

Connection Index

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Introduction

In this episode of the podcast, I will be discussing something near and dear to my heart—a tool I created to measure the connection between physician/student and teacher/medical learner in medical education. It is a tool called the Connection Index and its purpose is to improve the quality of the medical education experience. I wanted to answer the question of how we create better supervisors and mentors as students embark on their own “hero’s journey” to becoming physicians.

Medical students have the tireless tasks of showing up whenever it is required of them, often working 80-hour weeks in which they miss family and social connections and even meals. The medical education environment influences a student's level of burnout during their learning experience. I have often posed the question to medical students if their most stressful experience during medical school was regarding a patient interaction versus involving a mentor interaction. Consistently, almost every student would raise their hand on the side of an interpersonal conflict with a supervisor.

I used the things I have learned through psychotherapy—therapeutic alliance, empathy, psychological safety, effective feedback, and connection—to look at what had been studied up to this point in medical education. I found that there were no measures to look at empathy between a supervisor and a student; there were several measures to look at empathy between the doctor and the patient. There were also measures to look at psychological safety—how safe you feel giving interpersonal feedback to a supervisor—although it was team-based feedback, not dyad-level feedback. Much of medicine happens on an individual level and it is important to study individual data points to understand how each person is influenced by these relationships.

Challenges students face internally and externally going through medical education

- Internally:
 - Burnout
 - Three types: emotional exhaustion, personal accomplishment, depersonalization (Maslach Burnout Inventory)
 - Poor supervisors and burnout have been shown to be associated.
 - Suicidality
 - Depression
- Externally:

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- Paperwork
- No control over work hours
- Fixed schedule
- EMR time > patient time

The Domains of the Connection Index

The initial study for the Connection Index contained 61 questions regarding seven domains (empathy, education alliance, psychological safety, effective feedback, subjective emotional experience, bullying, harassment, prejudice and bias). The medical students were tested every six months over the course of two years. Four domains of empathy, psychological safety, education alliance and effective feedback were found to be very closely linked and the simplified test consisted of 12 questions regarding these domains. There were seven answers to choose from for each question ranging from strongly agree (7) to strongly disagree (1). The higher the score, the better the level of interpersonal connection.

Stress experienced within the encounters with a supervisor were found to have a linear relationship with the Connection Index; as connection between persons increased, stress decreased. There was found to be a stepwise decrease in emotional exhaustion as the connection score increased from 6.9 to 7. It meant the difference from experiencing emotional exhaustion a few times a week to once a week with just one highly connected person. That person is a “guide” in the student’s hero’s journey.

A large prior study showed higher empathy physicians had decreased diabetes complications. A study conducted in Italy showed that the highest empathy physicians had less than half the metabolic conditions than the low empathy physicians ([Del Canale et al., 2012](#)). So, empathy is a powerful impactor of not only mental but physical health. All domains flow together; it is almost impossible to score high in one domain, such as empathy, and low in another, like feedback. They are interconnected. When all of these are taking place, students thrive.

Traits of Connected vs. Unconnected Attendings

I just finished a qualitative study (not yet published) that interviewed 16 medical students and asked them to talk about their most connected attending and their least connected attending. We tracked themes with the domains.

What does an attending look like that is the most empathic and the least empathic? The most empathic attendings were mentally present, engaged, understood the concerns of the students, got to know students personally, greeted students and acknowledged their presence and their work. The least empathic and connected supervisors were not mentally present, only concerned

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about their own matters, didn't know the student's name, did not ask how they were doing, made the student feel nonexistent, had no respect for their time and made the student afraid to make mistakes.

In the psychological safety domain the most empathic/connected attendings felt safe to ask questions to even if they were busy or the student thought their questions were stupid, the senior encouraged them to learn from and even question their decision making, they cared about the student as individuals and allowed them to express their worries and their thoughts. The least connected attendings made the students fear voicing questions because they were concerned they would look stupid or useless. When students expressed questions, the attending was condescending or hostile or saw them as an attack on their judgment, the student was referred to as a medical student rather than their name, the senior talked on and on, had no expectations of students, and the senior was very disengaged.

By contrast, in the feedback domain, connected attendings had these things in common: they taught at the level of the student, invested in teaching and made sure the student learned, voiced their thought process out loud, gave the students assignments, encouraged them to reteach other students, encouraged the students to take ownership of their patients, gave them autonomy and responsibility, gave specific feedback. The least connected attendings were concerned with showing how smart they were, exposed the student's lack of knowledge, only gave criticism, couldn't give feedback because they weren't paying attention, did not use mistakes as learning opportunities, gave generic feedback, gave feedback based on other's observations and opinions.

In the education domain, the most connected attendings had these traits in common: their goal was to teach and they took time to do so (stayed late, etc.), taught and gave tasks at the student's level, didn't make the student feel small or stupid, used mistakes as learning opportunities, did not lose respect for the students after mistakes, gave specific goals, tasks and responsibilities to the student, discussed their learning goals and objectives, made the student feel valued, part of the team, and was looked up to as a role model.

The least connected attendings were dictatorial and gave orders without explanations, shut down a student's questions or input, looked down at the student's mistakes, yelled at the student for unspecified skills and tasks not taught, called them "medical student" or wrong name consistently, didn't give autonomy or responsibility over patients, were concerned with finishing their tasks rather than teaching, ignored the student, blamed the student for shortcomings outside the role on the team, expected the student to read the senior's mind, and sought to bring people down rather than teach them and bring them up.

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Conclusion

Connection includes empathy, psychological safety, feedback, and education alliance. There are different ways to score results—not just linear relationships with other outcome measures. The theme of attention and ability to understand the student was a theme of high-connection attendings and there was value in coaching attendings based on these good and bad scores.

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Further resources:

[Contact Dr. Puder](#)

[Connection Index Manual](#)

[Puder, D., Dominguez, C., Borecky, A., Martinez, A. E., Perea, M., & Kashner, T. M. \(2022\). Assessing Interpersonal Relationships in Medical Education: the Connection Index. *Academic Psychiatry*, 1-9.](#)