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GROUNDWORK

Teacher Perspectives of Interdisciplinary Coteaching Relationships in a Clinical Skills Course: A Relational Coordination Theory Analysis

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ABSTRACT

Phenomenon: Interdisciplinary coteaching has become a popular pedagogic model in medical education, yet there is insufficient research to guide effective practices in this context. Coteaching relationships are not always effective, which has the potential to affect the student experience. The purpose of this study was to explore interdisciplinary coteaching relationships between a physician (MD) and social behavioral scientist (SBS) in an undergraduate clinical skills course. We aimed to gain an in-depth understanding of what teachers perceive as influencing the quality of relationships to begin to construct a framework for collaborative teaching in medical education. **Approach:** A qualitative study was conducted consisting of 12 semistructured interviews (6 MD and 6 SBS) and 2 monodisciplinary focus groups. Sampling was purposive and aimed at maximal variation from among 64 possible faculty. The data were analyzed using the constant comparative method to develop a grounded theory. **Findings:** Five major themes resulted from the analysis that outline a framework for interdisciplinary coteaching: respect, shared goals, shared knowledge and understanding, communication, and complementary pairings. **Insights:** The first 4 themes align with elements of relational coordination theory, an organizational theory of collaborative practice that describes how work roles interact. The complementary pairings extend this theory from work roles to individuals, with unique identities and personal beliefs and values about teaching. Prior studies on coteaching have not provided a clear linkage to theory. The conceptual framework helps suggest future directions for coteaching research and has practical implications for administrative practices and faculty development. These findings contribute to the sparse research in medical education on interdisciplinary coteaching relationships.

KEYWORDS

medical education;
coteaching; relational
coordination theory;
interdisciplinary teaching

Phenomenon

Coteaching involves two professionals with complementary expertise delivering meaningful instruction, with equal ownership, responsibility, and accountability for the planning, conduction, and assessment of instruction across the duration of a course.¹ Several models of coteaching have been described that involve varying levels of cooperation (Appendix A), with the most collaborative being team teaching.

Coteaching is most widely used and researched in elementary and secondary education, where the model is used to support inclusion of students with disabilities in general education classrooms.² In 1994, Henderson et al. first described using coteaching in undergraduate medical education (UME),³ pairing basic scientists and clinicians to cofacilitate small-group discussions. Coteaching between social behavioral scientists (SBSs) and

physicians (MDs) subsequently emerged as a pedagogic model in clinical skills courses^{4,5} as they evolved to include instruction in both professional skills and multidisciplinary topics.⁶ Coteaching is now used extensively in UME, yet there is a paucity of research to guide effective practices.

In 2015, Lee and Soborowicz evaluated the effects of coteaching on learning, demonstrating that medical students perform better on knowledge assessments in courses cotaught by microbiologists and pharmacologists.⁷ Outcome studies in other medical education contexts are needed to assess the benefits of coteaching, as are investigations into the coteaching process. One critical element for successful implementation is thought to be the quality of relationships.^{8,9} Coteaching relationships can impact both the student experience of the learning environment and the faculty experience of

teaching. We do not know, however, what influences the quality of coteaching relationships in medical education.

Various studies outside of medical education have identified factors essential to coteaching relationships. A comparative synthesis of qualitative studies in K-12 classes and university-based Ph.D. courses identified shared knowledge, communication, and personality as critical elements.¹⁰ Coteachers in a university-based teacher-training program cited the three most important factors for success as respect and trust, honest communication, and shared leadership in the classroom.¹¹ Although this research is useful to develop a framework on coteaching relationships in medical education, direct transferability may be limited by context: Coteaching in K-12 classrooms is most commonly implemented in the form of one lead, one support,¹⁰ rather than team teaching (Appendix A). Furthermore, the composition of the student body is distinctly different in UME, with a more homogenous group of learners. The professional expectations and inherent hierarchies between general and special education teachers are also likely different from those of health professionals.

The purpose of the present study is to explore interdisciplinary coteaching relationships between MDs and SBSs in a clinical skills course to gain an in depth understanding of what teacher's perceive as influencing the quality of relationships. Prior studies on coteaching have not provided a clear linkage to theory.¹⁰ We aim to use our findings to construct a theory of coteaching in medical education while providing a practical framework to help guide pedagogy, administrative practices, and faculty development.

Approach

We utilized a constructivist grounded theory (CGT) approach.¹² As an epistemological stance, CGT views reality as cocreated by individuals as they assign meaning to the world. Knowledge is mutually created by the observer and the observed with an aim towards interpretive understanding.¹³ We chose CGTs for our study because little is understood about the social process of coteaching relationships. We wanted to inductively develop a theory using the experience of participants analyzed through the lens of the researcher (a course director).

Context

This study was conducted at The Warren Alpert Medical School of Brown University. In Brown's clinical skills course known as Doctoring, undergraduate (preclinical) medical students receive longitudinal instruction (3 hours

per week for 18 months) on patient-centered communication, physical examination skills, oral and written case presentations, professionalism, reflection, and a multitude of social behavioral topics.

The decision to coteach in Doctoring was influenced in part by Engel's biopsychosocial model, which encourages viewing health and disease not only in terms of biological but also in light of psychological (emotions, thoughts, behaviors) and social (environmental, economic, and cultural) factors.¹⁴ Coteaching combines the expertise of both faculty to promote a more integrative, collaborative approach to patient care.¹⁵

Coteaching pairs are assigned by the administration annually to work together for a minimum of 1 academic year. Pairing decisions are made based on a combination of factors, including years of experience teaching in the course, willingness to switch partners, and administrator gestalt on how personalities might interact (e.g., introvert paired with extrovert, sensing paired with judging.) Coteachers are responsible for the delivery of the curriculum and the assessment of a group of eight students. Instruction occurs in both the classroom and at the bedside in simulated clinical environments using standardized patients. Roughly one third of the time is spent team teaching, and two thirds of the time is spent station teaching (see Appendix A). The course leaders plan the curricular content centrally and distribute detailed weekly faculty guides that outline the session goals and material to be covered. Instructional materials are accessed via an online learning management system (CANVASTM). Teaching teams have the freedom to alter the lesson plans as long as the major objectives are met. Coteachers must schedule their own time to plan and debrief with each other, which may be done in person, by phone, or electronically. Faculty are evaluated biannually on an individual basis.

Subjects and sampling

SBS-MD coteachers were recruited for this study (as opposed to MD-MD or MD-PhD coteachers) for both convenience and representativeness of coteaching models in many clinical skills courses. Sixty-four faculty coteach in Doctoring, 32 SBS and an equal number of MD. Physician faculty in Doctoring tend to be older and have more teaching experience than SBS faculty. There is a slight male predominance among the physician faculty and a marked female predominance for SBS faculty.

Initial faculty sampling was purposive, to ensure that characteristics such as age, gender, specialty, number or years coteaching, and longevity with their current partner were representative of the faculty composition of the course. Extreme case sampling was used later in the

recruitment process to better understand why some partnerships were less successful (i.e., where coteachers struggled to work together based on verbal feedback by faculty and students to the course leader). Faculty were recruited in person or by e-mail. They were informed of the purpose of the study and provided consent. Participation was completely voluntary, and all faculty who were invited agreed to participate.

Data collection

Lead author Michelle M. Daniel, a physician with experience as a coteacher and a Doctoring course leader, conducted 12 one-hour, individual semistructured interviews—six with SBS and six with physician faculty. Four of the 12 interviews targeted less successful partnerships (two MD and two SBS). Interviews were chosen over direct observation methods in order to gain insight into teachers' perceptions of the relationships. The interviews used open-ended questions to invite participants to describe both their experiences with coteaching relationships and what they perceived as promoting or impeding these relationships (Appendix B). Two mono-disciplinary focus groups were then conducted for confirmation of and elaboration on themes. The focus groups were moderated by the lead author and a Doctoring course administrator. Five SBS faculty and six MD faculty who did not take part in the original interviews participated. Both the interviews and focus groups were audio-recorded and transcribed verbatim.

Data analysis

The transcripts of interviews and focus groups were analyzed by the lead author using the constant comparative method to develop a grounded theory.¹⁶ Early analytical insights shaped subsequent data collection in an iterative process. As new data were collected, categories were further detailed, divided, and revised as the coding structure developed. Data were collected until no new theoretical insights were forthcoming, and theoretical sufficiency was reached. Adequate

conceptual depth was determined on the basis of range, complexity, and resonance.¹⁷ Independent coding was performed for investigator triangulation on a subset of interviews twice, once during the data collection phase (by a course administrator) and once in the final thematic coding phase (by an independent qualitative researcher with no connection to the Doctoring course). Consensus on thematic categories was reached through multiple discussions. The coding structure was entered into NVivo for data management, and the entire data set was coded for further analysis. Themes were coalesced into a conceptual model to construct a theoretical framework for coteaching relationships. The model was then compared to existing theories in the literature to determine how the data might link to and extend existing theoretical frameworks.¹⁸ This led to the incorporation of relational coordination theory as a sensitizing concept.¹⁹

Permission

This study was deemed exempt by the Brown University Institutional Review Board (#654115-1).

Findings

Twenty-three faculty (36%) participated in the study. The sex, age, years coteaching, and specialty distributions are detailed in Table 1. The sample was representative of the course in all aspects except for gender, which was slightly skewed toward male physicians compared to the faculty composition of the course.

Five major themes resulted from the analysis that impacted the quality of coteaching relationships: (a) respect, (b) shared goals, (c) shared knowledge and understanding, (d) communication, and (e) complementary pairings. These themes and representative quotes are summarized in the text that follows. Table 2 provides additional quotes arranged by themes and subthemes. Quotations (Q) are identified with anonymous codes for physicians (MD 1–12) and social behavioral scientists (SBS 1–11), with focus groups additionally designated by (FG).

Table 1. Demographic characteristics of MD and SBS faculty participants.

Demographics	MD Faculty	SBS Faculty
Sex	8 male 4 female	1 male 10 female
Ages (Years)	30–78	25–78
Coteaching Experience (Years)	1–9	1–8
Specialties	Internal medicine, Emergency Medicine, Family medicine	Social work, Counseling, Psychology, Therapy, Nursing

Note: MD = physician; SBS = social behavioral scientist.

Table 2. Major themes and subthemes that impacted coteaching relationships.

Themes	Representative Quotes
1. Respect	
Valued partner's contribution	Q3: "As experienced as he was and as relatively new as I was, he was very good ... about deferring to me on issues. ... He never came in and sort of said, 'I'm the expert, I know what I'm doing, you know, you supplement.'" So I felt right from the beginning like my voice, while the students depending on the year were more or less interested in what he had to say as opposed to what I had to say, I always felt that what HE felt was that what I was saying had value." (FG, SBS9)
Demonstrated respect through deliberate deference	Q4: "There were little instances along the way where he would nod and defer, or just allow me to finish some thoughts, or when the students would pose a question—he would—gear it to me, when they would clearly be asking him, he would point to me—and I thought—that's very kind of you, that's very respectful" (SBS2)...
Demonstrated respect in communication	Q5: "_____ just comes to a brief halt if I have a comment to make – it is like—you have the floor. There is never an interruption, so I think respect is a big factor there." (SBS3)
2. Shared goals	
Viewed student success as a mutual responsibility	Q8: "Right from the beginning, (we had) a sense of shared responsibility for (our) students. That's of course, probably a no brainer, but important! If we lead with the idea that we are here to try our best to help the students" (SBS2)...
Aimed for student-centered, student-driven small-group dynamics	Q9: "We tell the students that we really want it to be student driven. ... When we terminate a discussion, we usually invite the students to decide either to break as the clock says or do we have more of this to go. You tell us, you're the drivers. We work for you. We work for you (emphasis)." (MD1)
Shared ideas concerning professional expectations and feedback	Q10: "One of the things we didn't ... rectify would be our different approach to providing feedback to the students. ... Our feedback was just completely different. ... Put it this way, I didn't see much constructive criticism in any of her remarks. Everything was kind of, 'You guys are all going to be great. You guys are all smart...' We came from two different viewpoints on having the students be prepared and... how the quality and their work would be, the timeliness of their deadlines. ... She viewed it as—we were all here to help each other, everyone's doing their best. ... So we didn't agree from the beginning. And I think when it's just so vastly apart, I kind of lost interest in getting us realigned because she's certainly set in her ways." (MD4)
3. Shared knowledge and understanding	
Shared understanding of the need to improve inter-professional collaboration	Q13: "The greatest benefit of the partnership—is it breaks down the myth of the superiority of the physician. This is a joint discussion all year long ... between us, a social worker and a physician in an equal partnership. ... I think that the teamwork of that interaction helps that tremendously—someday you are going to be in a team or in a partnership or a hospital or a private practice on your own, and you may have to make some of the decisions, but you are going to do it together, and you're going to work together." (FG, MD7)
Awareness of each others strengths and abilities	Q14: "I would probably suggest that they take the course syllabus / the subjects and discuss which items they feel comfortable getting into. Once they can sort of get a feel for each other's areas and levels of comfort, then they can both delve in a little more and sort of feel each other out. So I guess that maybe would be like the first thing that new people should do—see which areas you ... are the most comfortable with and divvy that up in some way, so it's a division of labor based upon your own intrinsic capabilities." (MD1)
Shared understanding of the limits of professional expertise	Q15: "And there were ... boundaries, soft boundaries, where I would probably be more of an expert talking about certain things and she would be more of an expert talking about certain things and certainly we did go back- we could overlap." (MD4)
4. Communication	
Discussed ground rules and parameters at the beginning	Q18: "I think in the beginning there was a lot more discussion about specifics of how we were going to run our sessions and what our guidelines were going to be with regards to deadlines for submission, and how we would handle certain issues" (MD2)
Invested the time to build the relationship, preferably face-to-face	Q19: "Faculty have to get together and find that bond so that they can work as a creative team. Not just a functional team, but a creative team. ... So communication between the faculty—I guess I keep saying the same thing, the time... I think talking with each other. Not just texting or emailing, but at least speaking on the phone with each other ... having face to face communication, contact, was vitally important. Voice. Actual voice-to-voice." (MD6)
Problem solved issues in coteaching relationship	Q20: "Communication, that's it. ... We talk. We keep talking. It's like getting through the discomfort and you keep showing up. You just have to keep showing up and keep working and you have to—It's like, it is like a marriage" (SBS5)
5. Complementary pairings	
Balanced an alpha with a beta	Q24: "Many times there's an alpha person in the group, meaning there's someone who kind of takes more charge than the other. ... If you have two people who want to take control, or two people that don't want any control and just want to follow, I think it could be a recipe for not a great group." (MD4)
Matched a planner with someone spontaneous	Q25: "I'm a planner – I need to know what's happening whereas (MD) is very spontaneous. He doesn't wear a watch for instance. So I like that spontaneity, but I need to know what's happening this morning, this afternoon, tomorrow morning. And (MD) lives in the moment, and that's a very admirable trait – that I will never have, but I admire it... it's a wonderful marriage." (SBS3)
Placed a direct individual with someone with a softer approach	Q26: "We work really well together. He can be wonderfully succinct – and sometimes just very direct, whereas I'll have a softer approach in feedback - and I was worried at first – I thought, will this work? But I think it does. It has worked very nicely." (SBS2)
Valued differences of opinion	Q27: "And I think there are people who really ... value someone who has a completely different vantage point and find it extremely interesting to work with them. I personally would love to work with people that have completely different vantage points." (MD4)

Note: FG = focus group; MD = physician; SBS = social behavioral scientist.

Respect

Respect was cited as a critical ingredient for effective coteaching relationships. Participants expressed respect as a positive feeling of admiration or deference for their partner and/or their partner's profession:

I always felt there was a mutual respect for each other. ... I think there was a value that we placed in each other's work. ... I think it was an appreciation. ... I felt there was an appreciation of my profession. To me that was very important for me to see within the medical field. (Q1 SBS1)

SBS faculty in particular emphasized that respect for their profession as well as their person was important to the coteaching relationship. The value placed in their work by the physicians conveyed that SBS expertise now had a place in medical education.

Participants showed respect through their conduct in the classroom:

I think that is why we both get along, because neither one of us has the ego that needs either one of us to be in control. ... We just respect each other's views, we listen to each other and kind of go with each other. ... I never contradict (her). ... I will usually validate her perspective and say, "You know another take on that is this." It will never be a you're wrong I'm right thing. Never. It can't happen. (Q2 MD1)

Participants outlined specific ways respect could be demonstrated, including deliberate deference (Table 2, Q4 SBS2), active listening, not interrupting (Table 2, Q5 SBS3), agreeing, and expressing any differences of opinion by first validating the others' perspective, then offering an alternative view.

Shared goals

Shared goals for teaching and learning were important to coteaching relationships. Faculty come from different professional backgrounds, and having mutual aims helped cement these interdisciplinary relationships:

For us, what bonded us so well was more that we were both doing it for the same reason. We both felt really strongly about giving back, and we both felt really strongly that the way that medical students are taught is lacking interdisciplinary collaboration, and that that's one of the larger problems in medicine in general. It's just so siloed. ... And so, we both felt really strongly that we didn't agree with that and that we wanted to alter that for our students. (Q6 FG SBS8)

Coteachers were committed to improving the health-care system by breaking down traditional role barriers through modeling interdisciplinary collaboration to the next generation of medical students. There was broad

agreement among participants that having this shared purpose was critical to the team dynamic.

Several participants expressed the importance of having mutual aims focused on student engagement in small-group learning (Table 2, Q8 SBS2). Coteaching pairs who were less student centered and who focused more on the role of teachers as the imparters of knowledge tended to have conflicts, especially if their agendas were not aligned:

I wanted to teach it ultimately dealing with the goals to be taught: Getting the student's perspective, but also achieving some of the objectives that were laid out. ... She had her own agenda. And those objectives were not always on her agenda that were clearly spelled out. And that was frustrating. And so I think ... I just disengaged. (Q7 MD4)

A lack of shared goals can lead to frustration, disengagement, and ultimately the disintegration of the coteaching relationship. The language that MD4 uses—"I" and "she" as opposed to "we" in describing the situation—is quite telling. It speaks to an individual as opposed to a team approach. This faculty pair experienced difficulties setting professional expectations and providing feedback (Table 2, Q10 MD4). The faculty members viewed their approaches as mutually exclusive and were unable to create a shared goal that incorporated both viewpoints

Shared knowledge and understanding

Having shared knowledge and understanding helped participants see how their respective roles contributed to student learning. Participants discussed the importance of shared knowledge of the biopsychosocial model:

I think a real ... deep awareness of that bio-psycho-social model is very important for the clinician and then also the social worker because they come from different points of view and they are not, all of them do not have the same approach. ... So therefore, I think the two are complementary ... or supplement each other. But they can't take the place of the other. ... We enhance each other's comments. And I think that's a good partnership and you enhance and fortify and each one bringing from their own background something. (Q11 MD3)

Knowledge of the biopsychosocial model allowed coteachers to use their different perspectives to augment and reinforce each other.

Valuing of interprofessional collaboration also led to a team-based approach and the breakdown of traditional role hierarchies (Table 2, Q13). Physicians emphasized the importance of a shared understanding of the strengths and limitations of each profession:

We do come from separate circles. We each have our own strengths. I think, again—and the point is for us to be unified as coteachers, not necessarily to pretend that

the other one has the same level of expertise that the other one does. ... I think we have to be careful with making ourselves the same. Coteaching doesn't mean we carry the same level of expertise. Coteaching means we're going to combine our expertise to make whole physicians in a manner that honors our strengths equally. (Q12 MD2)

Participants described how their different expertise, combined in a balanced way, helps medical students develop into holistic physicians. This understanding enhanced the coteaching relationship by allowing differences to be valued, strengths to be honored, and limits of expertise respected.

Communication

Participants emphasized communication as an essential element for effective coteaching, and a lack thereof was often perceived as a major contributor to the breakdown of relationships. Open, honest communication at the outset was important to help establish the ground rules for small-group facilitation (Table 2, Q18 MD2): Discussions centered around how sessions would be run, who would lead what parts, and how faculty would handle certain issues (i.e., feedback and late assignments). Once these *modus operandi* were set, communication then became the vehicle through which coteaching pairs transformed from functional teams to creative teams (Table 2, Q19 MD6).

Communication was particularly critical for problem solving, both between coteachers and concerning the students. When communication broke down, relationships disintegrated:

I think that's where it fell apart last year was that there wasn't that communication. ... She couldn't communicate, she was so caught up in her own stuff. ... It's the verbal communication about what went well in class and what didn't go well in class. It's the verbal communication of how you feel that a particular student is doing. And not grade-wise but just ... you know, what is it that you see that makes you feel good about ... a student. Again, I think last year we really missed the boat with _____. ... And that's what I was communicating to (her), but (she) just didn't have anything to give back. It would have been really good to be able to bounce something off somebody else and have an exchange of ideas about what we were seeing and what we were feeling and then what we were going to do about it. ... I think that what communication does between two co-teachers is that it validates that what you're feeling is real or not real and it also validates that it's nothing personal, it's just where that person is in their life struggles. (Q16 SBS4)

A lack of communication can hinder a coteaching pair's ability to respond to struggling students. Frequent,

timely communication is critical so faculty can bounce concerns off each other, to validate perspectives.

Students can sense communication breakdowns, and may take advantage of it:

You know, it's like a short-term marriage. And the students are only going to benefit from that the same way that parenting and being married is that, your kids respond to what you have as a couple and the students are going to respond to us. And these students are smart enough that they know exactly where the holes are in the communication. It's like one day (my son) said to me, "Well when you guys get on the same page, get back to me." And it's a little bit like that with teaching. I mean these kids are not schlepps. They are very bright to have gotten to this point and we are only as good as we are one. (Q17 SBS4)

Complementary pairings

Complementary pairings played an important role in coteaching relationships. Participants described combining in ways that enhanced the personal qualities of the other, or contributing something to the pair that the other lacked. Some faculty emphasized the importance of personality:

My personal opinion is it helps that you just click on a personality issue—personality-wise, which is hard to define. ... You never thought you'd be friends with certain people because they're so different than you but you just click, you know? You click because they give you something that you lack. (Q21 MD4)

While attempting to match faculty based on personality could prove challenging for course directors, participants noted that focusing on traits that might be synergistic could be successful.

During the focus group, one of the SBS faculty described her complementary pairing:

I think it became very obvious within the first half-hour of talking to each other that we were very well matched. That we both had a long experience in our own areas and that we would really be able to match well; my strengths, were not necessarily her strengths, and vice versa, and we could use that as a better whole. ... Our personalities were really well suited, because they're pretty much completely opposite but in complementary ways. We figured out really early on that I like to organize and I love to take full responsibility for that. And she likes to go more in depth into the readings, and we just kind of paired off really naturally. (Q22 FG SBS8)

Coteaching relationships were effective when strengths aligned in ways that created a better pair. Several faculty proposed specific personality traits to complement each other: an alpha paired with a beta (Table 2,

Q24 MD4), a planner matched with someone spontaneous (Table 2, Q25 SBS3), and a direct individual placed with someone who has a softer approach (Table 2, Q26, SBS2). Other participants focused on similar motivations for teaching (Q6 FG SBS8), shared beliefs about teaching (Table 2, Q9 MD1) and values that influenced their interactions (Table 2, Q27 MD4).

SBS3 described an ideal balance: “I think we have a lot of same qualities, but we have some different ones too, it’s that yin yang that we probably have together, that works” (Q23 SBS3). Coteachers were complementary and interdependent, and together they provided a greater opportunity for students to learn about clinical skills than the sum of their parts.

Linkage to theory

The themes that resulted from the analysis of this study have not previously been described together in coteaching studies. Their combined presence prompted further analysis using relational coordination theory as a sensitizing concept when similarities to this conceptual framework were observed (Figure 1). Relational coordination theory is an organizational theory that has been applied to interprofessional collaborative practice.¹⁹ According to this theory, three dimensions of role relationships are critical for task integration: respect, shared knowledge, and shared goals. These factors are reinforced through frequent, high-quality communication and have the potential to affect key outcomes measures, such as quality and efficiency.²⁰ Respect, shared goals, shared knowledge, and communication are themes shared by this study and relational coordination theory. Complementary pairings appear unique to this context.

Insights

We aimed to explore teacher perceptions of interdisciplinary coteaching between SBSs and MDs in a clinical skills course to improve our understanding of what

promotes and impedes the quality of these relationships. The themes that resulted from the analysis (*respect, shared goals, shared knowledge and understanding, communication, and complementary pairs*) can be related to themes found in research about coteaching in other settings,^{10,11} yet there are differences that have theoretical and practical implications.

Theoretical implications

Relational coordination theory has previously been applied to work roles within larger organizations.^{19–23} Relational coordination theory is used in medical and surgical care as a way of viewing cooperation between health profession roles on healthcare teams.^{21–23} The relational dimensions (*respect, shared goals, and shared knowledge and understanding*) are applicable to coteaching dyads. Of interest, when participants spoke about these relational dimensions, they often spoke about their professional “roles” as SBS and MDs (i.e., Q1 SBS1, Q6 FG SBS8, Q13 FG MD7), but they also spoke about themselves as individuals (Q2 MD1, Q7 MD4, Q14 MD1). The relational dimensions reinforce and are reinforced by effective *communication*. In the present study, participants positively described communication that was open and honest (Q18 MD2), personal (Q19 MD6), and problem-solving focused (Q20 SBS5). In relational coordination theory, communication that is frequent, timely, accurate, and problem solving is felt to be critical for effective coordination on teams.²⁴ There are clear similarities, but also differences that describe communication as a more personal connector that requires a time investment to help build the partnership (Q19 MD6). Notably, participants in this study discussed *complementary pairings* as an important element in quality coteaching relationships. Complementary pairings involve individual characteristics such as personality, motivation, beliefs, and values unique to each coteaching dyad, combining in mutually reinforcing ways. This element has not appeared in prior work on relational

Figure 1. Relational coordination theory (left); Theoretical framework for quality co-teaching relationships (right).

coordination theory, perhaps because the focus has been on occupational roles rather than individuals.

In *New Directions for Relational Coordination Theory*, Gittell discussed the need to extend the framework from its focus on work roles to individuals.²⁴ The addition of complementary pairings to the model may help bridge this theoretical gap. Faculty who coteach enter into the relationship with professional identities that fulfill particular roles in the course, but they also enter the coteaching dyad as people, with individual personalities (Q21 MD4, Q22 FG SBS8, Q24 MD4, Q25 SBS3, Q26 SBS2), motivations for teaching (Q6 FG SBS8), beliefs about teaching (Q9 MD1), and values (Q27 MD4) that influence the interaction. These individual characteristics affect relations (left arrow in [Figure 1](#)) and communication with their partner (right arrow in [Figure 1](#)). This likely explains why participants discussed the relational dimensions of the model both in terms of roles and individuals. It may also explain why communication shares some features with relational coordination theory, but also has a more personal emphasis in this study (Q19 MD6). The implications of these findings are significant: An exclusive focus on work roles may miss critical factors that can make or break relationships between unique individuals. Complementary pairings are also critically important. The impact may be greater when the organizational units are small (i.e., coteaching pairs, other partnerships, or in smaller organizations). The effect may also be more important when relationships are longitudinal, as they are in this context, though we do not have specific data to support this hypothesis.

Practical implications

The application of relational coordination theory to the findings of this study highlights the need to consider the interplay of both roles and individuals to foster quality coteaching relationships. This has several practical implications for medical education. Administrative and faculty development strategies may be influenced by these findings in the following ways:

Course directors should attempt to identify personality traits or modus operandi that complement each other to achieve dynamic and balanced partnerships. This may be accomplished through interviews or self-assessments. Coteachers should engage in open discussion of their similarities and differences, a conclusion supported by Pratt (2014)²⁵ and Shin (2016).¹⁰ We expand on their recommendations by providing specific traits or modes of interaction for discussion ([Figure 2](#), Part I).

Once pairings are made, faculty should focus on relational dimensions and quality communication. Faculty development practices could include dialogue about how

coteachers develop and demonstrate *respect* for each other, both as individuals and as healthcare professionals; engagement in *shared goal setting* as it relates to both their professional roles (i.e. modeling interdisciplinary collaboration) and their individual agendas; deepening faculty awareness of the biopsychosocial model, to foster *shared knowledge and understanding* about SBS and MD roles in medical student education; and exploring the boundaries of their professional knowledge and expertise. Communication should be leveraged to strengthen the relational domains, building more effective partnerships through open, honest, problem-solving dialogue.

Faculty development to enhance coteaching practices is needed to maximize the potential of this pedagogic model.²⁶ We have synthesized our suggestions for faculty development into an exercise for coteachers ([Figure 2](#)). These administrative and faculty development suggestions provide a clear and practical place to begin developing quality teaching teams, informed by their linkage to relational coordination theory.

Notably absent from our findings was an emphasis on coplanning, which was highlighted as essential for effective coteaching in K-12 studies.¹⁰ We hypothesize that this was due in part to the robust nature of our weekly faculty guides. If central coordination of content delivery is not provided, additional time for coplanning may be needed.

Strengths, limitations, and next steps

This study identifies key characteristics of quality coteaching relationships, providing a new and important link to relational coordination theory. This conceptual framework may further develop the practice of coteaching and to drive research in medical education and other contexts.²⁷ The practical suggestions to improve the quality of coteaching relationships have the potential to impact the educational experience for students and faculty.

Both a strength and limitation of this study is the in-depth qualitative approach. Constructivist grounded theory work is not generalizable yet is likely transferrable to other contexts. We purposively sampled faculty at a single medical school, and thus the findings are situated in the local culture of our Doctoring program. We offer a preliminary model for quality coteaching that must be explored in other settings. The linkage to relational coordination theory may not be as strong in other contexts, given that no single prior study on coteaching identified all three relational factors plus communication. The well-defined professional roles of SBS and MD faculty in this course may have enhanced the linkage to this organizational theory.

Part I: **Part II:**

Respect:
Describe a time where you felt very respected. What actions, words, or behaviors contributed?
Describe specific ways in which you would like respect to be demonstrated in the classroom.
Respect for your person is important, but so too is respect for your profession. How might this be demonstrated?
Shared Goals for Teaching and Learning:
What is your vision of the ideal student-doctor? What do their clinical skills look like?
What are your ideas about how to best facilitate small group sessions?
What are your ideas about how to best coach standardized patient interactions?
Shared Knowledge and Understanding:
What are your ideas about the role of SBS / MD in medical student education?
What are the boundaries of your individual expertise?
Together, how can you teach a biopsychosocial approach to patient care to your learners?
Communication:
How will you communicate before, during, and after sessions?
Are their ground rules concerning the mode of communication or the frequency?
How will you communicate honestly when problems arise?

Figure 2. Suggested faculty development exercise for coteachers. Part I: Mark where you fall on each of these spectrums as it relates to your style as a teacher. Discuss your self-assessment with your coteacher to identify domains in which your styles may complement each other. Part II: High-quality relationships are built upon respect, shared goals, shared knowledge, and understanding. Relationships are strengthened by good communication. Please discuss the following with your coteacher.

Of note, the perceptions of faculty participants and the researcher (Michelle M. Daniel) in her role as course director were the primary metrics used to determine pair quality. The researcher did have access to individual faculty teaching evaluations and knowledge of student complaints and compliments; however, coteaching pairs were not specifically evaluated. The researcher's role as a Doctoring course director may have influenced participants' responses, as well as her analysis of the data.²⁸ She engaged in reflexivity through note-taking and collaboratively analyzed the data with a researcher who had no connections to the Doctoring course to mitigate the influence of her insider status.

The use of interviews and a focus on perceptions presupposes that faculty are capable of providing a rationalistic account of their behavior within coteaching relationships, which according to Silverman is problematic.²⁹ Although

we recognize that this is a limitation, we did attempt to mitigate this effect by focusing not only on faculty perceptions but also on specific examples, situations, and behaviors.

An important avenue for future research will be to explore the link between coteaching and relational coordination theory. Does the link exist in other medical education contexts, where there are clearly defined roles (i.e., between clinicians and basic scientists)? What happens if roles are less clearly defined (i.e., two physicians with similar expertise teaching in a Doctoring program)? Another interesting area to pursue is the concept of complementary pairs and the interplay of role factors and individual factors in the framework. Studies that explore learner experiences and assess student outcomes in interdisciplinary cotaught classrooms are also needed. Are students more collaborative when they enter the clinical environment after participating in cotaught classrooms?

Do they better respect the perspectives of other members of the healthcare team? Do they employ a biopsychosocial approach to patient care?

Another next step involves implementing administrative practices and faculty development to improve coteaching by fostering complementary pairings and offering education focused on the identified themes.

Conclusions

This study contributes to the sparse literature on coteaching in medical education, identifying respect, shared goals, shared knowledge and understanding, communication, and complimentary pairs as critical to quality relationships. The study fills a critical theoretical gap in coteaching research by linking to relational coordination theory and extending the theory from work roles to individuals through the addition of complementary pairs. The study also provides practical guidance for course administrators to facilitate complementary pairings and faculty development for coteaching teams.

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Appendix A. Common coteaching models¹

Appendix B. Interview guide

Background Questions / Icebreaker

- 1) How old are you?
- 2) What is your (medical/social behavioral scientist) specialty?
- 3) How many years have you been a coteacher?
- 4) How many coteaching partners have you had?
- 5) How long have you been with your current coteaching partner?

Questions of interest:

- 1) What do you perceive as promoting interdisciplinary coteaching relationships?
 - a. Probe for specific and significant examples and situations
- 2) What do you perceive as impeding coteaching relationships?
 - a. Probe for specific and significant examples and situations
- 3) If you were to give advice to a new coteacher, what tips or pearls would you give them to foster effective relationships?