Carless’ framework was used to highlight how feedback
practices could serve to stimulate the external interaction and internal acquisition and elaboration processes and thus promote learners’ meaning-making processes. Together, these two frameworks and one theory are complementary in that they all highlight the importance of studying contextual factors (i.e., cognitive, emotional, social, and environmental factors) in order to better understand feedback, learning, and competence development.

As evidenced in my research, this conceptual framework serves as a useful guide to highlight the various contextual factors that can impact feedback interactions. Specifically, professional, institutional, and programmatic culture; physical space; learners’ skills, experiences, and emotions; attendings’ skills and abilities to handle situations; and trusting relationships emerged as contextual factors that potentially impact feedback interactions. Furthermore, my findings provide support that feedback can indeed be used to promote meaning-making. Specifically, my findings highlight that integrated models of feedback operationalized through embedded feedback strategies such as probing and role modelling can be used to help Pediatrics residents’ professional identity formation. In relation to the interrelated processes of external interaction and internal acquisition and elaboration, my findings help to highlight how transmission models of feedback operationalized through embedded feedback strategies such as teaching and non-verbal communication could help residents to gain information from attendings about expectations for work content and processes. Transmission models of feedback depend on residents’ abilities to independently use the processes of external interaction and internal acquisition and elaboration to make sense of information from feedback embedded in case presentations. Based on my research, it would appear that through these interrelated processes, residents can use feedback to gain greater medical knowledge or understanding of how to interact and participate in various Pediatrics clinical settings.
Operationalizing Feedback as Contextually-dependent, Performance-based Information to Support Learning

Overall, my findings help to highlight the contextually-dependent nature of feedback. Specifically, within clinical settings, feedback interactions appear to be shaped by various interrelated elements including feedback models/discourses, feedback strategies, forms of feedback, case presentation types, culture, physical space, relationships, and residents’ and attendings’ behaviours. For example, the embedded feedback strategies predominantly used in clinical settings can be categorized primarily under transmission or integrated models of feedback. Teaching and non-verbal communication were categorized as examples of transmission models of feedback while probing and role modelling were categorized as examples of integrated models of feedback. These categorizations were made based on comparing descriptions of embedded feedback strategies that emerged from interviews and observations to previously articulated descriptions of transmission, integrated, and dialogic models of feedback.

As described earlier, in the transmission model of feedback, feedback is characterized as a “gift” from an instructor to a learner, thus resulting in a one-way communication process. In the integrated model of feedback, feedback is characterized as a two-way, non-dialogic process in which feedback is used to help a learner make connections and explore understandings. Lastly, in the dialogic model of feedback, feedback is characterized as a dialogic process in which feedback and reflection are intertwined to support learning.

Although prior research suggests that feedback practices would be more effective if dialogic models are adopted as the predominant models of feedback in practice, results of my research suggest that due to constraints within different clinical settings, dialogic feedback strategies are not always feasible; in fact across the four settings, only two instances of feedback
interactions, involving attendings and a senior resident and embedded in one-on-one case presentiations within semi-private spaces, could be classified as dialogic feedback. My research suggests that due to various contextual constraints, instead of prioritizing dialogic models over transmission or dialogic models of feedback, there is space for all three models of feedback to coexist to support residents’ learning. Furthermore, my findings are in line with Archer’s (2010) argument that several types of feedback should be used to support learners. In Recognition that feedback is complex and contextual, Archer argued that programs should adopt robust approaches that are responsive to contextual variations. Archer went on to suggest that one way programs could develop a robust approach to feedback is through the use of three types of feedback. These types of feedback include directive feedback in which learners are informed of aspects requiring correction (i.e., transmission feedback model), facilitative feedback that involves providing learners with comments and suggestions to support their learning (i.e., integrated feedback model), and elaborative feedback in which interactive exchanges are used to support learners’ reflections on their actions (i.e., dialogic feedback model) (Archer, 2010).

A disconnect was, however, identified between residents’ and attendings’ perceptions of two of the four feedback strategies embedded within case presentations: teaching and probing. While attendings’ perceptions appear to fall in line with Archer’s (2012) view that multiple feedback types or strategies can be used to support learning, learners’ perceptions appeared to be more closely aligned with researchers such as Watling and colleagues who distinguish feedback from other ‘learning cues’ such as role modelling, clinical outcomes, patient or family responses, and peer comparisons (Watling, Driessen, van der Vleuten, & Lingard, 2012). Although a definition of feedback was not explicitly given by Watling et al. (2012), extrapolating from their participants’ excerpts regarding feedback, the definition of feedback they used was likely similar
to that proposed by van der Ridder et al.: “Specific information about the comparison between a trainee’s observed performance and a standard, given with the intent to improve the trainee’s performance” (van de Ridder et al., 2008, p. 189). As discussed earlier, this definition of feedback may be too limiting given that it only captures the transmission model of feedback.

In order for all three models of feedback (i.e., transmission, integrated, and dialogic) to coexist in a residency program, it is important to educate relevant individuals (e.g., researchers, instructors, and learners) on the various feedback discourses and related feedback strategies that might be used in different clinical settings (Figure 8). Further, in support of Archer’s (2012) argument that programs need robust feedback approaches that are responsive to contextual variations, I would propose that in order to help individuals gain a more comprehensive understanding of feedback models/discourses and strategies, individuals need to work from an operational definition of feedback that captures the core elements of all three feedback models/discourses (i.e., information and supporting learning). Consequently, based on my findings, I propose that within workplace-based environments, feedback be operationally defined as contextually-dependent, performance-based information to support learning.

Figure 8. Feedback discourses and related feedback strategies
Value of Coupling Interviews and Observations in Medical Education Research

With reference to learning and the workplace environment, the experiences of different participants result in different perceptions of learning in the workplace (see also Prince et al., 2004). Thus, in order to study how various elements of the workplace environment (i.e., the individual, the context, different variations in competence, and workplace relationships) impact feedback and competence development, it is important to use multiple sources of complementary data in order to better understand participants’ differing perceptions of learning in the workplace. Although the use of multiple sources of complementary data is important to gaining a better understanding of various phenomena, a critical gap identified in prior studies of feedback in postgraduate medical education was the lack of studies that used both interviews and direct observations to explore the alignment between perceptions and actual practices. In fact, of the 48 articles that made up the scoping review of feedback in postgraduate medical education literature, only two studies included the use of interviews and direct observations to explore the alignment between individuals’ perceptions and actual practices (i.e., Ahmed, Sevdalis, et al., 2013; Ahmed, Arora, et al., 2013).

The value of using multiple sources of complementary data was evidenced in my research in that using interviews and direct observations together helped to not only identify the level of alignment between attendings’ and residents’ perceptions and actual practices, but also highlight commonalities and differences among the four clinical settings that Pediatrics residents rotate through during their residency program. For example, although participants spoke of reassurance as an important form of feedback, during observations this form of feedback was not observed. Similarly, while participants did not initially discuss physical space as a possible
barrier to feedback interactions, observations helped to highlight this as an area requiring further exploration in participant interviews.

Limitations

Findings from this study emerged from a descriptive qualitative study of a single postgraduate medical education (residency) program at one institution. Although attempts were made to obtain a purposive sample of residents and attendings from the program that included a range of levels of training and settings, the single institution focus limits the generalizability of findings to other programs or institutions. Rather, this study focused on the use of detailed descriptions of clinical settings and activities in these settings in an attempt to promote transferability of findings to other similarly structured programs. Another limitation in this study was the focus on clinical settings that were predominantly staffed by general pediatricians. Within Pediatrics residency programs, residents have the opportunity of rotating through different clinical settings staffed by general pediatricians and specialist pediatricians. The only setting in this study that contained specialist pediatricians (i.e., neonatologists) was the Neonatal Intensive Care Unit (NICU). Furthermore the number of observation conducted in the NICU was lower than in the other settings, thus potentially limiting the transferability of findings to other NICU settings. Due to the small number of residents rotating through other settings staffed by specialist pediatricians during the course of the study, other settings primarily staffed by specialist pediatricians were not included in this study due to concerns about participant privacy.

Recommendations for practice

Three recommendations for practice emerged from the research findings: (a) the need for orientation to program/institutional feedback culture, (b) the need for educational development
sessions for both residents and attendings, and (c) the need to work within constraints of clinical settings to meet accreditation requirements.

**The need for orientation to program/institutional feedback culture.** To address the dissonance some residents experience when their previous feedback culture does not match their current culture, it is suggested that programs orient new residents to their program’s feedback culture. During an orientation session, program personnel can use the session to explain to residents the purpose(s) of feedback, feedback discourses/models, the different forms of feedback, and the various embedded and structured feedback strategies that residents will experience within and across the different clinical settings they will work during rotations. To further support residents’ learning, this type of orientation session could also be used to discuss residents’ perceptions of similarities or differences between different programmatic/institutional cultures. This relatively easy to implement addition would likely also have the added benefit of communicating a set of guiding principles and practices for attendings.

**The need for educational development sessions for both residents and attendings.** Educational development sessions could be developed to address any disconnect that may exist between attendings’ and residents’ perceptions of feedback strategies and to discuss the various contextual factors that can impact feedback. Findings suggest that attendings and residents focus on different aspects that they consider to impact feedback. It is therefore important to educate both residents and attendings on the various contextual factors (e.g., professional, institutional, and programmatic culture; physical space; learners’ skills, experiences, and emotions; attendings’ skills and abilities to handle situations; and trusting relationships) that may impact feedback practices in various clinical settings.
The need to work within constraints of clinical settings to meet accreditation requirements. To support accreditation requirements particularly in relation to assessment and evaluation, programs need to set up programmatic assessment systems that work within settings’ constraints. For example, there are seven CanMEDS roles in Canada that residents are expected to be assessed on during their residency programs; these roles include medical expert (central role), communicator, collaborator, manager, health advocate, scholar and professional (Frank, 2005). Not all roles can be assessed in every clinical setting due to constraints such as scheduling and physical space. Thus programs must work to determine which clinical settings are optimal environments to assess select CanMEDS roles such that sampling from across settings provides a holistic assessment of residents’ competence development in these roles. Feedback is also important to support residents’ learning. Given the recognition that the hierarchical structure of medicine may limit residents’ opportunities to obtain day-to-day feedback from attendings, programs should leverage multiple sources of feedback available to residents within different clinical settings. For example, in the NICU where attendings are primarily present only during team-based bedside rounding, residents could be encouraged to obtain feedback on CanMEDS roles such as communicator, collaborator, or health advocate from near peers, bedside nurses, and patients’ families.

Recommendations for Future Research

Recommendations for future research are organized around the three levels of Teunissen’s (2015) experiences-trajectories-reifications (ETR) framework. Recognizing that the three levels of the framework interconnect, each suggestion for future research is related to further exploring feedback practices in clinical settings.
Level 1: Experiences. Future research that explores how situations lead to learners’ constructions of their personal experiences could help us better understand the role of feedback interactions in residents’ competence development. In conjunction with observations, the use of data collection methods such as critical incident techniques and dialogic interviewing to obtain perspectives from pairs of individuals involved in feedback interactions could be used to better understand how learners and supervisors construct understandings of their personal experiences. This type of research could also help us to better understand why disconnects between residents’ and attendings’ perceptions of feedback persist.

Level 2: Trajectories. To explore combinations of personal experiences over time that result in personal development and impact residents’ competence development and professional identity formation, studies using longitudinal analyses of residents from across several programs or institutions could help us better understand how residents use feedback embedded in various work activities to develop their professional identity formation. These types of studies could be modelled after Pratt and colleagues’ (2006) longitudinal qualitative study of residents from three postgraduate medical education programs: primary care, radiology, and surgery. Given that feedback was identified as an important component in both work learning and identity learning cycles, such research could explore how feedback is used in various professional tasks including case presentations within diverse clinical settings, programs, and institutions.

Level 3: Reifications. In order to understand how learning environments evolve, how program changes happen, why changes arise, or how changes impact people in residency programs, studies that compare learning climates across programs and institutions could help us better understand programmatic and institutional variations and how these variations influence attendings’ and residents’ perceptions of feedback practices. Furthermore this type of research
could help us expand our understanding of how the three feedback discourses are operationalized and how contextual variations in clinical settings, programs, and institutions shape feedback practices.

**Concluding Remarks**

To better understand and support the development of feedback practices that support residents’ competence development, it is important to study how various elements of the workplace environment (i.e., the individual, the context, different variations in competence, and workplace relationships) impact feedback interactions. Accordingly, my research explored how contextual factors shape feedback interactions within and across various clinical settings. In particular, this study explored the nature of feedback in inpatient and outpatient Pediatrics clinical settings from attendings’ and residents’ perspectives. Contributions of my research include: (a) highlighting the relationships among forms of feedback, embedded feedback strategies, and existing models of feedback in medical education; (b) exploring the role of physical space as a possible barrier to feedback; and (c) suggesting that due to constraints within different clinical settings, there is space for all models of feedback to coexist to support residents’ competence development. My findings also provide further support for the use of frameworks and theories, such as Velde’s (1999) interpretative-relational conceptualization of competence, Illeris’ (2003a, 2003b) theory of learning, and Yang and Carless’ (2012) dialogic feedback framework, to explore (a) the contextually-dependent nature of feedback in clinical settings, (b) how feedback practices are perceived and enacted, and (c) how institutional culture, policies, and resources support or hinder feedback provision.


http://doi.org/10.1111/medu.12075


http://doi.org/10.1176/appi.ap.09110207


http://doi.org/10.3109/0142159X.2013.806791


http://doi.org/10.3109/0142159X.2012.756576


http://doi.org/10.1080/02602930601127869


http://doi.org/10.1080/13576280400002510

http://doi.org/10.1016/j.carj.2014.04.003

http://doi.org/10.1111/j.1525-1497.2006.00447.x


1–10.


http://doi.org/10.4135/9781412963909.n442


http://doi.org/10.1080/13562517.2012.719154

### Appendix A: Articles related to feedback in postgraduate medical education (n = 48)

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Appendix B: Health Sciences Research Ethics Board approval

QUEEN'S UNIVERSITY HEALTH SCIENCES & AFFILIATED TEACHING HOSPITALS RESEARCH ETHICS BOARD-DELEGATED REVIEW
October 15, 2014

Ms. Ulenu Luhanga
Faculty of Education
Queen's University

Dear Ms. Luhanga

Study Title: EDUC-012-14 An Exploration of what Contextual Factors Influence the Development of Dialogic Feedback in Pediatrics Residency Clinical Education
File # 6013708
Co-Investigators: Dr. D. Könger

I am writing to acknowledge receipt of your recent ethics submission. We have examined the protocol, introductory interview protocol, exit interview protocol, observation protocol, feedback environment scale, document review protocol, recruitment emails, information/consent form – Attendings and information/consent form – Residents for your project (as stated above) and consider it to be ethically acceptable. This approval is valid for one year from the date of the Chair’s signature below. This approval will be reported to the Research Ethics Board. Please attend carefully to the following listing of ethics requirements you must fulfill over the course of your study:

Reporting of Amendments: If there are any changes to your study (e.g. consent, protocol, study procedures, etc.), you must submit an amendment to the Research Ethics Board for approval. Please use event form: EHSERB Multi-Use Amendment/Full Board Renewal Form associated with your post review file # 6013708 in your Researcher Portal (https://services.queensu.ca/romeo_researcher)

Reporting of Serious Adverse Events: Any unexpected serious adverse event occurring locally must be reported within 2 working days or earlier if required by the study sponsor. All other serious adverse events must be reported within 15 days after becoming aware of the information. Serious Adverse Event forms are located with your post-review file 6013708 in your Researcher Portal (https://services.queensu.ca/romeo_researcher)

Reporting of Complaints: Any complaints made by participants or persons acting on behalf of participants must be reported to the Research Ethics Board within 7 days of becoming aware of the complaint. Note: All documents supplied to participants must have the contact information for the Research Ethics Board.

Annual Renewal: Prior to the expiration of your approval (which is one year from the date of the Chair’s signature below), you will be reminded to submit your renewal form along with any new changes or amendments you wish to make to your study. If there have been no major changes to your protocol, your approval may be renewed for another year.

Yours sincerely,

Chair, Health Sciences Research Ethics Board
October 15, 2014

Investigators: please note that if your trial is registered by the sponsor, you must take responsibility to ensure that the registration information is accurate and complete
Appendix C: Resident and Attending information and consent forms

Combined Letter of Information and Consent Form: Residents

PROJECT: An Exploration of what Contextual Factors Influence the Development of Dialogic Feedback in Pediatrics Residency Clinical Education

Background Information: You are invited to participate in a research study being conducted by Ulemu Luhanga under the supervision of Dr. Don A. Klinger, in the Faculty of Education at Queen’s University in Kingston, Ontario. This study was reviewed for ethical compliance by the Queen’s University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board.

Details of Study: The purpose of this study will be to explore what contextual factors influence the development of trusting dialogic feedback within Pediatrics postgraduate medical education. There are no known risks to participation in the study.

What your participation involves: During your Pediatrics rotation, your participation in the study will involve a short introductory interview, direct observations of your performance feedback conversations with senior physicians, an interview about your experiences toward the end of the rotation, and a survey.

Confidentiality: Your identity will be kept confidential and your name and all identifying information will be removed from all data collection materials. The data from this study may be used for presentation and in similar research projects should the opportunity arise. Should such secondary uses occur, confidentiality of participants will be maintained.

Voluntary Nature of Study: Your participation in this study is voluntary. You may withdraw at any time. Should you choose to withdraw, you may request removal of all or part of your data by contacting me, Ulemu Luhanga at ulemu.luhanga@queensu.ca or (780) 237-0420. Further, choosing not to participate or to withdraw will have no adverse consequences to your academic standing.

I have read and understand the combined letter of information and consent form for this study I have had the purposes, procedures, and technical language of this study explained to me. I have been given sufficient time to consider the above information and to seek advice if I chose to do so. I have had the opportunity to ask questions which have been answered to my satisfaction. I am voluntarily signing this form. I will receive a copy of this consent form for my information.
In the event you have any questions, please feel free to contact me, Ulemu Luhanga at ulemu.luhanga@queensu.ca or my supervisor Dr. Don A. Klinger at don.klinger@queensu.ca. In the event that you have questions, concerns, or complaints of an ethical nature please contact: Dr. Albert Clark, the Chair of the Health Sciences and Affiliated Teaching Hospitals Research Ethics Board: (613) 533-6081 or clarkaf@queensu.ca.

By signing this consent form I am indicating that I agree to participate in this study.

Name: ___________________ Signature: ___________________ Date: ______________
Combined Letter of Information and Consent Form: Attendings

PROJECT: An Exploration of what Contextual Factors Influence the Development of Dialogic Feedback in Pediatrics Residency Clinical Education

Background Information: You are invited to participate in a research study being conducted by Ulemu Luhanga under the supervision of Dr. Don A. Klinger, in the Faculty of Education at Queen’s University in Kingston, Ontario. This study was reviewed for ethical compliance by the Queen’s University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board.

Details of Study: The purpose of this study will be to explore what contextual factors influence the development of trusting dialogic feedback within Pediatrics postgraduate medical education. There are no known risks to participation in the study.

What your participation involves: During your Pediatrics rotation, your participation in the study will involve direct observations of your performance feedback conversations with residents and an interview about your experiences toward the end of the rotation.

Confidentiality: Your identity will be kept confidential and your name and all identifying information will be removed from all data collection materials. The data from this study may be used for presentation and in similar research projects should the opportunity arise. Should such secondary uses occur, confidentiality of participants will be maintained.

Voluntary Nature of Study: Your participation in this study is voluntary. You may withdraw at any time. Should you choose to withdraw, you may request removal of all or part of your data by contacting me, Ulemu Luhanga at ulemu.luhanga@queensu.ca or (780) 237-0420.

=====================================================================
I have read and understand the combined letter of information and consent form for this study I have had the purposes, procedures, and technical language of this study explained to me. I have been given sufficient time to consider the above information and to seek advice if I chose to do so. I have had the opportunity to ask questions which have been answered to my satisfaction. I am voluntarily signing this form. I will receive a copy of this consent form for my information. In the event you have any questions, please feel free to contact me, Ulemu Luhanga at ulemu.luhanga@queensu.ca or my supervisor Dr. Don A. Klinger at don.klinger@queensu.ca. In the event that you have questions, concerns, or complaints of an ethical nature please contact: Dr.
Albert Clark, the Chair of the Health Sciences and Affiliated Teaching Hospitals Research Ethics Board: (613) 533-6081 or clarkaf@queensu.ca.
By signing this consent form I am indicating that I agree to participate in this study.

Name:_________________________ Signature:_________________________ Date:_____________
### Appendix D: Initial direct observation protocol

<table>
<thead>
<tr>
<th>Rotation: __________________________</th>
<th>Date: ____________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals involved (coded): ________________________________________________</td>
<td></td>
</tr>
<tr>
<td>Composition (i.e., group or 1-1 interaction)</td>
<td></td>
</tr>
<tr>
<td>Sequence of interaction (i.e., learner initiated or supervisor initiated)</td>
<td></td>
</tr>
<tr>
<td>Location (i.e., private, semi-private, public)</td>
<td></td>
</tr>
<tr>
<td>Timing (i.e., before patient interaction, after patient interaction, or at end of clinic)</td>
<td></td>
</tr>
<tr>
<td>Materials used (i.e., learner assessments or patient charts)</td>
<td></td>
</tr>
<tr>
<td>Nature of interaction (i.e., one way or two way)</td>
<td></td>
</tr>
<tr>
<td>Length of interaction</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**
(participants’ body language, facial expressions, and details about conditions in the setting)
Appendix E: Outpatient direct observation protocol

Block: ____________________  Att: ____________________
Day: ____________________  Res: ____________________
Time: ____________________  Setting: ____________________

Case #1
Interaction (Discussion):

Stance/Posture:

Location:

Materials used:

<table>
<thead>
<tr>
<th>Teaching Strategy</th>
<th>Seen?</th>
<th>Thinking Like a Doctor Strategy</th>
<th>Seen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling language</td>
<td>Information access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pointing to an absence</td>
<td>Information relevance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pursuing a pet topic</td>
<td>Information reliability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inserting a footnote or tip</td>
<td>Evidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing by quiz/Socratic method</td>
<td>Probability management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Case #2
Interaction (Discussion):

Stance/Posture:

Location:

Materials used:

<table>
<thead>
<tr>
<th>Teaching Strategy</th>
<th>Seen?</th>
<th>Thinking Like a Doctor Strategy</th>
<th>Seen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling language</td>
<td>Information access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pointing to an absence</td>
<td>Information relevance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pursuing a pet topic</td>
<td>Information reliability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inserting a footnote or tip</td>
<td>Evidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing by quiz/Socratic method</td>
<td>Probability management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Case #3
Interaction (Discussion):

Stance/Posture:

Location:

Materials used:

<table>
<thead>
<tr>
<th>Teaching Strategy</th>
<th>Seen?</th>
<th>Thinking Like a Doctor Strategy</th>
<th>Seen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling language</td>
<td></td>
<td>Information access</td>
<td></td>
</tr>
<tr>
<td>Pointing to an absence</td>
<td></td>
<td>Information relevance</td>
<td></td>
</tr>
<tr>
<td>Pursuing a pet topic</td>
<td></td>
<td>Information reliability</td>
<td></td>
</tr>
<tr>
<td>Inserting a footnote or tip</td>
<td></td>
<td>Evidence</td>
<td></td>
</tr>
<tr>
<td>Testing by quiz/Socratic method</td>
<td></td>
<td>Probability management</td>
<td></td>
</tr>
</tbody>
</table>

Field Notes:
Appendix F: Inpatient observation protocol

Block: ______________________  Att:  ______________________
Day: ______________________  Res:  ______________________
Time: ______________________  Setting: ______________________

Setting/Location(s) details:

Morning Handover details:

Running of the list details:

Individual rounding details:

Team rounding details:

(✓ = present, ✗ = absent, actions by each individual documented in each cell)

<table>
<thead>
<tr>
<th>Primary Learner</th>
<th>Junior Attending</th>
<th>Attending</th>
<th>Nurse</th>
<th>Other Learners</th>
<th>Patient/Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case #1 (example)</td>
<td>✓ present</td>
<td>✓ correcting, planning, explaining</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Case #</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>…</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Case #</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Field notes:
### Participant excerpts for giving information category

<table>
<thead>
<tr>
<th>Attendings (n = 8)</th>
<th>Residents (n = 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>It means the opportunity to give back information that helps someone improve their performance. (A1)</td>
<td>Information that’s passed from someone senior than you or peer group as you [on] how you are doing things and how you approach situations. (R9)</td>
</tr>
<tr>
<td>I think of giving information back to someone. (A2)</td>
<td>Any sort of response . . . from another person whether at the same level, above, or kind of below in terms of status . . . that is meant to inform your performance in your work. (R10)</td>
</tr>
<tr>
<td>I see it as a two-way communication with a mildly evaluation process involved in it. (A3)</td>
<td>The term feedback means that when you do an action, somebody analyzes it, and then tells you what you need to improve and what was wrong about it. (R11)</td>
</tr>
<tr>
<td>Feedback to the trainee specifically regarding their performance. (A4)</td>
<td>I think it is basically information given to someone for the goal of improving their performance in something that is skills based. (R12)</td>
</tr>
<tr>
<td>It’s content of information ... geared to help the receiver kind of improve or modify the way that they’ve done whatever it was that you’re providing feedback for. (A5)</td>
<td></td>
</tr>
<tr>
<td>Feedback is giving information to the learners or the patients or the parents about how their performance was on something. (A6)</td>
<td></td>
</tr>
<tr>
<td>It would be [after] I’ve seen a trainee do something . . . telling them how I thought they did. (A7)</td>
<td></td>
</tr>
<tr>
<td>Providing the people you’re working with, with an assessment of how they’re performing. (A8)</td>
<td></td>
</tr>
</tbody>
</table>
### Table G2

**Participant excerpts for reassurance category**

<table>
<thead>
<tr>
<th>Attendings</th>
<th>Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I say “I think you did very well in your physical exam, that’s great”. . . it’s good for them, it’s positive, it reinforces that they are doing things right. (A3)</td>
<td>I would also like, throughout the day ... “that was great” or whenever at the end of a presentation like even if [a] simple thing like, “Okay, good. Let’s go see the patient.” With that little good, I’m like, “Okay, all right.” Rather than, “All right. Fine. Let’s go see the patient.” A little bit of reassurance (R9)</td>
</tr>
<tr>
<td>A lot of the feedback is, I feel like I’m just reassuring them. “You’re on the trajectory; you’re fine, there’s a little bit of gap in your knowledge . . . but just sort of keep going on what you’re doing because I know you’ll get there”. (A7)</td>
<td></td>
</tr>
</tbody>
</table>

So whenever a person say presents a case on rounds, I would try to say, “Okay, good job” or something like that. (A8)

### Table G3

**Participant excerpts for guiding category**

<table>
<thead>
<tr>
<th>Attendings</th>
<th>Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think for me feedback is about giving people food for thought, so that they can be themselves, but be the best that they can be in being themselves. So you know feedback to me isn’t about telling someone do this because it’s the right thing and it’s because I think it’s the right thing, it’s about guiding and allowing people to develop on their own. (A1)</td>
<td>I like when they ask questions that make us think, that we don’t necessarily know the answers to. And then they bring us through kind of an invisible flowchart of ways of thinking. I like that, I like when they give advice. (R9)</td>
</tr>
<tr>
<td>I hope that it [feedback] helps them broaden their differential [diagnosis] and then hopefully they learn something about what kind of style they themselves would have as a future physician. (A5)</td>
<td>Feedback I would say is non-judgmental. It’s observational – the goal of helping someone with something they are trying to improve at. Feedback, I think of it in the context of mentoring and coaching relationship; and something that is very frequent, that happens like every few minutes, almost constant, as you are working together with someone. (R12)</td>
</tr>
</tbody>
</table>