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Application of the R2C2 Model to In-the-Moment Feedback and Coaching

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Abstract

Purpose
The R2C2 (relationship, reaction, content, coaching) model is an iterative, evidence-based, theory-informed approach to feedback and coaching that enables preceptors and learners to build relationships, explore reactions and reflections, confirm content, and coach for change and cocreate an action plan. This study explored application of the R2C2 model for in-the-moment feedback conversations between preceptors and learners and the factors that influence its use.

Method
A qualitative study using framework analysis through the lens of experiential learning was undertaken with 15 trained preceptor–learner dyads. Data were collected during feedback sessions and follow-up interviews between March 2021 and July 2022. The research team familiarized themselves with the data, used a coding template to document examples of the model's application, reviewed the initial framework and revised the coding template, indexed and summarized the data, created a summary document, examined the transcripts for alignment with each model phase, and identified illustrative quotations and overarching themes.

Results
Fifteen dyads were recruited from 8 disciplines (11 preceptors were paired with a single resident [n = 9] or a single medical student [n = 2]; 2 preceptors each had 2 residents). All dyads were able to apply the R2C2 phases of building relationships, exploring reactions and reflections, and confirming content. Many struggled with the coaching components, specifically in creating an action plan and follow-up arrangements. Preceptor skill in applying the model, time available for feedback conversations, and the nature of the relationship impacted how the model was applied.

Conclusions
The R2C2 model can be adapted to contexts where in-the-moment feedback conversations occur shortly after a clinical encounter. Experiential learning approaches applying the R2C2 model are critical. Skillful application of the model requires that learners and preceptors go beyond confirming an area of change and deliberately engage in coaching and cocreating an action plan.

Medical students, residents, and physicians receive feedback from many sources. Many have difficulty interpreting, assimilating, and using the data to inform changes in practice.[1] The R2C2 (relationship, reaction, content, coaching) model provides an evidence-based, theory-informed model for guiding meaningful feedback and coaching conversations that target performance improvement and behavior change.[2–4] The 4 phases, used iteratively, enable the preceptor to build a relationship, explore reactions and reflections, confirm content, and coach for change and cocreate an action and follow-up plan for implementation.[2–4] Although originally developed and used for discussions about performance data, users of the model queried whether it could be applied to in-the-moment (ITM) feedback. Some preceptors had made adaptations following a clinical experience, procedural observation, or challenging case.[5] These adaptations were clearly needed because competency-based medical education environments ideally incorporate ITM coaching and feedback to assist learners in achieving competencies.[6–9]

The research and theory underpinning R2C2 include informed self-assessment, humanistic and person-centered approaches, the science of behavior change, and commitment to change.[2] These principles are relevant and applicable to ITM feedback conversations. Although the original work to develop R2C2 focused on practicing physicians,[2] subsequent studies have demonstrated its application and adaptation across the continuum of medical education participants, including medical students, residents, and practicing physicians.[3,4,9–11] The model has also been used for feedback with nurse practitioners and dental students.[12,13] Earlier research demonstrated that coaching is complex,[4] requiring preceptors and learners to receive training on the skills involved.[3]

Our first step in adapting the model for immediate feedback was to interview experienced preceptors who had adapted R2C2 for ITM feedback to learn about the changes they made.[5] On the basis of their input,[5] the model and associated resources were revised for the ITM context.[14] Revisions included providing background information about the phases and suggesting helpful phrases for different preceptor–learner situations, such as a first meeting, follow-up

meetings, gaps in performance, and the learner with difficulty articulating goals. There are additional notable differences between the original and ITM versions. In the reaction and reflection phase of R2C2-ITM, learners are asked to reflect on the clinical interaction as the foundation for the rest of the conversation; in the original model, written data informed the conversations. In the ITM model, the time available for feedback and coaching is short, and the focus is on helping the learner concentrate on one action plan rather than a few. The coaching and action plan phrases are consistent for both versions (Table 1).[2–4]

The purpose of this study was to explore the application of R2C2-ITM in feedback and coaching conversations between preceptors and learners in authentic clinical workplace settings. Specific aims were to understand how preceptor–learner dyads applied this model and the factors influencing its use.

Method

Study design

We conducted a qualitative study using framework analysis[15,16] through the lens of experiential learning.[17–19] Through learning experientially, preceptors and learners participate in concrete experiences, whether real or simulated; have an opportunity to reflect on the experiences and how they fit with their usual approaches; and actively experiment with the approach to embed it within their work.[17–19] Figure 1 illustrates the key research steps undertaken for data collection and analysis of ITM feedback conversations and follow-up interviews. The institutional review boards at University of Calgary, Dalhousie University, Queens University, and Hackensack Meridian School of Medicine provided ethics approval. Mass General Brigham provided exempt status. Written informed consent was collected from all enrolled participants.

Recruitment, training, and data collection

Five institutions in Canada and the United States participated in the study, with a research team member as site leader responsible for recruiting preceptor–learner dyads. Recruitment varied: the learner (or preceptor) was identified first, and then a site leader (or research associate) invited the preceptor (or learner). We sought representation from a variety of medical disciplines and clinical contexts, with 3 dyads per site for a total of 15 dyads.

Recruitment was challenging because it occurred during the COVID-19 pandemic, between February 2020 and May 2022. Across all centers, delays occurred with redeployment of residents and preceptors, closure of clinical units, high stress levels precluding trainee and preceptor engagement in research, a shift to virtual outpatient visits, and changes to scheduled preceptor–resident dyads. Two dyads withdrew from the study after the first feedback session; 1 preceptor moved into another role, and 1 resident required remediation, precluding participation.
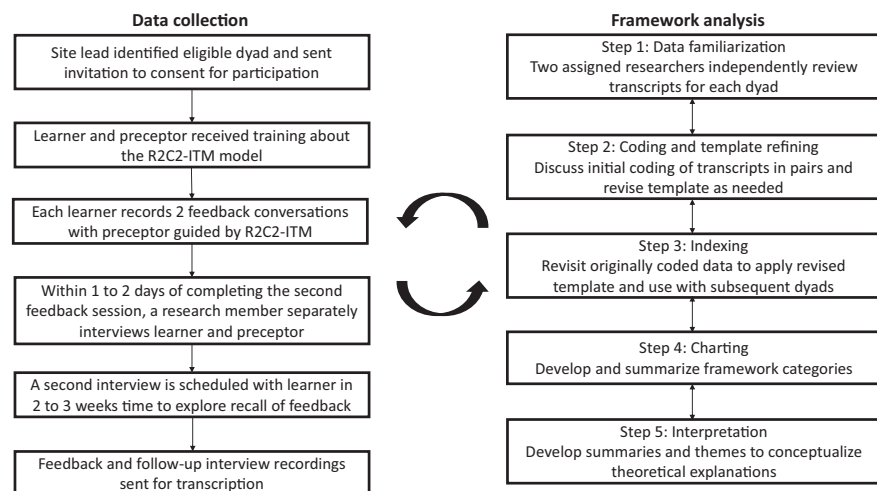
The site leaders for each institution introduced preceptors and learners to R2C2-ITM through educational rounds using experiential approaches with common PowerPoint slides, video demonstrations, and role-plays.[14,17–19] Training took approximately 1 hour. Once dyads were confirmed, site leaders met with the preceptor and learner to review the model and resources and address questions.

Data collection included real-time feedback sessions and separate follow-up interviews with preceptors and learners between March 2021 and July 2022. Each dyad recorded 2 in-person feedback conversations applying the R2C2-ITM model during or at the end of the day following an outpatient or inpatient encounter. Learners recorded the feedback sessions on their smartphones and uploaded the recordings (with their preceptors' permission) to a secure research database. Within 1 to 2 days of completing the feedback sessions, a research team member interviewed learners and preceptors individually via telephone or videoconferencing. The interviews captured demographic data, perceptions of each of the R2C2 phases, the context of the feedback sessions, and suggestions for improving the R2C2-ITM model. Another follow-up interview with learners was conducted 2 to 3 weeks later to explore recall about the feedback conversations, including the action plan and its outcomes and perceptions of the model. The protocol for the debrief interviews appears in Supplemental Digital Appendix 1 at

Table 1

Phases and Implementations of the R2C2 (Relationship, Reaction, Content, Coaching) Model for In-The-Moment Feedback Conversations Between Preceptors and Learners

Phase	Goal	Procedure
Build relationship	To engage the learner and build mutual respect and trust	Ask about the learner's experiences and goals or revisit goals previously established and agree on expectations.
Explore reactions and reflections	To foster learner self-reflection, address emotions, and begin to develop shared understanding of the experience	Use open questions to determine the learner's perspectives about their experience and reflections on the experience (e.g., a specific patient interaction, procedure or challenging encounter) and promote their self-assessment. Provide your own observations and reflections.
Confirm content	To enable learner and preceptor to reach a shared understanding about content and consensus on one priority	Summarize the discussion, verify that you have a mutual understanding of the experience, and together set the priority for an action plan.
Coach for change and cocreate an action plan	To ensure learner and preceptor agree on learning goal and cocreate an achievable action plan	Agree on the goal and codevelop the action plan (i.e., establish what the learner will do to achieve their goal, including resources needed, barriers, and timeline). Determine the follow-up plan with you or others if you won't be working together in near future.

Data collection

Site lead identified eligible dyad and sent invitation to consent for participation

↓

Learner and preceptor received training about the R2C2-ITM model

↓

Each learner records 2 feedback conversations with preceptor guided by R2C2-ITM

↓

Within 1 to 2 days of completing the second feedback session, a research member separately interviews learner and preceptor

↓

A second interview is scheduled with learner in 2 to 3 weeks time to explore recall of feedback

↓

Feedback and follow-up interview recordings sent for transcription

Framework analysis

Step 1: Data familiarization
Two assigned researchers independently review transcripts for each dyad

↓

Step 2: Coding and template refining
Discuss initial coding of transcripts in pairs and revise template as needed

↓

Step 3: Indexing
Revisit originally coded data to apply revised template and use with subsequent dyads

↓

Step 4: Charting
Develop and summarize framework categories

↓

Step 5: Interpretation
Develop summaries and themes to conceptualize theoretical explanations

Figure 1 Process diagram for recruitment, data collection, and analysis of application of the R2C2 (relationship, reaction, content, coaching) model for in-the-moment (ITM) feedback.

http://links.lww.com/ACADMED/B413. All interviews were transcribed.

Data analysis

We used framework analysis to analyze the transcripts,[4,15,16,20] following a 5-step iterative process. We familiarized ourselves with the data from the first 5 dyads. We assigned transcripts from individual dyads to pairs of research team members. Working individually, each researcher examined the complete set of dyad transcripts and used a coding template (i.e., structured table) to document examples of how the phases of the model were applied (e.g., key phrases), the microcommunication skills used (e.g., preparation, relationship development, listening, probing),[4] and the context. Pairs met to discuss the data. We then met as a group to review the initial framework and revise the coding template, including the addition of a summary, facilitators, and barriers. Next, team members engaged in indexing, which involved revisiting original coding as needed and coding new dyads as transcripts became available. We then charted the data to summarize them within each framework category. In the mapping and interpretation steps, we continued the discussion through regular research team meetings. We created an overall summary document that captured the summaries within each framework category, examined the transcripts for alignment with each phase of the model, and identified illustrative quotations and overarching themes.

We ensured quality and rigor in the data analysis through frequent virtual meetings of small groups of team members and the full team, sharing data interpretations, resolving differences through discussion, generating summary documents regularly, and ensuring that all members of the team had access to all transcripts, their coding, summary sheets, and manuscript drafts. We used email for discussion and to conceptualize specific aspects of the study, including diagrams to capture the major ideas as our thinking evolved in an iterative way. We challenged assumptions and the theories underpinning our findings, including discussions of additional theories that resonated with participant narratives.

The research team included 3 PhD educators, 5 physicians of whom 4 had graduate degrees in health professions education, and 4 research associates with graduate degrees in education or medical education. One physician was working on a PhD and another on an MHPE. A research associate was working on a PhD. Throughout the analysis, we regularly reflected on our positions as clinicians or nonclinicians while sharing perspectives. Some of the group reflected on their earlier R2C2 research, whereas others not involved in those studies added new perspectives.

Results

We recruited a total of 15 dyads from 8 disciplines (11 preceptors were paired with a single resident [n = 9] or a single medical student [n = 2]; 2 preceptors each had 2 residents). One institution provided 5 dyads (3 with residents and 2 with medical students at the clinical

clerk level), 2 provided 3 dyads, and 2 provided 2 dyads. Table 2 presents a full breakdown of demographic details for coaching dyads. Duration of ITM feedback and coaching ranged from 4 to 22 minutes, with a median of 12 minutes. The feedback sessions took place during clinical time, gaps in work schedules, after a clinical session, or early the next day.

The R2C2-ITM model was applied in different ways by preceptor–learner dyads in clinical settings. The data analysis found that the first 3 phases pertaining to building relationship, exploring reactions and reflections, and confirming content were enacted consistently. However, key phrases in the coaching for change and cocreating an action plan were used variably. Some preceptors used most of the phrases, whereas others used few or none. Many dyads struggled with developing a clear action plan with a definite approach to follow-up with that preceptor or another. In the following sections, we describe application of each phase followed by factors that influenced their application. We identify quotations by site (A–E) and dyad number (1–5).

Relationship

Most preceptors and learners reported knowing each other and had worked together for several months or years. They believed this made ITM feedback more comfortable and less threatening. They stressed that important features of the relationship were the preceptor's respect for them, interest in their learning, and trust, which enabled learners to speak openly about areas for growth and development. One resident said:

> I think that we have a pretty good relationship … and I know that any feedback that she gives is coming from a good place to kind of make me a stronger resident … she never presents anything in a harsh way. (C-3)

Relationship building required preceptors to orient the learner to the ITM session. They did this by being specific about the purpose, reminding the learner of previous discussion(s), and asking the learner how things were going for them and what they would like to focus on.

Reactions and reflections

Preceptors queried the learner's perspective on the encounter and invited the learner to react and reflect. Some

Table 2

Demographic Characteristics of 15 Coaching Dyads in a Multi-Institutional Study Using the R2C2 (Relationship, Reaction, Content, Coaching) Model for In-The-Moment Feedback Conversations Between Preceptors and Learners, March 2021 and July 2022

Characteristic	Preceptors	Learners
Clinical specialty/subspecialty (n = 13 preceptors and 13 learners)		
Dermatology	1	1
Geriatric psychiatry	1	1
Internal medicine	6	5
Neurology	0	1
Physical medicine and rehabilitation	2	2
Rheumatology	1	2
Palliative medicine	1	0
Ophthalmology	1	1
Faculty years of precepting (n = 13 preceptors and no learners)		
≤ 5	3	0
6–10	4	0
11–20	3	0
21–30	3	0
Learner stage of training (n = 0 preceptors and 15 learners)		
Clerkship (third year)	0	2
Residency		
PGY-1	0	4
PGY-2	0	5
PGY-3	0	1
PGY-4	0	2
PGY-5	0	1
Gender identification (n = 13 preceptors and 15 learners)		
He	1	3
She	12	12

Abbreviation: PGY, postgraduate year.

provided their perspective on what they observed. Many drew on phrases in the trifold, such as "How was that experience for you?" and "Did anything surprise you?" Generally, the learners were able to describe their thoughts and reactions to preceptor observations.

> Preceptor: That was a bit of a challenging case … how did you feel things went for you?
>
> Resident: I think they went pretty well … but yeah, like you said … I wasn't going into my physical exam feeling particularly confident about what the diagnosis was…. So, I felt like I had to go into my physical exam still keeping it fairly broad. And sometimes I find in the physical exam part of it, when I'm trying to combine an MSK [musculoskeletal] and a neuro exam, sometimes I find flow a little bit challenging. (C-2)

Other times the learner's reflections were constrained by the preceptor providing lengthy explanations and offering suggestions with little opportunity for learner self-reflection.

> Preceptor: I think you did a good job of listening to her, letting her talk, asking her questions, helping think through what she was doing. There's a couple things … and I didn't have a pad with me to be taking notes, so I hope I remember these things. There was one in particular where I felt like you could have stopped and asked more open-ended questions. For example, you said, "Have you thought about surgery?" and then you immediately followed that up with—I think you said, "Or is just that you're worried about the side effects?"
>
> Resident: Mm-hmm. Yeah. (D-2)

The preceptor then provided a lengthy explanation of how the resident could have reined in the patient. Again, the resident responded with "Yeah." (D-2)

Confirm content

Dyads were asked to establish a single priority; however, this was not always done. Conversation topics ranged from specific experiences that day, such as a technical procedure or therapeutic intervention, to broader areas, such as efficiency, time management, or communication skills. Preceptors who followed the model transitioned from reactions and reflections into more specific content. One preceptor said:

> If you wanted to work on a couple of things between now and the next time we have a chat, what might they be? (D-3)

Some preceptors listened and reaffirmed what the learner was saying before establishing the learning goal on which to focus. Others clarified what they heard the learner saying.

> Resident: I did have some chatty patients today and I still managed to stay mostly on time. So, I'm pretty pleased about that.
>
> Preceptor: I totally agree. You got through a lot of patients today, patients that had some significant issues that were going to take some time to assess. So, yeah, I think you did a great job with that. (A-2)

Some learners used the feedback conversation to gain tips for patient management and ask a clinical question. Some preceptors refocused the conversation on establishing a single priority as the focus for coaching.

Coach for change and cocreate an action plan

The coaching and cocreating an action plan step was the most problematic part of applying the R2C2-ITM model. This conversation was often brief, if performed at all. Some preceptors did not ask questions to elicit a clear action plan, as suggested in the trifold designed for this model. For some, establishing a priority or goal was the terminal point in the conversation. Preceptors often noted that follow-up would continue because they would be meeting again, particularly in cases where the feedback discussions were scheduled within a short period or the dyad had a longitudinal relationship.

For some, the discussion was precise, and the dyad cocreated a concrete plan that encompassed what the learner would do to achieve the goals through accessing

resources, seeking feedback from others, managing the timeline, addressing facilitators and barriers, and determining when they were successful. The following 2 examples demonstrate specific coaching techniques. One preceptor asked, "What are some strategies you might want to incorporate to help hone your skills in?" The learner described tables she created to learn information. As the discussion proceeded, the preceptor suggested other areas that might be included and followed up by asking whether there was anything she might change. The resident identified that she might organize the table differently to make it more useful (C-3).

In the first of 2 feedback sessions related to a procedure, another preceptor initiated the action plan by stating, "The things that we talked about today that you are going to think about the next time was maybe—go ahead, actually you might want to summarize" (E-3). The resident responded with how she would hold equipment more appropriately for the patient and position herself more ergonomically. The preceptor offered a suggestion and then asked:

> Preceptor: When do you think that you'd like to start working on this and when can we maybe revisit how you've been doing?
>
> Resident: I'll implement it today and maybe the next time we're in clinic we'll do another observed session and see how I've implemented these techniques and strategies. (E-3)

Coaching was less concretely conducted when plans were not created or the dyad deviated from developing a plan. One resident said:

> Content is, I guess, for us, usually actual medical knowledge and that, I think, bled into coaching … I always felt that the most helpful part of our sessions was asking Dr. X for advice about what she would do…. That was, I think, the most valuable teaching and where I felt like I was learning. (D-2)

There was ambivalence about documenting an action plan. Some felt it would be an added burden, others thought it would be useful, and still others had not developed a process for documenting feedback conversations.

Mediating factors

We identified several factors that influenced the use of the model. Some factors might act as either a facilitator or a barrier, depending on the context in which the preceptors and learners were working together and other obligations (e.g., clinical assignments and rotations). Time available for feedback conversations was one of these. One preceptor said:

> You don't have enough time because you're precepting too many residents or seeing patients. And then you have like a million other responsibilities on top of it.… It's time, lack of time. (B-2)

Conversely, where the dyads had a close longitudinal relationship, navigating the time element was more seamless. Deliberate scheduling was often required. One resident said:

> We had to be intentional … to have time or agree to meet after our usual clinic days in order to do the R2C2 feedback sessions. (D-2)

Preceptor skill in applying R2C2-ITM was variable. Some preceptors were skilled in asking insightful questions that drove learner self-reflection and facilitated cocreating an action plan. Preceptors who were most skilled had more experience with R2C2 or coaching conversations. Preceptors who indicated that the model resonated with their personal style appeared to use it more effectively. Those who expressed less experience with the model were less likely to apply it as intended. Preceptors acknowledged the role of experience:

> With any of these things, it's really hard just to remember it in the real time until you get practice.… A little log card maybe … I like the trifold. (D-2)

Learner knowledge and skill with R2C2-ITM were also variable. Some learners effectively engaged with the model, whereas others used the time to ask questions or probe for tips. Learners who embraced the model were guided by preceptors who began by describing the purpose of the feedback conversation or were more senior residents who appeared more self-directed and goal oriented. Several could see how it would apply to their own teaching role. One resident stated:

> … as a senior resident where I can look at it from the perspective of the learner getting feedback, but I can also look at it as the perspective of a senior resident providing feedback to a more junior learner. (A-2)

Collaboration based on positive relationships and trust was important; both learners and preceptors noted it made feedback and coaching conversations more comfortable and effective. Preceptors noted it was easier when their perceptions of the learning goals were congruent with the learner's and more difficult when they diverged. One preceptor commented:

> I was having trouble getting him to understand what I thought his challenges were. So even though he was saying he did, I didn't really think he did. (B-3)

Discussion

Our exploration of how the evidence-based, theory-driven R2C2 model of feedback and coaching revised for ITM feedback situations was applied enabled us to look at how preceptor–learner dyads engaged in feedback and coaching conversations in real-time clinical settings. This study confirms that the 4-phase R2C2 model was valued by participants and could be adapted for use in ITM, while retaining the 4 core phases. It extends our earlier work by testing the adaptations to the model described by experienced preceptors.[5] We learned that although preceptors saw the value to a structured approach to deliver ITM feedback, there was variability in the extent to which they applied elements of the model, particularly for coaching for change and cocreating an action plan.

The importance of developing and maintaining a relationship throughout the feedback session was identified, similar to our own work[2–5] and other work in feedback and coaching.[21–23] Dyads prioritized this step and took the time to establish rapport either in advance or immediately preceding the clinical encounter. Similarly, both preceptors and learners valued discussing reactions and reflections. The relationship as well as the reaction and reflection phases built trust and enabled the dyad to collaboratively identify meaningful areas for improvement, also identified as important in our earlier work[3,4] and other studies.[21,23] Confirming content ensured that both shared the same perspectives and served as a springboard for establishing specific goals.[4]

Coaching for change and cocreating an action plan were more difficult for

preceptors. Some preceptors were able to help the learner create an action plan. Others struggled and failed to develop a plan and follow-up strategy with the learner. In prior studies,[2,3] coaching was identified as a new skill that required instruction. Other studies have not reported these difficulties or recorded actual feedback conversations using the R2C2 model.[8–13] There may have been time constraints and lack of opportunities for the dyad to work together going forward, even though the trifold and training provide guidance on following up with other preceptors. There was also variability in experience with the model and coaching overall. Coaching is complex and bidirectional and requires both new learning and unlearning as well as the use of facilitative communication skills.[4] It requires less direct *telling* learners what to do and more *facilitating* through engaging, activating, and supporting learners as they identify their needs and how to address gaps. Preceptors have told us these skills are not intuitive. Although orienting the dyads to the model intentionally drew on the principles and theory of experiential learning to familiarize both preceptor and learner with the model, training may have been too short and not sufficiently concrete to allow effective use of the coaching phase of the model.[17–19] More time may have been required for preceptors to proceed from abstract conceptualization (i.e., hearing, reading about R2C2, or watching a video) to active experimentation (i.e., role-play or simulation) to concrete experience (i.e., actually coaching a learner) and into reflective observation as the final stage of experiential learning during which self-reflection guides performance improvement. It is also possible that the cognitive load of implementing a new approach to feedback was excessive,[24,25] considering that feedback conversations were taking place within complex and underresourced clinical settings with multiple demands exacerbated by the COVID-19 pandemic.

This study has implications for preparing preceptors to use a structured approach to ITM feedback, with emphasis on coaching and development of coaching microskills.[4] Our findings point to the importance of learning these skills in settings where preceptors can practice and receive feedback in a safe environment. To facilitate easy access to evidence-based resources, our website[14] will continue to be updated with the most recent version of the R2C2 trifold and videos to demonstrate its ITM application. Work has begun on a smartphone application to guide coaching. Continued practice and reinforcement of the model through observation and coaching over time may be required to optimize skill development.[24] Transparent collaborative relationships along with a plan for ongoing follow-up, particularly when the preceptor is unable to follow up directly, are key. Additional research could investigate the effectiveness of R2C2-ITM tools and training interventions.

Strengths of this study include participation of 5 medical schools in the United States and Canada that represented several disciplines. The different perspectives and backgrounds of the authors and the rigor and time spent on analysis provide a rich collection of findings for those engaged in feedback and coaching. We identified unique struggles preceptors have with ITM coaching and action plan development.

Limitations include a self-selection bias. The recruitment of dyads was not as broad as anticipated; more participation from procedural or surgical specialties may have added breadth to our data. Nonetheless, a reasonable cross section of specialties and levels of training were represented. Preceptors who volunteered for the study were those with greater interest and commitment to medical education as evident from their descriptions of the feedback workshops and seminars they had previously attended. Most preceptors identified learners who they appeared to feel comfortable with and/or with whom they had a longitudinal relationship. The learners recorded and controlled the submission of feedback audiotapes. Although we used common resources for teaching, training was performed by different team members, which could have affected the use of the model.

Conclusions

The R2C2 model can be adapted to contexts where brief, ITM feedback conversations take place shortly after an observed clinical encounter, while retaining the 4 phases of the original model. Experiential learning approaches, including skills practice and feedback, in the application of the R2C2 model are critical. Skillful application of the model requires that learners and preceptors go beyond confirming an area of change and deliberately engage in coaching and cocreating an action plan. Follow-up on progress in moving toward competency and beyond is essential.

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