

Teaching and Learning in Medicine

An International Journal

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/htlm20>

Strengthening Parent – Physician Communication: A Mixed Methods Study on Attuned Communication Training for Pediatric Residents

Heather Taff, Linda Gilkerson, Amanda Osta, Alisa Seo-Lee, Alan Schwartz,
Zobia Chunara, Lander McGinn, Nikita Pillai & Michelle M. Barnes

To cite this article: Heather Taff, Linda Gilkerson, Amanda Osta, Alisa Seo-Lee, Alan Schwartz, Zobia Chunara, Lander McGinn, Nikita Pillai & Michelle M. Barnes (2022): Strengthening Parent – Physician Communication: A Mixed Methods Study on Attuned Communication Training for Pediatric Residents, *Teaching and Learning in Medicine*, DOI: [10.1080/10401334.2022.2107528](https://doi.org/10.1080/10401334.2022.2107528)

To link to this article: <https://doi.org/10.1080/10401334.2022.2107528>



View supplementary material [↗](#)



Published online: 10 Aug 2022.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)



Strengthening Parent – Physician Communication: A Mixed Methods Study on Attuned Communication Training for Pediatric Residents

Heather Taff^{a,b}, Linda Gilkerson^c, Amanda Osta^a, Alisa Seo-Lee^d, Alan Schwartz^{a,e} , Zobia Chunara^e, Lander McGinn^e, Nikita Pillai^e and Michelle M. Barnes^a

^aDepartment of Pediatrics, University of Illinois College of Medicine at Chicago, Chicago, Illinois, USA; ^bVNA Health Care, Aurora, Illinois, USA; ^cErikson Institute, Chicago, Illinois, USA; ^dDepartment of Pediatrics, Cook County Health, Chicago, Illinois, USA; ^eDepartment of Medical Education, University of Illinois College of Medicine at Chicago, Chicago, Illinois, USA

ABSTRACT

Problem: High-quality communication improves patient satisfaction and clinical outcomes, yet formal communication training in residency is often minimal. Many studies on empathic communication show mixed results and are often hindered and skewed by brief study lengths, insufficiently and ambiguously defined concepts, and limited methods for objective measurements. **Intervention:** The FAN Curriculum is a unique communication curriculum, based on the conceptual frameworks of patient-centered communication, reflective practice, mindfulness, and attunement using the Facilitating Attuned Interactions (FAN) model. The first part of the FAN Curriculum was delivered as a 3-hour interactive workshop involving didactics, group discussion, and role play with pediatric residents. Residents then completed weekly self-reflections, a follow-up one-hour training to reinforce concepts, and five monthly mentor sessions, all emphasizing reflective practice. **Context:** This longitudinal, mixed-methods study examined the effects of the FAN Curriculum on residents' empathy levels and ability to communicate with parents in the clinical setting. The study was conducted at two urban, academic, medium-sized pediatric residency programs in Chicago between October 2016 and November 2017. First- and second-year pediatric residents whose continuity clinic site was located at their home institution participated. Residents received training in the use of the FAN Communication Tool using a delayed-start crossover study design. **Impact:** At five time points, residents and parents completed instruments validated for measuring physician empathy and mindfulness. Post-study interviews were conducted for one institution's residents and mentors and were evaluated using open and focused coding. Participants ($n=23$) demonstrated a high degree of use of the FAN Communication Tool six months post-training and a significant rise in self-reported comfort with four of five FAN core processes. One parent-completed survey (Consultation and Relational Empathy, CARE) showed a statistically significant rise of 3.26% in resident relational empathy and collaboration after training ($p=0.02$). In qualitative analysis of interviews, residents and mentors found the FAN Communication Tool beneficial, making clinic visits more efficient and collaborative. Both groups noted improvement in the residents' relationship-building skills; residents were able to use enhanced communication skills to better approach challenging encounters and work through parent concerns. **Lessons Learned:** Family-centered communication training can improve physician-perceived empathy and mindfulness. Effective communication for pediatric residents incorporates an empathic approach, and introduction to this formal curriculum supported their growth in connecting and engaging with children and parents. The FAN Curriculum may provide a useful method for improving resident communication skills with a positive impact on pediatricians' collaboration with patients and families.

ARTICLE HISTORY

Received 25 May 2021
Accepted 11 July 2022

KEYWORDS

Patient-centered communication; pediatric residency; empathy; curriculum

Introduction

The importance of effective physician-patient communication skills and its impact on quality of care is well-recognized.^{1–4} When physicians communicate well, their patients report increased satisfaction with

their care, have increased treatment compliance, and demonstrate improved health outcomes.^{5–9} The Accreditation Council for Graduate Medical Education (ACGME) requires physicians to demonstrate competency in six domains during training: patient care,

CONTACT Michelle M. Barnes  mbarnes@uic.edu 

 Supplemental data for this article is available online at <https://doi.org/10.1080/10401334.2022.2107528>.

© 2022 Taylor & Francis Group, LLC

medical knowledge, interpersonal and communication skills, professionalism, practice-based learning and improvement, and systems-based practice. According to the *Pediatric Milestones*, pediatric residents are expected to achieve competence in “patient- and family-centered communication”⁹ a key component of the Interpersonal and Communication Skills domain. Similarly, the role of emotional connection in facilitating understanding between physicians and patients has been well studied, using concepts like empathy, compassion, emotional intelligence, and attunement.^{10–18} Despite increasing awareness of their importance in medical practice, many residency programs lack a formalized curriculum focused on teaching empathy, compassion, or attunement as components of communication.

Countless recent studies have focused on empathy, although exact definitions of the concept are variable, if not entirely absent.¹⁹ Many empathy-based curricula show some improvement in empathy scoring: the most promising highlight recognizing and utilizing non-verbal communication, promoting compassion, and verbally offering validation and support.¹⁰ However, many empathy studies have limited long-term post-intervention measurements. They rely largely on physician self-reported empathy levels,²⁰ though physician self-assessment of empathy inconsistently correlates with patient assessment of physician empathy.^{21,22} Further, baseline scores on instruments validated to measure empathy are often high and any documented changes are small, raising the question of how well statistical significance correlates with clinical significance in these instances.^{23,24}

This study examined the impact of a novel curriculum for pediatric residents based on the Facilitating Attuned Interactions (FAN), a conceptual framework for developing attunement in relationships and promoting reflective practice used nationally in evidence-based home visiting programs.^{25–27} The FAN was originally developed to promote parent/professional communication by the Erikson Institute Fussy Baby Network and is now used nationally in home visiting and other systems of care.^{25,28} It was recently designated as a Promising Practice through the Association of Maternal and Child Health Programs’ Innovation Station.²⁹ The FAN Communication Tool (Fig. 1) is the key practical component used in the FAN. The FAN Communication Tool is centered on the parents’ urgent concern about their child and is based on the concept of attunement, defined as the feeling of being connected and understood. Attunement between people creates an openness to learn or interact differently, which serves as the

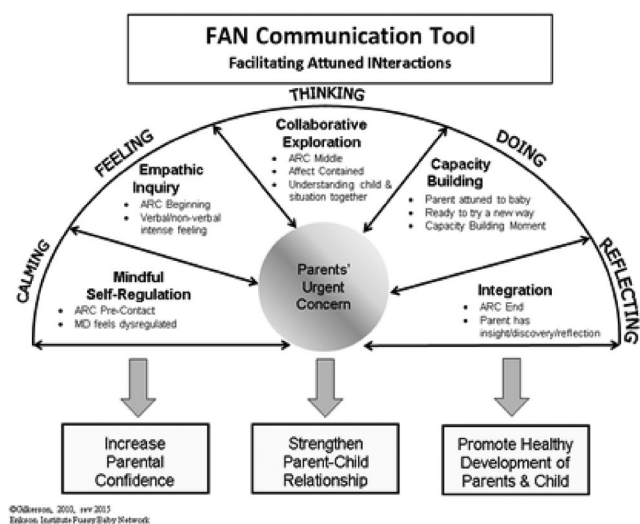


Figure 1. Diagram of the FAN Communication Tool and its 5 core components, used as the framework for empathic communication training of residents. Reproduced with permission by the Erikson Institute.

foundation for this framework.³⁰ This definition of attunement falls under the conceptualization of empathy as the “ability to communicate understanding of a patient’s world and to act on that understanding in a therapeutic way.”^{31,32} We adapted the FAN and the FAN Communication Tool to create the FAN Curriculum with the goal of promoting parent/physician communication. In this study, we explore the impact of the FAN Curriculum on pediatric residents’ communication with patients and families.

The FAN Curriculum is based primarily on the FAN,³³ while also incorporating elements of reflective practice,^{34,35} mindfulness,³⁶ and patient-centered communication.^{37–40} The FAN Communication Tool provides a framework for developing the patient-physician relationship, operationalizing attunement by teaching physicians how to read the parent’s cues and match their communication approach to the parent’s demonstrated need. The FAN Curriculum prepares physicians for clinical encounters by providing a roadmap for recognizing parents’ immediate needs regarding communication. For example, sometimes parents may only want the physician to listen to their concerns about their child, and at other times, they may be ready to receive guidance from the physician about next steps.

The FAN Curriculum offers a unique approach to communication training by including self-attunement and mindfulness as part of its framework, thereby bolstering physician self-awareness and self-regulation.⁴¹ Through their use of the FAN Communication Tool in clinical encounters, physicians adjust their communication to meet their patients’ needs or their own

needs (such as through mindfulness) to optimize their connection with their patients, rather than with all patients in a similar, sequential fashion, regardless of their respective emotional states. The FAN Curriculum also uses reflective supervision with physician mentors to bring understanding and integration of the FAN into practice. In this study, we examined the impact of the FAN Curriculum on pediatrics residents' ability to provide attuned communication and incorporate mindfulness into their relationship with patients and families.

Methods

In this study, pediatric residents were trained to use the FAN, and they applied the knowledge and skills acquired through this training in their routine clinical encounters with patients in their continuity clinic (longitudinal outpatient clinical experience). Throughout the study, resident participants regularly reflected on the application of the FAN with faculty mentors from their residency program to further enhance their integration of the FAN into their clinical practice (Fig. 2).

Setting and participants

This mixed-methods study was conducted at two urban, academic medical center pediatric primary care clinics between October 2016 and November 2017. First- and second-year pediatric residents whose continuity clinic site was located at their home institution were eligible to participate. The principal investigators at each site (MB, ASL) invited 37 eligible residents to participate via email, and 23 residents agreed to the study. All residents were invited to join the initial training regardless of eligibility for the study, though only participating residents attended. General pediatric faculty mentors were randomly assigned to residents

at their home institution, and five faculty served as mentors. Although mentors were familiar with the FAN, an educator from the Fussy Baby Network (LG) prevention program formally trained them in the FAN and reflective supervision and offered practice support throughout the study.

Parents, age 18 years or older, of children under age 18 years who received care at the participating sites' continuity clinics were eligible to participate. Parents who did not speak English or Spanish were excluded from the study. All parents whose children had visits in the residents' continuity clinic were approached by a research assistant to discuss the study. After parents arrived at the clinic for their children's scheduled appointment, the research assistant recruited them to participate in the study while they waited for the resident to enter the examination room to start their children's clinic visit. The research assistant also collected surveys from resident participants and conducted post-study interviews.

FAN model

The FAN model is centered on the FAN Communication Tool, which identifies five areas for communication, called wedges, correlating a mental/emotional state with an associated communication strategy: Calming/Mindful Self-Regulation (MSR), Feeling/Empathic Inquiry (EI), Thinking/Collaborative Exploration (CE), Doing/Capacity Building (CB), and Reflecting/Integration (INT) (Fig. 1). A unique part of the FAN Communication Tool is MSR, which allows the physician to identify their own dysregulation cues and use correctional strategies such as breathing or grounding in order to respond empathetically to the parent. The other wedges require reading the parent's cues and then interacting in a way that matches the parent's needs at that moment. In EI, physicians offer emotional support to parents in the "Feeling" wedge. When

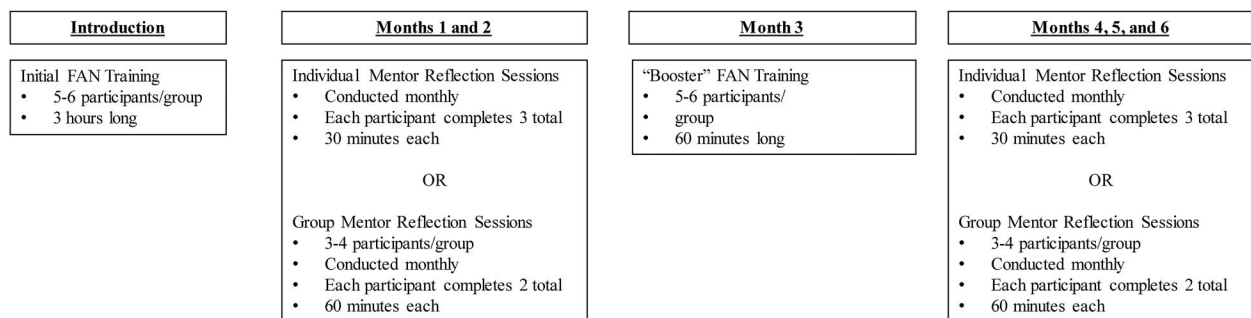


Figure 2. FAN Curriculum. Each resident participated in initial FAN training (time 0), followed by monthly individual or group mentor reflection sessions at months 1 and 2, "booster" FAN training at month 3, and monthly mentor reflection sessions at months 4, 5, and 6. Of their 5 mentor reflection sessions, each resident completed 3 individual and 2 group sessions.

their feelings are contained, and parents want to discuss an issue, they are in the “Thinking” wedge, and physicians use CE to think together about the concern. When parents are in the “Doing” wedge, able to listen and ready to act, physicians offer information and guidance through CB. During “Reflecting,” physicians highlight the parent’s insights about their concerns via INT. A key element of the FAN Communication Tool is identifying mismatches and re-tuning communication as needed. The FAN also establishes a framework for the clinical encounter, called the ARC of Engagement (ARC) (Fig. 3). This includes pre-contact self-regulation and a defined beginning, middle, and end of the encounter that promotes collaboration throughout the visit.

FAN curriculum

This study used a delayed-start crossover experimental design. Resident participants at each site were randomized into two groups, Early Start (ES) and Delayed Start (DS). The DS group began the training approximately six months after the ES group. The delayed-start design was intended to differentiate behavioral changes related to the intervention from any natural maturation of trainees that occurs with typical residency training.

The FAN Curriculum was delivered to residents over six months and consisted of four components: an initial three-hour training conducted in groups of five to six (large groups), three individual 30-minute mentor reflection sessions, one 60-minute “booster” training conducted three months after initial training in large groups, and two 60-minute mentor reflection sessions conducted in groups of three to four residents (small groups). The initial training consisted of an interactive workshop with didactics, videos, role play, and small group discussions to familiarize residents

with the FAN and use of the FAN Communication Tool. Resident participants applied this communication style through role play, similar to what has been done to train other child health professionals in the FAN.^{25–28}

Participants were also trained to complete the FAN Reflection Tool (Supplemental Fig. S1) to promote self-reflection and practice of the FAN after using the FAN Communication Tool in their clinical encounters. Residents completed the FAN Reflection Tool after one encounter in their continuity clinic weekly for six months after the initial training. We designed the FAN Reflection Tool based on similar instruments used by the national model prevention program in their training for home visitors and clinicians.^{25,42,43} Using the FAN Reflection Tool, participants reported whether they used various elements of the ARC (yes/no), which FAN core processes they used most (MSR, EI, CE, CB, INT), how well they believe they used these, and what feelings they and the families expressed during the encounter.

Mentor reflection sessions occurred monthly and alternated between individual and small group settings with one consistent mentor. Resident participants presented cases in which they had used the FAN Communication Tool, discussed its applicability and challenges, and reflected on their own emotions during the clinical encounters. Mentors used participants’ completed FAN Reflection Tools to facilitate discussion during mentor reflection sessions, encouraging participants to identify challenges, successes, and progress in their communication with families. Mentors then completed FAN Individual (Supplemental Fig. S2) or Group (Supplemental Fig. S3) Mentor Review Forms for each resident. We developed the FAN Mentor Review Form to assess how often residents used the elements of the ARC and the FAN in their clinical encounters. Mentors reported areas of strength, areas for growth, and next steps for residents. Faculty mentors met monthly with the Fussy Baby Network educator to discuss successes and challenges encountered during mentor sessions. The use of FAN Reflection Tools and reflective practice with mentors is standard for the FAN model and has been studied with different professional groups.^{25,27,42–44} Reflective practice regarding patient communication is a unique part of what the FAN Curriculum adds to medical education.

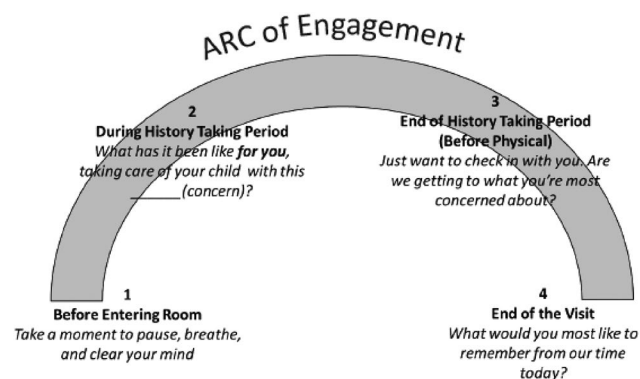


Figure 3. Diagram of the ARC of Engagement, a framework for an attuned clinical encounter. Reproduced with permission.

Impact assessment

Resident empathy, mindfulness, and relational empathy were measured at months 1, 3, 7, 9, and 12 for

participants in both ES and DS groups. There are no widely available instruments validated to measure physician attunement. As such, we used instruments designed to assess empathy to track changes in this aspect of attunement from the perspectives of residents and parents.

- Resident participants completed the Jefferson Scale of Physician Empathy (JSPE),^{13,45} and the Kentucky Inventory of Mindfulness Skills (KIMS),⁴⁶ surveys validated for measuring empathy and mindfulness respectively.
- Parent participants completed, the Jefferson Scale of Patient Perceptions of Physician Empathy (JSPPE),^{47,48} and the Consultation and Relational Empathy (CARE) Patient Feedback Measure,^{31,49} instruments validated for measuring physician empathy.

Parent surveys were associated with specific residents but collected no parental identifying data. Up to five parents were recruited to complete surveys for each resident at each time point, based on scheduling and eligibility. All parents whose children were seen in the continuity clinics during the study period were invited to complete the parent surveys (JSPPE and CARE), regardless of whether parents met criteria to be included in the study as outlined above or whether the resident caring for the patient was involved in the study.

Continued use of the FAN Communication Tool by resident participants was assessed by faculty mentors during mentor reflection sessions. Mentors reviewed participants' completed FAN Reflection Tools during the sessions and used these tools to guide resident reflection. Mentors completed the Mentor Review Forms based on their appraisal of the residents' FAN Reflection Tools and the reflective discussion during the sessions.

All residents and faculty mentors at one institution were invited to participate in one semi-structured interview with an independent researcher from the Fussy Baby Network at the end of the study regarding their experience with the FAN Curriculum; nine residents and two faculty mentors agreed to participate. During interviews, participants discussed the impact of the FAN Curriculum on their clinical practice and their use of the ARC and the FAN in practice. Participants explained their respective experiences with the FAN Curriculum, mentor reflection sessions, and utilization of FAN Reflection Tools. Interviews were recorded and transcribed by a professional service.

Analysis

Empathy and mindfulness scores on the four instruments (JSPE, KIMS, JSPPE, CARE) were calculated and analyzed for each group of residents (sites 1 and 2, ES and DS) at each of the five time points (Table S1). Scores were combined into pre-training (time points 1 for ES and 1–3 for DS) and post-training (time points 2–5 for ES and 4–5 for DS). REDCap (Research Electronic Data Capture), a secure, web-based service hosted at the University of Illinois at Chicago, was used to organize, analyze, and store data from FAN-specific forms.^{50,51} Statistical analysis was conducted using R. We compared pre-intervention and post-intervention outcomes using a linear mixed effects model with time period (pre/post) and resident group (ES/DS) as predictors and random effects of learner and learner within time-point. We examined self-reported changes over time in the use of the FAN Communication Tool overall, and in the use of each of its components, using a linear mixed effects model with month, component, and the month x component interaction as predictors and a random effect of learner. Qualitative data were coded and analyzed using Nvivo (Version 12),⁵² without participants' demographic information, to limit bias. Four authors who were not involved in the development of the FAN (HT, NP, LM, ZC) analyzed data from the interviews using open and focused coding. Specifically, we each independently reviewed all the transcripts to develop codes after coming to consensus about definitions and use of these codes. We reviewed the codebooks, iteratively identified representative themes from the dataset, and finalized the themes. We resolved any disagreements by consensus.

This study was approved by the Institutional Review Boards at the University of Illinois at Chicago (IRB protocol number 2016-0809), John H. Stroger, Jr. Hospital (IRB protocol number 16-118), and the Erikson Institute (IRB file number 16.006). Resident and parent participants consented to participate in the study.

Results

Of 37 eligible pediatric residents, 23 (62%) participated in the FAN Curriculum and 22 (96%) completed at least some portion of the study's post-training surveys, FAN Reflection Tools, and mentor reflection sessions. Ninety-six percent of residents (22/23) provided baseline scores on the four mindfulness, empathy, and relational empathy instruments outlined above (JSPE, JSPPE, KIMS and

CARE). The total response rate for the resident-completed surveys over the entire study was 93% (214/230). Based on the goal of five parent-completed surveys per resident per time point, the response rate was 89% (1029/1150), after removing incorrectly completed or ineligible surveys. Residents were expected to complete a minimum of 20 FAN Reflection Tools in the six months following the initial training. Nineteen out of 23 (82.6%) of residents completed at least one FAN Reflection Tool. Response rates ranged from 0 to 21, with a mean of 8.8 FAN Reflection Tools submitted. Eighty-seven percent of residents (20/23) attended at least one individual or group mentor session.

Mean pre-training scores for each subgroup of residents showed no statistical differences between subgroups or when compared to previously published data for JSPE, JSPPE, and KIMS instruments (Table S1).^{13,46,47} ANOVA of pre-training CARE scores showed an overall statistical difference between the subgroups ($p=0.044$) and significantly higher baseline values when comparing two of the resident groups to published data ($p=0.0003$) (Table S1).⁴⁹ Post-study interviews were completed at one institution, with 9/13 (70%) residents and 2/2 (100%) mentors participating.

Primary outcome

Relational empathy scores as measured by the CARE increased significantly by an average of 1.63/50 points (3.26%) after initial training ($p=0.02$, CI 0.28–2.98, SE = 0.69). In addition, as noted in Table S1, baseline CARE scores were already higher than previously published average values (in some resident subgroups, this baseline difference was even statistically significant). The other three instruments did not show any statistical increase in mean score values with training.

Use of the FAN communication tool

Analysis of FAN Reflection Tools showed that residents continued to use the FAN Communication Tool up to six months after initial training. Mentors reported that residents used the FAN Communication Tool with relatively high frequency (Fig. 4). Average reported use of the FAN Communication Tool at each time point ranged from 3.45 to 4.18 on a 5-point Likert scale where 5 indicated the resident “always used” the FAN Communication Tool. Mentors also reported no notable decay with time (Fig. 4). There was a slight drop in scores in the first month after initial training, possibly indicating

initial difficulty incorporating the FAN Communication Tool into practice. However, mean scores of FAN Communication Tool usage, as reported by the mentors, rose relatively steadily after that first drop. By five months post training, reported usage of the FAN Communication Tool was at or above the level it was immediately after initial training. In fact, there was a small but statistically significant increase of 0.16 points per month in overall FAN Communication Tool use with time according to a mixed effects linear regression model ($p < .001$, SE = 0.039). Residents reported increasing comfort with each wedge of the FAN Communication Tool over time (Fig. 5). Overall self-reported use of four of the five FAN wedges increased significantly by study month (empathic inquiry $B=0.09$, 95% CI [0.04–0.14]; collaborative exploration $B=0.05$ [0.00–0.10]; capacity building $B=0.10$ [0.05–0.15]; integration $B=0.05$ [0.01–0.10]). Reported mindful self-regulation use also increased with time, but this was not statistically significant ($B=0.04$, [–0.00 to 0.09]).

Qualitative analysis of FAN feedback

Themes from post-study interviews corroborate quantitative findings of the FAN Reflection Tools (Supplemental Fig. S1) and Mentor Review Forms (Supplemental Figs. S2, S3). Overall response to the FAN Curriculum was positive with every resident stating they would continue to use at least some aspects of the FAN Communication Tool in their clinical activities. We explore several ways in which use of the

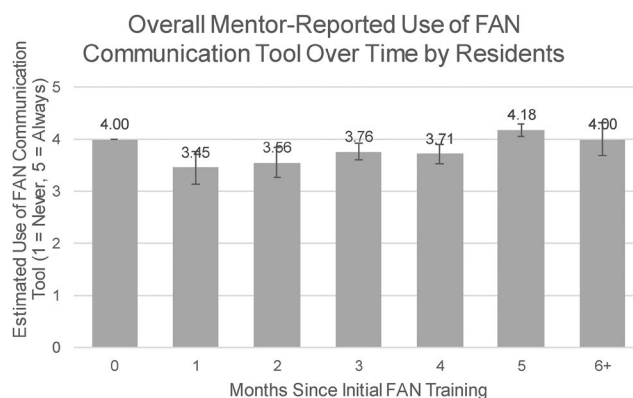


Figure 4. Estimated resident use of the FAN Communication Tool as reported by faculty mentors at monthly mentor reflection sessions. Scores given on 5 point rating scale where 1 = never used and 5 = always used. Overall use of the FAN Communication Tool showed a small but statistically significant increase of 0.16 points per month based on mixed effects linear regression model (SE = 0.039, $p < .001$).

Resident-Reported Comfort with Components of the FAN Communication Tool

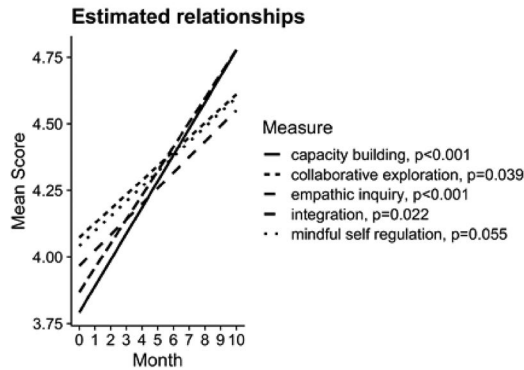


Figure 5. Resident self-reported ability to use each component of the FAN Communication Tool on a 5-point category rating scale according to FAN Reflection Tools. Data analyzed with linear mixed models. All components showed statistically significant rises in self-reported ability except for mindful self-regulation.

FAN Curriculum positively impacted residents: (1) improved attunement with families; (2) improved clinical skills due to increased collaboration with families; and (3) increased efficiency in clinical encounters.

Residents reported that their relationships with parents were strengthened.

I think that it's helped me build close - more trustworthy relationships with some of the patients that I might not have had the opportunity to without the FAN (Participant 1, Resident).

In addition to facilitating improved connection with parents, residents found they were better able to understand their families when they used the FAN Communication Tool to guide the clinical encounter. Residents believed the enhanced understanding resulted from the families sharing more about their own experiences, re-balancing the power in the physician-patient relationship. Their experience in training helped residents to encourage families to open up more by allowing them the space to do so.

I think it gives a lot of power back to patients and parents, and I think it returns the focus more to them (Participant 2, Resident).

Residents reported families were more comfortable discussing difficult topics (such as concerns about their child's behavior, food insecurity, or parental stress in the home) when they used the FAN Communication Tool.

Even though we might be in completely different situations or environments, it made us feel, at least, like we understood each other (Participant 1, Resident).

Residents sensed improved collaboration and rapport with families when they used the FAN Communication Tool in their encounters.

Resident participants thought the FAN Communication Tool led to improved patient care because they were more effective in taking a history and listening to their patients, and their clinical work was more efficient. Some residents noticed more advanced diagnostic skills.

I think there have been at least three instances where I truly don't think I would have been able to come up with a diagnosis, or gotten to a certain point, if I had not used it. And I would have just...missed something (Participant 3, Resident).

Though residents expected clinical encounters to be longer because they encouraged families to open up when using the FAN Communication Tool, most residents found the opposite. Residents reported increased efficiency during their clinic session.

You get to the primary concern faster. We get to solutions faster. We build rapport quicker and stronger. I think all those things have been results of using the FAN (Participant 2, Resident).

Residents especially found the first two questions on the ARC useful for establishing rapport, promoting efficiency and preventing the "doorknob phenomenon,"⁵³ in which the patient reveals their primary concern or provides crucial information at the end of the clinical encounter, often while the physician's hand is on the doorknob in preparation to exit the examination room.

Discussion

The implementation of a curriculum based on the FAN to train pediatric residents in attuned communication and the use of mindfulness in their clinical encounters with patients resulted in modest improvement in the residents' empathy and attunement, although the increase in mindful self-regulation was not statistically significant. The FAN Communication Tool was modified for use by pediatricians to strengthen their communication with families during clinical encounters. Although only relational empathy showed somewhat of an increase based on parent surveys, resident participants qualitatively found their ability to connect with families noticeably improved throughout the study. Residents reported an increase in their attunement with families, expressing that they felt more connected with their patients and parents and were better at reading nonverbal cues. Residents believed this increased attunement improved their efficiency and effectiveness

in addressing their families' needs. Participants noted they collaborated more and dictated less in their communication with patients and families.

The limited objective change in resident empathy in our study is likely representative of the inadequacy of measuring empathy to quantify any and all concepts related to emotion in healthcare. The FAN Curriculum is less about increasing overall empathy, but more about teaching how to appropriately communicate the empathy that one feels; it operationalizes the physician's validation of parent/patient concerns. This is likely the reason that only the CARE demonstrated a significant change in score, as it is specific to relational empathy, rather than measuring empathy in general.⁴⁹ Nevertheless, the residents' baseline CARE scores were already higher than previously published values (Table S1), making the significant rise in their scores all the more important given that they had less room for improvement at the start.

Clinical efficiency is a major concern in healthcare and was a chief educational challenge noted during FAN Curriculum development. However, the qualitative results garnered from post-study interviews provide evidence against the common belief that connecting emotionally with patients and allowing them to tell their story is more time-consuming than is realistic for primary care. When using the FAN Communication Tool, residents discerned the parent/patient's issues more quickly, making the encounters more efficient.

Along with increased efficiency, residents reported greater satisfaction with their clinical care when they felt more attuned to their patients/parents. Work satisfaction is a component of burnout.⁵⁴ The importance of addressing resident wellness and preventing burnout during residency and throughout physicians' careers has been emphasized by the ACGME, and medical education has shifted its focus to this important issue.^{55,56} We believe that a communication curriculum that improves attunement and collaboration between physicians and families may improve physicians' work satisfaction and protect against burnout. The FAN Curriculum has since been shared with other pediatric and family medicine residency programs and informally has been well-received. Future directions may include adapting the training to meet the needs of practicing physicians.

The FAN Curriculum is novel because it includes six months of active mentoring to promote reflective practice, facilitating retention of and improvement upon skills learned in initial training. Further, we addressed some of the major concerns of similar communication studies by collecting data longitudinally, using qualitative and quantitative approaches, from

multiple sources.²⁰ As such, we conducted a comprehensive evaluation of the curriculum, assessing its effects on multiple key stakeholders. There is concern in the field about the utility of single day interventional training to induce long-term behavioral change. In our study, residents continued to use the FAN Communication Tool in their practice months after the initial training session.

There are many potential reasons for the initial drop in reported use of the FAN Communication Tool in the first month after training (Fig. 4), including residents' initial discomfort with the FAN model, confusion about how to efficiently implement the training, and the natural decay expected after a one-time educational intervention. However, Fig. 4 also clearly shows that reported use of the FAN Communication Tool rose steadily after that brief drop, eventually even surpassing reported use immediately after the initial training. Fig. 5 similarly shows that residents' comfort level with each component of the FAN Communication Tool increased with time. It is unclear why Mindful Self-Regulation was the only component that did not show a statistically significant increase over time. In the post-study interviews, some residents reported already feeling skilled at self-regulation prior to the training. Additionally, this skill requires more self-awareness and introspection than the other wedges of the FAN Communication Tool, which might necessitate relatively more practice and internal motivation than incorporating the other components.

Further, resident completion of FAN Reflection Tools for use in the mentor sessions was less than expected, however resident participants still reported increased use of the FAN Communication Tool in their clinical practice. This is likely related to the continued support provided through monthly mentor sessions, in which residents participated, regardless of the number of FAN Reflection Tools they had completed. The mentoring sessions were designed as a component of the FAN Curriculum using the framework of reflective practice, and this is likely the aspect of the curriculum that made the greatest impact. As there was no unmentored control, the impact of mentoring cannot be directly measured. However, based on qualitative data from our study, and previous research on the FAN, we believe the reflective mentoring sessions were a crucial part of the curriculum's success.^{25,27,42–44}

Limitations

We used the Jefferson Scales, which are commonly used and have been widely validated for measuring

empathy,^{10,21,22,45,47,48,57–60} for participants in this study because an instrument for measuring attunement between physicians and patients/parents does not exist in the literature. This is an important limitation because, as this study shows, empathy scales may not be ideal for measuring all aspects of relationship-building in healthcare. However, without a means to measure attunement, we used a mixed-methods approach to better understand the experience of resident physicians in using the FAN Communication Tool. This presents an opportunity for further exploration into quantifying attunement in the patient-physician relationship.

This study had multiple components—an initial workshop, a follow-up workshop, and monthly mentoring sessions. As previously stated, it is difficult to discern from this pilot study whether one of these components in isolation (such as mentoring), or the complete intervention, contributed most to the effect that we found. In future studies, it will be important to isolate these variables to better understand whether one element contributed significantly more to the net effect. This would allow residency programs to allocate resources accordingly. As mentioned above, the longitudinal mentoring aspect of the study is fairly novel among similar empathy and communication curricula. While mentoring, and more recently coaching, has been evaluated as a model to support residents clinically,^{61,62} this is the first study to longitudinally evaluate a mentoring intervention that focuses specifically on the physician's communication and attunement with the patient/family. Because residency leaders are familiar with mentoring as an integral part of residency education, it is likely feasible for them to incorporate the FAN Curriculum into their programs. It is possible that communication skills mentoring alone could reproduce a similar effect as the FAN Curriculum; however, without the training, structure and common language provided by the curriculum, it is unlikely that results from mentoring alone would be adequately consistent.

Another limitation to this study was the small sample size, limiting the statistical impact of the data. We did not have the same group of parents complete instruments (JSPPE and CARE) for each resident at each time point, adding another potential confounding factor into analyzing that data. Having a single cohort of parents complete the JSPPE and CARE instruments would improve the weight of those results, but this would limit the type of families who could be recruited to our study to those whose children were scheduled to be seen in clinic every few

months. Finally, the inability to conduct post-study interviews with one of the residency programs reduced the potential richness of the qualitative data. Future studies will involve more attunement-specific data collection, objective assessment of changes in clinical efficiency, and evaluation of the specific contribution of mentor sessions to long-term practice change.

Conclusion

The FAN Curriculum provides a conceptual framework and practical communication model for promoting attunement between physicians, patients and parents, enhancing patient-centered care through the use of reflective practice and mindfulness. The training, as described here, increased resident relational empathy with families. The curriculum was well-received, had multiple benefits in effectiveness and efficiency of resident clinical practice and well-being, and led to lasting professional behavior change. As stated by one study participant,

I think it's been very helpful and really beneficial to learn how to be a little more present...I think it makes me a better doctor. It makes me, certainly, happier. And it makes clinic and work more enjoyable (Participant 4, Resident).

Acknowledgments

We would like to thank the pediatric residents who participated in the curriculum for their commitment to their education and for sharing their clinical experiences with us. We are grateful for the faculty mentors and workshop facilitators for contributing their time and enthusiasm to this curriculum. We alone are responsible for the content and writing of this research paper.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Erikson Institute under the Faculty Innovation Fund Grant (2016, no number) and the Association of Pediatric Program Directors (APPD) under a Special Project Program grant (2016, no number).

ORCID

Alan Schwartz  <http://orcid.org/0000-0003-3809-6637>

References

- Wanzer MB, Booth-Butterfield M, Gruber K. Perceptions of health care providers' communication: relationships between patient-centered communication and satisfaction. *Health Commun.* 2004;16(3):363–384. doi:10.1207/S15327027HC1603_6. PMID: 15265756.
- King A, Hoppe RB. "Best practice" for patient-centered communication: a narrative review. *J Grad Med Educ.* 2013;5(3):385–393. doi:10.4300/JGME-D-13-00072.1. PMID: 24404300.
- Simpson M, Buckman R, Stewart M, et al. Doctor-patient communication: the Toronto consensus statement. *BMJ.* 1991;303(6814):1385–1387. doi:10.1136/bmj.303.6814.1385. PMID: 1760608.
- Levinson W, Pizzo PA. Patient-physician communication: it's about time. *JAMA.* 2011;305(17):1802–1803. doi:10.1001/jama.2011.556. PMID: 21540424.
- Fan VS, Burman M, McDonell MB, Fihn SD. Continuity of care and other determinants of patient satisfaction with primary care. *J Gen Intern Med.* 2005;20(3):226–233. doi:10.1111/j.1525-1497.2005.40135.x. PMID: 15836525.
- Clever SL, Jin L, Levinson W, Meltzer DO. Does doctor-patient communication affect patient satisfaction with hospital care? Results of an analysis with a novel instrumental variable. *Health Serv Res.* 2008;43(5p1):1505–1519. PMID: 18459954. doi:10.1111/j.1475-6773.2008.00849.x.
- Ha JF, Longnecker N. Doctor-patient communication: a review. *Ochsner J.* 2010;10(1):38–43.
- Sany SBT, Behzad F, Ferns G, Peyman N. Communication skills training for physicians improves health literacy and medical outcomes among patients with hypertension: a randomized controlled trial. *BMC Health Serv Res.* 2020;20(1):60. doi:10.1186/s12913-020-4901-8. PMID: 31973765.
- Pediatric Milestones Work Group. Pediatric milestones. Accreditation Council for Graduate Medical Education. <https://www.acgme.org/globalassets/pdfs/milestones/pediatricmilestones.pdf>. Published July 1, 2021. Accessed November 15, 2021.
- Patel S, Pelletier-Bui A, Smith S, et al. Curricula for empathy and compassion training in medical education: A systematic review. *PLoS One.* 2019;14(8):e0221412. doi:10.1371/journal.pone.0221412. PMID: 31437225.
- Shield RR, Tong I, Tomas M, Besdine RW. Teaching communication and compassionate care skills: an innovative curriculum for pre-clerkship medical students. *Med Teach.* 2011;33(8):e408–e416. doi:10.3109/0142159X.2011.586748. PMID: 21774636.
- Roberts BW, Roberts MB, Yao J, Bosire J, Mazzarelli A, Trzeciak S. Development and validation of a tool to measure patient assessment of clinical compassion. *JAMA Netw Open.* 2019;2(5):e193976. doi:10.1001/jamanetworkopen.2019.3976. PMID: 31099870.
- Hojat M, Gonnella JS, Nasca TJ, Mangione S, Vergare M, Magee M. Physician empathy: definition, components, measurement, and relationship to gender and specialty. *Am J Psychiatry.* 2002;159(9):1563–1569. doi:10.1176/appi.ajp.159.9.1563. PMID: 12202278.
- Epstein RM, Street RL. Shared mind: communication, decision making, and autonomy in serious illness. *Ann Fam Med.* 2011;9(5):454–461. doi:10.1370/afm.1301. PMID: 21911765.
- Neumann M, Edelhauser F, Tauschel D, Fischer MR, Wirtz M, Woopen C. Empathy decline and its reasons: a systematic review of studies with medical students and residents. *Acad Med.* 2011;86(8):996–1009. doi:10.1097/ACM.0b013e318221e615. PMID: 21670661.
- Grewal D, Davidson HA. Emotional intelligence and graduate medical education. *JAMA.* 2008;300(10):1200–1202. doi:10.1001/jama.300.10.1200. PMID: 18780859.
- Snyder J, Silberschatz G. The patient's experience of attunement and responsiveness scale. *Psychother Res.* 2017;27(5):608–619. doi:10.1080/10503307.2016.1147658. PMID: 27013357.
- Howick J, Steinkopf L, Ulyte A, Roberts N, Meissner K. How empathic is your healthcare practitioner? A systematic review and meta-analysis of patient surveys. *BMC Med Educ.* 2017;17(1):136. PMID: 28823250. doi:10.1186/s12909-017-0967-3.
- Sulzer SH, Feinstein NW, Wendland CL. Assessing empathy development in medical education: a systematic review. *Med Educ.* 2016;50(3):300–310. doi:10.1111/medu.12806. PMID: 26896015.
- Kelm Z, Womer J, Walter JK, Feudtner C. Interventions to cultivate physician empathy: a systematic review. *BMC Med Educ.* 2014;14:219. doi:10.1186/1472-6920-14-219. PMID: 25315848.
- Bernardo MO, Cecilio-Fernandes D, Lima ARdA, et al. Investigating the relation between self-assessment and patients' assessments of physicians-in-training empathy: a multicentric, observational, cross-sectional study in three teaching hospitals in Brazil. *BMJ Open.* 2019;9(6):e029356. PMID: 31243037. doi:10.1136/bmjopen-2019-029356.
- Glaser KM, Markham FW, Adler HM, McManus RP, Hojat M. Relationships between scores on the Jefferson Scale of physician empathy, patient perceptions of physician empathy, and humanistic approaches to patient care: a validity study. *Med Sci Monit.* 2007;13(7):291–294.
- Colliver JA, Conlee MJ, Verhulst SJ, Dorsey JK. Reports of the decline of empathy during medical education are greatly exaggerated: a reexamination of the research. *Acad Med.* 2010;85(4):588–593. doi:10.1097/ACM.0b013e3181d281dc. PMID: 20354372.
- Roff S. Reconsidering the "decline" of medical student empathy as reported in studies using the Jefferson Scale of Physician Empathy-Student version (JSPE-S). *Med Teach.* 2015;37(8):783–786. PMID: 25665629. doi:10.3109/0142159X.2015.1009022.
- Gilkerson L, Burkhardt T, Katch LE, Hans SL. Increasing parenting self-efficacy: the Fussy Baby Network® intervention. *Infant Ment Health J.* 2020;41(2):232–245. doi:10.1002/imhj.21836. PMID: 32242969.
- Spielberger J, Gouvea M, Winje C, Burkhardt T, Gitlow E. A evaluation of the Fussy Baby Network Condensed FAN Training: final report. Chapin Hall at University of Chicago. <https://www.chapinhall.org/wp-content/uploads/Fussy-Baby-Cross-Model-Evaluation.pdf>. Published May 2019. Accessed November 15, 2021.
- Cosgrove K, Gilkerson L, Leviton A, Mueller M, Norris-Shortle C, Gouvêa M. Building professional capacity to strengthen parent/professional relationships

- in early intervention: the FAN approach. *Infants & Young Children*. 2019;32(4):245–254. doi:10.1097/ IYC.000000000000148.
28. Gilkerson L, Hofherr J, Steier A, Cook A, Arbel A, Heffron MC. Implementing the Fussy Baby Network approach. *Zero to Three*. 2012;33(2):59–65.
 29. Association of Maternal and Child Health Programs. Facilitating Attuned Interactions (FAN): an Innovation Station promising practice. Innovation Station Practice Summary and Implementation Guidance. <http://www.amchp.org/programsandtopics/BestPractices/InnovationStation/ISDocs/Facilitating%20Attuned%20Interactions.pdf>. Published December 4, 2019. Accessed November 15, 2021.
 30. Siegel DJ, Hartzell M. *Parenting From the Inside Out: How a Deeper Self-Understanding can Help You Raise Children Who Thrive*. 10th ed. New York: TarcherPerigee; 2013.
 31. Mercer SW, McConnachie A, Maxwell M, Heaney D, Watt GC. Relevance and practical use of the Consultation and Relational Empathy (CARE) mMeasure in general practice. *Fam Pract*. 2005;22(3):328–334. doi:10.1093/fampra/cmh730. PMID: 15772120.
 32. Zaner RM. Medicine and dialogue. *J Med Philos*. 1990;15(3):303–325. doi:10.1093/jmp/15.3.303. PMID: 2203868.
 33. Hazen KP, Carlson MW, Hatton-Bowers H, et al. Evaluating the Facilitating Attuned Interactions (FAN) approach: vicarious trauma, professional burnout, and reflective practice. *Children Youth Serv Rev*. 2020;112:104925. doi:10.1016/j.chilcyouth.2020.104925.
 34. Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: a systematic review. *Adv Health Sci Educ Theory Pract*. 2009;14(4):595–621. doi:10.1007/s10459-007-9090-2. PMID: 18034364.
 35. Plack M, Greenberg L. The reflective practitioner: reaching for excellence in practice. *Pediatrics*. 2005;116(6):1546–1552. doi:10.1542/peds.2005-0209. PMID: 16322184.
 36. Scheepers RA, Emke H, Epstein R, Lombarts K. The impact of mindfulness-based interventions on doctors' well-being and performance: a systematic review. *Med Educ*. 2020;54(2):138–149. doi:10.1111/medu.14020. PMID: 31868262.
 37. Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. *Acad Med*. 2001;76(4):390–393. doi:10.1097/00001888-200104000-00021. PMID: 11299158.
 38. Institute of Medicine Committee on Quality of Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press; 2001.
 39. Levinson W, Lesser CS, Epstein RM. Developing physician communication skills for patient-centered care. *Health Aff (Millwood)*. 2010;29(7):1310–1318. doi:10.1377/hlthaff.2009.0450. PMID: 20606179.
 40. Henschen BL, Ryan ER, Evans DB, et al. Perceptions of patient-centered care among first-year medical students. *Teach Learn Med*. 2019;31(1):26–33. doi:10.1080/10401334.2018.1468260. PMID: 29847155.
 41. Epstein RM. Mindful practice. *JAMA*. 1999;282(9):833–839. doi:10.1001/jama.282.9.833. PMID: 10478689.
 42. Spielberger J, Burkhardt T, Winje C, Gouvea M. *Impact of FAN Training on Home Visitors over Time (Waves 3, 4, 5)*. Chicago: Chapin Hall at University of Chicago; 2017.
 43. Spielberger J, Burkhardt T, Gouvea M, Winje C. Sustainability of the Fussy Baby Network's FAN approach after training: results of a follow-up study. Chapin Hall at University of Chicago. <https://www.chapinhall.org/wp-content/uploads/Follow-up-study-Final.pdf>. Published September 2019. Accessed November 15, 2021.
 44. Pryce JM, Gilkerson L, Barry JE. The mentoring FAN: a promising approach to enhancing attunement within the mentoring system. *J Soc Serv Res*. 2018;44(3):350–364. doi:10.1080/01488376.2018.1472174.
 45. Hojat M, Gonnella JS, Nasca TJ, Mangione S, Veloksi JJ, Magee M. The Jefferson Scale of Physician Empathy: further psychometric data and differences by gender and specialty at item level. *Acad Med*. 2002;77(Suppl 10):S58–S60. doi:10.1097/00001888-200210001-00019. PMID: 12377706.
 46. Baer RA, Smith GT, Allen KB. Assessment of mindfulness by self-report: the Kentucky inventory of mindfulness skills. *Assessment*. 2004;11(3):191–206. doi:10.1177/1073191104268029. PMID: 15358875.
 47. Hojat M, Louis DZ, Maxwell K, Markham F, Wender R, Gonnella JS. Patient perceptions of physician empathy, satisfaction with physician, interpersonal trust, and compliance. *Int J Med Educ*. 2010;1:83–87. doi:10.5116/ijme.4d00.b701.
 48. Kane GC, Gotto JL, Mangione S, West S, Hojat M. Jefferson Scale of Patient's Perceptions of Physician Empathy: preliminary psychometric data. *Croat Med J*. 2007;48(1):81–86. PMID: 17309143.
 49. Mercer SW, Maxwell M, Heaney D, Watt GC. The consultation and relational empathy (CARE) measure: development and preliminary validation and reliability of an empathy-based consultation process measure. *Fam Pract*. 2004;21(6):699–705. doi:10.1093/fampra/cmh621. PMID: 15528286.
 50. Harris P, Taylor R, Thielke R, Payne J, Gonzalez N, Conde J. Research electronic data capture (REDCap) – a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377–381. doi:10.1016/j.jbi.2008.08.010. PMID: 18929686.
 51. Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: building an international community of software partners. *J Biomed Inform*. 2019;95:103208. doi:10.1016/j.jbi.2019.103208. PMID: 31078660.
 52. QSR International Pty Ltd. <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>. Published March 2020. Accessed November 15, 2021.
 53. Faden J, Gorton G. The doorknob phenomenon in clinical practice. *Am Fam Physician*. 2018;98(1):52–53. PMID: 30215953.
 54. Maslach C, Jackson SE, Leiter MP. *Maslach Burnout Inventory Manual*. 3rd ed. Palo Alto, CA: Consulting Psychologists Press; 1997.
 55. Accreditation Council for Graduate Medical Education. Improving physician well-being, restoring meaning in medicine. <https://www.acgme.org/what-we-do/initia>

- tives/physician-well-being. Published 2021. Accessed November 15, 2021.
56. Daskivich TJ, Jardine DA, Tseng J, et al. Promotion of wellness and mental health awareness among physicians in training: perspective of a national, multispecialty panel of residents and fellows. *J Grad Med Educ*. 2015;7(1):143–147. doi:[10.4300/JGME-07-01-42](https://doi.org/10.4300/JGME-07-01-42). PMID: 26217450.
 57. Hojat M, Mangione S, Nasca TJ, Gonnella JS, Magee M. Empathy scores in medical school and ratings of empathic behavior in residency training 3 years later. *J Soc Psychol*. 2005;145(6):663–672. PMID: 16334513. doi:[10.3200/SOCP.145.6.663-672](https://doi.org/10.3200/SOCP.145.6.663-672).
 58. Tavakol S, Dennick R, Tavakol M. Psychometric properties and confirmatory factor analysis of the Jefferson Scale of Physician Empathy. *BMC Med Educ*. 2011;11:54. doi:[10.1186/1472-6920-11-54](https://doi.org/10.1186/1472-6920-11-54). PMID: 21810268
 59. Spasenoska M, Costello S, Williams B. Investigating the psychometric properties of the Jefferson Scale of Physician Empathy in a sample of Malaysian medical students. *Adv Med Educ Pract*. 2016;7:331–339. doi:[10.2147/AMEP.S96591](https://doi.org/10.2147/AMEP.S96591). PMID: 27350763.
 60. Domingues AC, Santiago LM, Rodrigues AR, Pires B, Velho D, Ferreira PL. Cross-cultural adaptation and validation of the Jefferson Scale of Patient's Perceptions of Physician Empathy (JSPPE) for the Portuguese population. *Patient Prefer Adherence*. 2019;13:1145–1152. doi:[10.2147/PPA.S211764](https://doi.org/10.2147/PPA.S211764). PMID: 31409977.
 61. Graddy R, Reynolds SS, Wright SM. Coaching residents in the ambulatory setting: faculty direct observation and resident reflection. *J Grad Med Educ*. 2018;10(4):449–454. doi:[10.4300/JGME-17-00788.1](https://doi.org/10.4300/JGME-17-00788.1). PMID: 30154978.
 62. Rassbach CE, Blankenburg R. A novel pediatric residency coaching program: outcomes after one year. *Acad Med*. 2018;93(3):430–434. doi:[10.1097/ACM.0000000000001825](https://doi.org/10.1097/ACM.0000000000001825). PMID: 28700460.