

Discordance Between Resident and Faculty Perceptions of Resident Autonomy: Can Self-Determination Theory Help Interpret Differences and Guide Strategies for Bridging the Divide?

Eric A. Biondi, MD, William S. Varade, MD, Lynn C. Garfunkel, MD, Justin F. Lynn, MD, MPH, Mark S. Craig, MD, MPH, Melissa M. Cellini, MD, MEd, Laura P. Shone, DrPH, MSW, J. Peter Harris, MD, and Constance D. Baldwin, PhD

Abstract

Purpose

To identify and interpret differences between resident and faculty perceptions of resident autonomy and of faculty support of resident autonomy.

Method

Parallel questionnaires were sent to pediatric residents and faculty at the University of Rochester Medical Center in 2011. Items addressed self-determination theory (SDT) constructs (autonomy, competence, relatedness) and asked residents and faculty to rate and/or comment on their own and the other group's behaviors. Distributions of responses to 17 parallel Likert scale items were compared by Wilcoxon rank-sum

tests. Written comments underwent qualitative content analysis.

Results

Respondents included 62/78 residents (79%) and 71/100 faculty (71%). The groups differed significantly on 15 of 17 parallel items but agreed that faculty sometimes provided too much direction. Written comments suggested that SDT constructs were closely interrelated in residency training. Residents expressed frustration that their care plans were changed without explanation. Faculty reported reluctance to give "passive" residents autonomy in patient care unless stakes were low. Many reported granting more independence to residents who displayed motivation and competence.

Some described working to overcome residents' passivity by clarifying and reinforcing expectations.

Conclusions

Faculty and residents had discordant perceptions of resident autonomy and of faculty support for resident autonomy. When faculty restrict the independence of "passive" residents whose competence they question, residents may receive fewer opportunities for active learning. Strategies that support autonomy, such as scaffolding, may help residents gain confidence and competence, enhance residents' relatedness to team members and supervisors, and help programs adapt to accreditation requirements to foster residents' growth in independence.

Editor's Note: A Commentary by B. Hoffman appears on pages 408–410.

Self-determination theory (SDT) has been studied extensively and applied to enhance motivation in business, education, and health care settings.^{1–4} Academic medicine, however, has been slow to integrate this theoretical framework into educational practice.^{5–7} SDT may prove useful in illuminating the dynamics of teacher–learner interactions in the residency training environment,

Please see the end of this article for information about the authors.

Correspondence should be addressed to Dr. Baldwin, Department of Pediatrics, University of Rochester Medical Center, PO Box 777, 601 Elmwood Ave., Rochester, NY 14642; telephone: (585) 275-8425; e-mail: constance_baldwin@urmc.rochester.edu.

Acad Med. 2015;90:462–471.

First published online October 21, 2014
doi: 10.1097/ACM.0000000000000522

Supplemental digital content for this article is available at <http://links.lww.com/ACADMED/A237>.

where evolving evaluation systems and intensifying regulatory mandates^{8–10} as well as generational differences^{11,12} cause stress for residents and faculty alike. Insights provided by SDT may also help to guide residency programs' responses to the dissonance created by these pressures.

SDT is relevant to all levels of education because motivation is the primary energy that drives learning.^{2,3} SDT is centered on three constructs that define an individual's innate psychological needs:

- *autonomy*—the drive to be the origin of one's behavior and to exercise free will in choosing one's goals;
- *competence*—the need to feel efficacious in the actions one pursues and performs; and
- *relatedness*—the desire to feel connected with others, to belong to and to be valued by one's community.

All three constructs are relevant to independent medical practice.^{1,2,5} Exercising

autonomy can help physicians think for themselves and pursue self-directed learning; feeling competent is key to confident decision making and leadership; and feeling a sense of relatedness can enhance physicians' rapport with patients and the health care team.

Individuals who receive autonomy support (e.g., sensitivity to their perspectives, acknowledgment of their feelings, provision of choices, minimization of controls) from important authority figures are more motivated to pursue their goals, are more satisfied with their work and lives, and ultimately become higher achievers than individuals who are forced or persuaded to pursue the goals of others.^{2,5} Adult learners, in particular, are more motivated when they are given choices and when their learning agenda is directly relevant to their professional needs and interests.¹³ Yet residency training programs are replete with external mandates that challenge the autonomy of faculty and

residents. The Carnegie Foundation for the Advancement of Learning's 2010 call for medical education reform suggests that such regulatory constraints can interfere with the individualization of learning and with physician identity formation.^{10,14}

Several insightful studies from the University of Utrecht have examined SDT in the context of undergraduate medical education.^{6,15–17} These have found application of SDT-related methods in curricula that adopted problem-based learning (autonomy and competence), employed small-group learning (autonomy and relatedness), and exposed students to patients early in medical school (relatedness). Analogous applications of SDT to graduate medical education are needed.

The pediatric residency program at the University of Rochester Medical Center (URMC) is engaged in a longitudinal curriculum development and evaluation project that is applying SDT strategies to improve the learning climate.¹⁸ Over the past decade, our faculty have repeatedly stated at faculty meetings that residents lack initiative and are overly dependent on them in making patient care decisions. Yet in 2010, residents formally expressed their frustration to the faculty via an internal "Pediatric Resident–Faculty Autonomy Contract," writing that they were not being given enough opportunities to make decisions, were having patient management plans dictated to them, and were not receiving enough feedback to learn from their errors. In response to these dissonant views, our curriculum has been modified to include discussions of SDT with faculty and residents, as well as resident workshops on understanding individual autonomy needs and working more effectively with faculty to ensure that those needs are met.

To clarify and interpret these dissonant perceptions of resident autonomy and faculty support of resident autonomy, we used the three constructs of SDT to create parallel resident and faculty surveys. These surveys probed areas of disagreement and asked about elements of resident education related to autonomy, competence, and relatedness. We compared resident and faculty responses using quantitative analysis of Likert scale data and qualitative content

analysis of SDT-related factors in written comments.

Method

Setting and sample

Our residency program includes approximately 15 residents per postgraduate year (PGY) in the three-year categorical pediatric program and 8 residents per PGY in the four-year combined medicine–pediatric program. Categorical residents have a choice of five longitudinal tracks for their curriculum. Graduate medical education at URMC emphasizes the biopsychosocial model,¹⁹ which addresses patients holistically and encourages trainees to reflect on how to support patients in all the ways that illness may affect their lives.

This study targeted all pediatric and medicine–pediatric residents in our program in academic year 2011–2012 and all faculty who interacted significantly with these residents. Resident completion of the survey was a required program activity, but residents were given the option of refusing use of their responses for research purposes. No incentives were offered. Faculty participation was voluntary. This study was approved by the URMC institutional review board.

Survey design: Parallel questionnaires

To enhance content validity of survey responses,^{20,21} the parallel questionnaires for residents and faculty were designed using an iterative consensus process among the authors, who included senior and junior faculty and fellows. Items were created according to the following primary criteria: (a) limited number of items (to maximize response rate), (b) balanced numbers of items on behaviors of residents and of faculty, and (c) inclusion of items addressing each of the three SDT domains (as explained in Table 1, footnote c).

To enhance validity of the response process, item wording avoided specialized SDT terminology, and the survey employed an online response format familiar to all respondents. To avoid social desirability bias, items were phrased to avoid prompts for a specific response, and respondents were guaranteed confidentiality. To enhance reliability (validity of internal structure), the questionnaires were pilot tested

repeatedly by former pediatric chief residents and current fellows, refined, and re-reviewed to ensure alignment with SDT constructs.

Table 1 describes the 11 items that used parallel wording to ask residents and faculty to rate the frequency of their own behaviors or the behaviors of the other group. Because 6 of these items elicited separate faculty responses regarding the behaviors of interns (PGY-1) and senior residents (PGY-2–PGY-4), a total of 17 parallel items could be compared between residents and faculty. Ratings were based on a five-point Likert scale ranging from "very seldom" = 1 to "very frequently" = 5. Residents were required to respond to all Likert scale items; faculty could skip items because not all applied to everyone. Optional written comments were invited on 2 items on the resident survey and 3 items on the faculty survey; these were not parallel. The resident and faculty surveys are available as Supplemental Digital Appendixes 1 and 2 at <http://links.lww.com/ACADMED/A237>.

Survey distribution

Residents and faculty were sent informational letters that explained the survey and its goal: to improve residency training in our program. The letters stated that responses would be confidential (residents) or anonymous (faculty). During the study period (June–October 2011), potential participants were sent an e-mail notification with a link to the online survey at SurveyMonkey.com (SurveyMonkey, Palo Alto, California). Nonrespondents received a maximum of three e-mailed reminders.

Quantitative analysis

Distributions of intern, senior resident, and faculty responses to the 17 parallel items were compared using Wilcoxon rank-sum tests in two ways: (1) intern and senior resident responses separated, and (2) all resident responses combined. Statistical differences at the level of $P < .05$ were considered significant.

Qualitative analysis

Because the items requesting written comments were not parallel across the two questionnaires, we analyzed resident comments as one set and faculty

Table 1

Description of Parallel Items and Open-Ended Items Included in Resident and Faculty Questionnaires and Their Relationship to Self-Determination Theory (SDT) Constructs, University of Rochester Medical Center Pediatric Residency Program, 2011 Surveys

Item no. ^a	Item descriptor ^b	SDT constructs ^c		
		Autonomy	Competence	Relatedness
Items related to resident behaviors				
1, 2, 3 ^d	Resident presentations answer pertinent questions regarding the patient's history of present illness, medications, past medical history, lab work, orders, or events during the hospitalization. Three settings: during admissions (item 1), during rounds (item 2), when cross-covering (item 3)		✓	
4, 5, 6 ^d	Residents present a thorough assessment and plan (e.g., patient's symptoms, differential diagnosis, system- or problem-based plans, and rationale). Three settings: during admissions (item 4), during rounds (item 5), when cross-covering (item 6)	✓	✓	
	Residents read to understand disease process and plan better care for patients. (On resident survey only; also: optional written comment)	✓	✓	
Items related to faculty behaviors				
7	Faculty give too much direction ^e (resident survey also had optional written comment)	✓	✓	✓
8	Faculty take resident input seriously	✓		✓
9	Faculty encourage independent thought of residents	✓		✓
10	Faculty follow residents' plans even if faculty prefer an equivalent alternative plan (faculty survey also had optional written comment)	✓	✓	
11	Faculty give feedback to residents	✓	✓	✓
Open-ended items on faculty survey only				
	Noticed improvement over the past 12 months in quality of resident assessments and independent thought processes	✓	✓	
	Specific contributing factors that force faculty to limit residents' autonomy	✓		

^aNumbers correspond to the order in which parallel items appeared on the resident survey. Items without numbers had no parallel item.

^bAll item wording has been abbreviated. Resident and faculty Likert scale items used parallel wording. For example, item 8 for residents read: "I feel that my input is taken seriously when it comes to making important medical decisions," whereas the parallel item for faculty read: "I take the housestaff's input seriously when it comes to making important medical decisions." For complete item wording, see resident and faculty surveys, available as Supplemental Digital Appendixes 1 and 2 at <http://links.lww.com/ACADMED/A237>.

^cItems related to residents' *autonomy* addressed taking initiative, taking responsibility, and acting independently.

Competence-related items addressed demonstrating skills or feeling confident about having skills. *Relatedness* items dealt with feeling trust/distrust or interacting with patients as caring, committed physicians.

^dFaculty were asked to provide separate responses to items 1–3 and 4–6 for interns and for senior residents.

^eThe resident survey asked how often faculty direction was "too little," "just right," or "too much." Only responses to the "too much" faculty direction question were used in the analysis, to maintain parallelism with the faculty item: "I give too much direction to housestaff regarding patient care activities."

comments as another. We conducted a directed qualitative content analysis²² to evaluate SDT themes that might elucidate quantitative group differences.

To minimize generational bias, we divided ourselves into two groups of mixed ages: One group began with resident comments, the other with the faculty comments. Each author independently examined resident and faculty comments in several iterations to identify themes and participated in meetings of the full group of authors to reach consensus on common themes. Next, we independently reexamined the comments to identify SDT-related factors and illustrative comments.

We reconvened to compare and agree on new themes and consider how the theoretical concepts of SDT helped to elucidate resident and faculty differences.

Results

Sample

Of the 78 residents and 100 faculty who received the survey, 62 residents (79%) and 71 faculty (71%) responded. The 62 residents included 18 interns (29%) and 44 senior residents (71%; 17 PGY-2, 21 PGY-3, and 6 PGY-4 [of 8 medicine–pediatrics residents]). None of the residents requested exclusion from the research analysis.

Quantitative results

Table 2 summarizes mean ratings of the frequency of resident and faculty behaviors by interns, senior residents, and faculty. Differences in resident and faculty ratings were statistically significant for 15 of the 17 parallel items. Both groups agreed that faculty provided too much direction with moderate frequency.

Intern and senior resident self-ratings were typically higher than faculty ratings of resident behaviors, whereas faculty self-ratings were higher than resident ratings of most faculty behaviors. This consistent pattern of differences is depicted in Figure 1,

Table 2

Comparison of Resident and Faculty Ratings of Parallel Items on Resident and Faculty Behaviors, University of Rochester Medical Center Pediatric Residency Program, 2011 Surveys^a

Resident behavior ^b	Rating, mean (SD)			P value
	Interns (n = 18)	Senior residents (n = 44)	Faculty (n = 71)	
Prepared to answer questions about HPI and current status/treatment				
1. During admissions				
Interns	4.17 (0.86)	—	3.57 (0.78)	.005
Senior residents	—	4.79 (0.41)	4.07 (0.83)	<.001
2. During rounds				
Interns	4.28 (0.75)	—	3.53 (0.85)	<.001
Senior residents	—	4.70 (0.46)	4.03 (0.85)	<.001
3. When cross-covering				
Interns	3.00 (0.97)	—	2.53 (0.82)	.055
Senior residents	—	3.45 (0.70)	3.06 (0.84)	.018
Present a thorough assessment and plan				
4. During admissions				
Interns	3.94 (0.94)	—	2.98 (0.86)	<.001
Senior residents	—	4.70 (0.46)	3.64 (0.94)	<.001
5. During rounds				
Interns	4.17 (0.79)	—	3.12 (0.90)	<.001
Senior residents	—	4.68 (0.47)	3.75 (0.89)	<.001
6. When cross-covering				
Interns	3.11 (1.07)	—	2.31 (0.84)	.004
Senior residents	—	3.84 (0.86)	2.87 (0.90)	<.001
Faculty behavior ^b	All residents (n = 62)	Faculty (n = 71)	P value	
7. Give too much direction^c	2.97 (1.19)	3.24 (0.97)	.167	
8. Take resident input seriously	3.69 (0.89)	4.24 (0.77)	<.001	
9. Encourage independent thought	3.71 (0.91)	4.11 (0.93)	.011	
10. Follow residents' plans	2.68 (1.05)	3.45 (0.88)	<.001	
11. Give feedback to residents	2.79 (1.17)	3.64 (0.89)	<.001	

^aData are mean (standard deviation [SD]) of responses on a five-point Likert scale, ranging from "very seldom" = 1 to "very frequently" = 5. P values compare distributions of faculty and resident data. Note that items 1–3 and 4–6 asked faculty for two responses per item—a response regarding interns (postgraduate year 1) and a response regarding senior residents (postgraduate years 2–4). Hence, these 11 items yielded 17 parallel responses.

^bNumbering reflects the order in which behavior items appeared on the resident survey. For additional detail regarding survey items, see Table 1. For complete item wording, see resident and faculty surveys, available as Supplemental Digital Appendixes 1 and 2 at <http://links.lww.com/ACADMED/A237>.

^cThe survey included three items for residents asking whether faculty direction was "too little," "just right," or "too much." Only responses to the "too much" question were included in this analysis, to maintain parallelism with the faculty item: "I give too much direction to housestaff regarding patient care activities."

where intern and senior resident data are combined. (Analysis of separate ratings by/of interns and senior residents provided very similar results and is not shown.)

Qualitative findings

Seven major themes emerged from our initial, open-ended qualitative analysis of resident and faculty written comments: (1) faculty direction of residents, (2) patient care planning and resident learning,

(3) resident confidence and preparedness, (4) faculty expectations of residents, (5) cultural or generational differences, (6) time and scheduling limitations, and (7) trust and support (see Table 3).

This initial analysis of the written responses confirmed our expectation that resident autonomy was a contentious issue in our residency program. We next proceeded to a directed content analysis of the themes and comments in relation to the SDT

constructs of competence, autonomy, and relatedness. Our findings are presented below. (Parenthetical numbers and letters indicate pertinent themes and comments, respectively, from Table 3.)

Faculty reasons for limiting residents' exercise of autonomy. Faculty agreed that residents were no longer given (or had failed to "earn") opportunities to exercise the autonomy that they themselves had enjoyed as housestaff

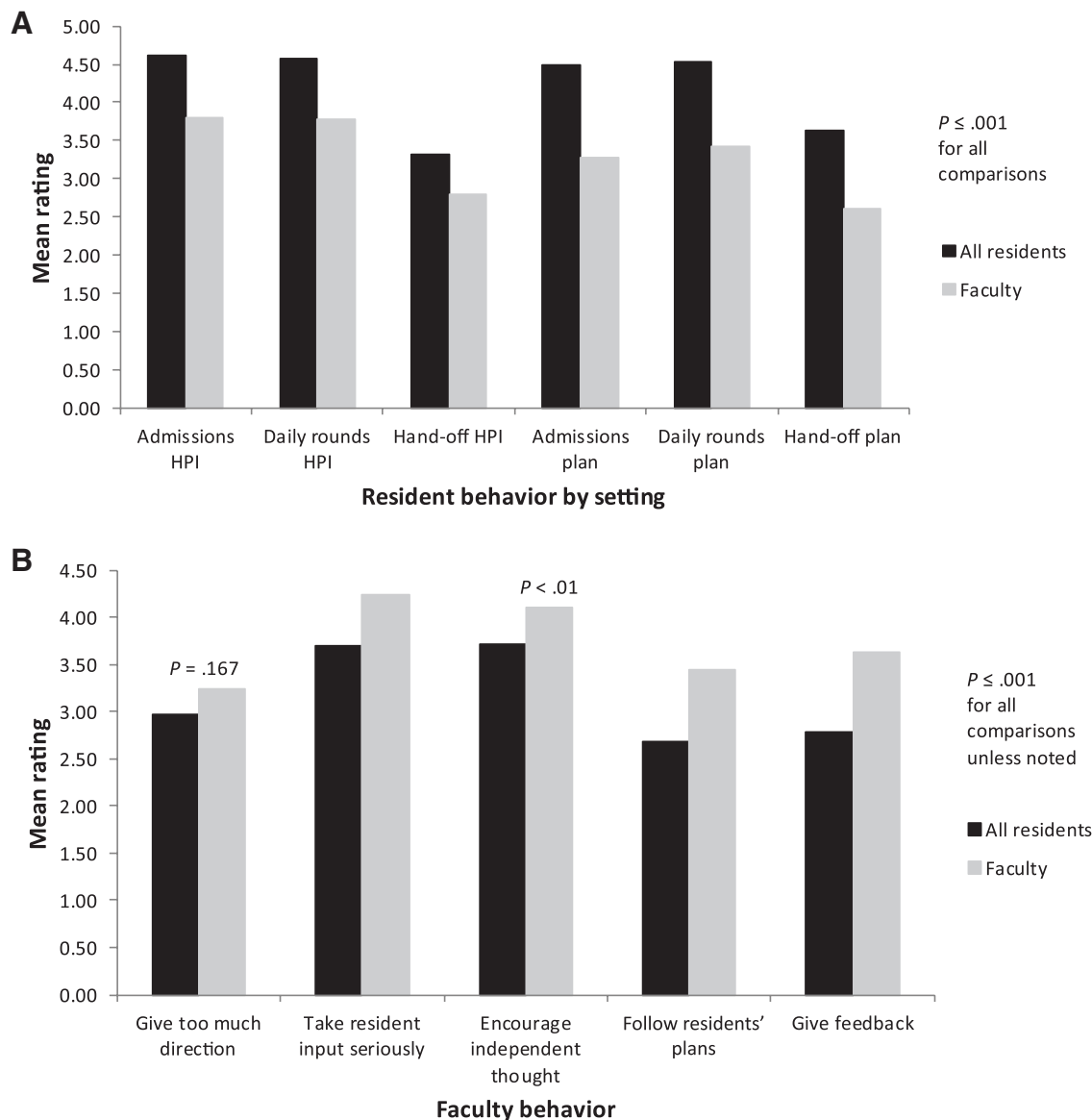


Figure 1 Comparison of resident and faculty perceptions of resident behaviors (panel A) and faculty behaviors (panel B) as rated on 2011 parallel surveys, University of Rochester Medical Center Pediatric Residency Program. Data are mean ratings by group on a Likert scale, where very seldom = 1 and very frequently = 5. *P* values compare all resident responses (interns and senior residents combined, *n* = 62) and faculty responses (*n* = 71) regarding all residents. Resident behaviors (panel A) were rated in three settings: during admissions, during rounds, and when cross-covering. In panel A, “HPI” refers to resident presentations (answering pertinent questions regarding the patient’s history of present illness [HPI], medications, etc.); “plan” refers to presenting a thorough assessment and plan (e.g., patient’s symptoms, differential diagnosis). For descriptions of behaviors and parallel survey items, see Table 1.

(e.g., 5a, 5b). About one-third of faculty comments described worrisome inconsistencies among residents. For example, faculty complained:

I think that the quality of residents is quite variable and between the shifts, the cross-coverage, etc., it is hard to really feel safe giving housestaff “authority.”

Many [residents] are not invested enough and seem to have little desire to be independent and accountable.

[Some] don’t even seem to know what their job as an intern or resident is.

Collectively, faculty reported granting more independence to residents who were confident and took initiative (3d), who were committed to knowing the patient well and being accountable (1c, 2d), and who understood the rationale for their own patient care plans (2c). In SDT terms, faculty wished to see motivation and competence (both demonstrated and self-perceived) in residents in order to feel “safe” allowing residents to make autonomous decisions.

Negative effects of limiting resident autonomy opportunities. Faculty and

residents agreed that, typically, residents were given relative independence in care planning only when the stakes were low. Residents expressed frustration about faculty restrictions on their opportunities to make decisions (2a) and about unexplained changes in their patient care plans. One resident explicitly associated this frustration with a loss of learning opportunities:

[On some critical care services,] residents are not even involved at all in the consults. They are forced to babysit the old patients and consequently miss out on a valuable opportunity to assess sick versus not sick.

Table 3

Themes and Representative Written Comments From Residents and Faculty on Resident Autonomy and Faculty Support of Resident Autonomy, University of Rochester Medical Center Pediatric Residency Program, 2011 Surveys^a

Theme	Representative comments	
	Residents	Faculty
1. Faculty direction of residents	<p>(a) In general, faculty will always default to telling residents what to do.</p> <p>(b) On some ... rotations, attending [faculty] oversight seems a bit excessive, which can cause confusion and issues with communication.</p>	<p>(c) If the housestaff physician [resident] demonstrates eagerness to truly understand the details of a patient, demonstrates active learning (seeking articles, etc.), offers suggestions on diagnosis/management, and can answer my questions in a professional manner, I will give the house officer [resident] a great deal of autonomy.</p> <p>(d) [I] provide more direction if I see] lack of attention to detail, poor organizational skills, overconfidence and being cavalier, poor ability to synthesize information and formulate plans.</p>
2. Patient care planning and resident learning	<p>(a) [O]ftentimes I am just told what the next step should be—not, “what do you think is going on?” or “what would you like to do next?” or “why is this going on?”</p> <p>(b) My plan for a sick kid was very different than the attending’s and I asked their reasoning and they cited a study that clearly illustrated that their plan was more appropriate.</p>	<p>(c) [I may follow a resident’s plans even if I prefer an equivalent alternative plan when] we have discussed rationale and the basis for the decision. It could also happen if the intern/resident comes to me with a well-thought-out plan. It is less likely to happen if they do not know the rationale for a decision.</p> <p>(d) [Specific contributing factors that force faculty to limit resident autonomy:] When someone has not invested the time to learn about the patient and disease process I limit my teaching and [the resident’s] autonomy.</p>
3. Resident confidence and preparedness	<p>(a) The level of direction depends a lot on how well I know the reasonable path of management for a patient.</p> <p>(b) [I]f I confidently present my own plan as I am presenting the patient, I am often allowed to execute my plan.</p>	<p>(c) The motivated ones are always motivated; the unmotivated ones have to be pushed.</p> <p>(d) I find that certain housestaff who are independent thinkers and display a fair amount of autonomy [are] very forthright with their plans. The individuals who are less confident still need a lot of encouraging with their plans, even though they are probably capable without having to pull it out of them.</p>
4. Faculty expectations of residents	<p>(a) [Reading is facilitated by] attendings who will hold you accountable</p> <p>(b) I want to read as much as possible. I just don’t feel like I have enough time. Perhaps it would help if we had more assigned ... [readings].</p>	<p>(c) [O]nce I explain my preferences for presentations ..., the housestaff have been very responsive.</p> <p>(d) At the start of the rotation, I ask them to conclude their morning rounds with their own plan for the day and only after they have completed their presentation will the fellow and I add or change things. This seems to be very difficult for even more senior residents but after several days of practice (along with lots of “silent” time on AM rounds ...) they are really quite capable.</p>
5. Cultural or generational differences	No direct comments on this topic	<p>(a) As a resident, we all knew that it was unacceptable to call a consult or present a patient to the attending on-service without a plan.... We also knew that we must have a specific question when calling a consult.... This is a cultural thing. The residents need to expect it of each other and we need to expect it of them.</p> <p>(b) Because their experience is more limited now than in the past, they have a smaller subspecialty-specific knowledge base from which to generate differential diagnoses, plans, etc.... Their educational priorities have shifted, leaving them less prepared to be autonomous in certain subspecialty settings.</p>
6. Time and scheduling limitations	<p>(a) [Reading about patients is] limited by the amount of time it takes to do logistical work on a busy service ... and the need for some personal time when not at work.</p>	<p>(b) [Factors that limit opportunities for autonomy are] time pressure, inadequate staffing (of both attendings and residents) to allow time to dwell on management nuances, etc.</p> <p>(c) House officers are frequently not present for important decisions on their patients. The frequent absences make it very difficult for them to take control of their patients, since they don’t develop a longitudinal sense of what is happening with them.</p>
7. Trust and support	<p>(a) I have been scolded for changing antibiotics, fluids, etc., even though my changes are evidence based and correct—I just did not ask the attending.</p> <p>(b) I do feel very well supported by the faculty and know that they are there for me if I need them, which is reassuring.</p>	<p>(c) [I]f the resident doesn’t appear to know the basic information about a patient ... and the significance of this information, they do not get the privilege to make medical decisions.</p> <p>(d) The individuals who are less confident still need a lot of encouraging with their plans, even though they are probably capable without having to pull it out of them.</p>

^aSurvey respondents included 68 residents and 71 faculty. Providing written comments was optional, and items inviting comments were not parallel on the resident and faculty questionnaires. For a description of survey items, see Table 1. For complete item wording, see the full surveys, available as Supplemental Digital Appendixes 1 and 2 at <http://links.lww.com/ACADMED/A237>.

Environmental factors related to resident autonomy restrictions. Some faculty attributed their restriction of resident autonomy to environmental barriers. Both faculty and residents noted that a high patient census, fragmented resident time, frequent changes in attending faculty and resident assignments, and the pressure of completing clerical work were impediments to resident autonomy and self-directed learning (6b, 6c). Competing demands on time were identified in more than three-quarters of the resident comments on this topic (6a).

Faculty strategies to support resident autonomy. Some faculty described dealing with resident passivity by setting clear expectations for performance (4c, 4d). One faculty member commented that this method was effective, but also exhausting:

After two weeks of this, there is only so much teeth pulling I feel like doing to have them make a decision/plan.

However, other faculty admitted that they may be too quick to take control of the planning process:

I have definitely had a resident stop me, appropriately, and say, “Do you want to first hear what I want to do?” This was a bit of a wake-up call to me to allow her to provide a plan on her own. [Cf resident comment 2a]

I encourage housestaff to think independently—I tell them that I want to hear their thoughts, and I try hard to stay out of the discussion until they have communicated their thoughts.

Relatedness in the learning community. The few comments that focused explicitly on trust and support were a mix of positive and negative opinions (7a–7d). Faculty and residents often expressed dismay and frustration about differences in “expectations,” “priorities,” or “cultures” between their respective groups. However, some faculty comments implied supportive attitudes toward residents and concern about meeting residents’ learning needs (3d), and a few residents expressed appreciation for faculty support, implying that their autonomy needs were being met (7b). In our educational environment, relatedness appears to be strained for many, but not all, residents and faculty.

Discussion

This study demonstrates significant discordance between faculty and resident perceptions of resident autonomy and of faculty support for resident autonomy within one residency program. Faculty and resident responses to parallel survey items showed strikingly consistent differences. Respondents’ written comments may help explain the underlying factors driving this dissonance and suggest potential strategies for resolution. Our analysis of these comments suggests that support of autonomy, competence, and relatedness—the three constructs of SDT—are closely interrelated in residency training. Strategies that help residents exercise autonomy appropriately are likely to encourage them to develop competence and enhance their relatedness to their team members and supervisors. Hence, our study affirms the relevance and potential importance of SDT in resident education, as has been demonstrated previously in other settings.^{1–4,15–17}

The consistent differences between faculty and resident perceptions of autonomy (Table 2) suggest that a common underlying factor or set of related factors may be driving the observed differences. Here, we will explore three possible underlying drivers: (1) generational differences, (2) inaccurate self-assessment on the part of both faculty and residents, and (3) challenges to self-determination. In the context of challenges to self-determination, we will consider strategies that may help to bridge the divide between residents and faculty.

Generational differences

Our results are generally consistent with findings of studies of generational differences in medical education.^{11,12,23–26} Descriptions of Generation Y (individuals born after 1982¹²) predict some of the attitudes expressed by our residents: For example, our residents indicated that they would like faculty to provide more specific work expectations, more support, better explanations when residents’ treatment plans are changed, and frequent feedback. However, we did not design this study for generational analysis: Although most of the responding residents belong to Generation Y, the faculty are a composite of generations.²⁵

Physician self-assessment

Our results are also consistent with reports that physicians are often inaccurate in their self-assessments.^{27–30} The resident and faculty groups consistently rated themselves higher than the other group did, and some written comments suggested a lack of insight into how their own behaviors could help drive the behaviors of the other group. For example, overdirection by faculty may make residents more passive, whereas resident passivity may stimulate faculty to exert more control. We anticipate that efforts to improve the self-understanding and mutual empathy of both groups, through ongoing discussions of SDT, may enhance their insights into themselves and one another.

Challenges to self-determination

SDT provides a useful lens for interpreting resident and faculty responses to our survey. In written comments, several faculty said they wanted to see evidence of motivation and competence in a resident before trusting him or her to participate autonomously in patient care. Residents, in turn, expressed frustration about faculty withholding trust and limiting opportunities to exercise autonomy and demonstrate competence. Lack of mutual trust is a serious threat to relatedness in a learning community and in patient care teams.

The written comments also suggested strategies emerging from SDT for bridging the divide between residents and faculty. Some residents reported that they had learned to earn decision-making opportunities by giving faculty evidence of their motivation, competence, and confidence. Certain faculty commented that some “passive” residents had more potential for self-direction than was initially evident; these faculty described assiduous efforts to engage residents in active planning by clarifying and reinforcing their expectations. This autonomy-supportive teaching strategy, often called “scaffolding,” has been widely recommended to foster self-directed learning in learners at all levels.^{31,32}

We encourage faculty to scaffold the learning of residents they view as passive—including novices who are appropriately reluctant to take on independent roles—by giving them

decision-making responsibilities in increasingly complex situations after they have proven themselves in less challenging settings. Dijksterhuis et al³³ have analyzed how faculty assess the degree of independence they feel comfortable giving to learners, and these authors argue that faculty need to find ways to move learners beyond their current level of competence without jeopardizing their confidence, relatedness, and capacity for autonomous action. We suggest that faculty who develop empathy with residents and learn to identify their concerns and needs are more likely to achieve this delicate balance.

The dissonance evident in our program could be symptomatic of the stresses other residency programs may experience as faculty face the challenge of evaluating resident achievement of milestones and entrustable professional activities.^{34–36} Success of the Accreditation Council for Graduate Medical Education's Next Accreditation System^{37–39} requires that faculty learn to effectively support and at the same time evaluate residents' progress toward independence.^{33,40–42} The Carnegie Foundation's 2010 call for reform recommends that we “promote relationships with faculty who simultaneously support learners and hold them to high standards” in order to facilitate identity formation in physicians-in-training.¹⁴

Faculty and residents labor together in a highly regulated environment and could potentially create partnerships to help one another cope. According to SDT, arbitrary external controls that conflict with personal value systems would be expected to challenge the autonomy of both groups.²³ Developing new approaches to help both faculty and residents live more autonomous lives, while sharing coping strategies and bonding around common frustrations, may make our learning communities healthier.¹⁴

Strengths and limitations

This study has limitations. First, generalizability may be restricted. The study was conducted within one residency program where frequent discussion of autonomy issues may have elicited differences between residents and faculty that would not be evident elsewhere. Moreover, most respondents represented the discipline of pediatrics.

However, given that generational divides have been reported in medical school and in residencies in other disciplines,^{23–26} we believe that the study of resident–faculty discord in other settings may also be clarified by the insights offered by SDT.

Another important limitation of this study is that our interpretation of survey responses was not formally evaluated for construct validity (as defined by Cook and Beckman²⁰). The brevity of our tool, although necessary to ensure a good response rate, may have increased the risk of construct underrepresentation.⁴³ However, the items we included were developed with careful attention to content and response-process validity, and the tool was pilot tested iteratively to enhance its reliability. All items related to one or more SDT constructs, thus minimizing the threat of construct-irrelevant variance.⁴³ In addition, measures to minimize response bias from social desirability were implemented. The consistent differences in the responses from resident and faculty groups suggest considerable internal consistency, although factor analysis was not feasible. Evaluation of validity by comparison of our findings with those from a “gold standard” assessment was impossible, and evidence from consequences was not relevant.

The consistency between our quantitative and qualitative data helps to cross-validate our findings, but neither source can be considered objective because all responses depended on self-report. The purpose of this study was to compare perceptions of the respondent groups about themselves and each other in relation to resident autonomy, and in studies of attitudes and emotions, self-report data—despite their limitations—are more informative than objective data.⁴⁴ Objective measurement of self-determination factors in our residents is ongoing.

Conclusions

This study identified consistent differences between faculty and resident perceptions of resident autonomy and of faculty support for resident autonomy. Analysis of written comments showed that autonomy, competence, and relatedness interacted in the way faculty directed the clinical activities of residents, thus confirming the relevance of SDT

to resident education in our residency program. Faculty expressed reluctance to support residents' needs for autonomy in patient care if residents failed to demonstrate motivation and competence.

A major concern raised by this study is that when faculty restrict the independence of “passive” residents whose competence they question, these residents may receive fewer opportunities for active learning. Some faculty, however, described success in motivating and activating passive residents by enforcing clear expectations for active participation in patient care decision making. Residents who are reluctant to act autonomously may benefit from more scaffolding in their education, so that they can gradually build the confidence they need to assume a more independent role in patient care.

We propose the following hypothesis for future study: Residents with weak autonomy and limited competence will benefit if faculty give them gradations of independence to scaffold their learning and development. The Next Accreditation System³⁹ will offer concrete tools to facilitate this process. Future research could also address interactions between resident and faculty autonomy in the educational environment—exploring, for example, whether faculty who feel their own autonomy is restricted are more likely to limit independent learning opportunities for residents. Such a study might inform new strategies for enhancing resident learning in an environment bristling with external controls.

Acknowledgments: The authors wish to thank Aaron Blumkin, MS, for assistance with data analysis, and MacKenzi Hillard, MD, for her contributions to the authors' Self-Determined Learning and Improvement Project. Geoffrey Williams provided early guidance in project planning.

Funding/Support: This project was supported by the University of Rochester Medical Center Pediatric Residency Program, and a grant from the Physician Faculty Development in Primary Care Program (HRSA D55-HP23211-01). The project was approved as a model project by the Initiative for Innovation in Pediatric Education.

Other disclosures: The views expressed are those of the authors and do not reflect the official policy of the Department of the Army, the Department of Defense, or the U.S. government. The investigators have adhered to the policies for protection of human subjects as prescribed in 45 CFR 46.

Ethical approval: Ethical approval for this study was granted by the research studies review board of the University of Rochester Medical Center for the study entitled “Longitudinal Curriculum to Enhance the Autonomy of Residents in Self-Evaluation and Self-Improvement,” RSRB00034240, date: 5/26/2011. The study was deemed exempt from federal regulation as Category 1: Educational research conducted in educational settings.

Previous presentations: Portions of this study were presented at the Annual Meeting of the Pediatric Academic Societies, April 28, 2012, Boston, Massachusetts (platform presentation) and at the Association of Pediatric Program Directors Annual Meeting, April 2012, San Antonio, Texas (poster presentation).

Dr. Biondi is assistant professor, Department of Pediatrics, University of Rochester School of Medicine and Dentistry, Rochester, New York.

Dr. Varade is associate professor and residency program director, Department of Pediatrics, University of Rochester School of Medicine and Dentistry, Rochester, New York.

Dr. Garfunkel is associate professor and associate program director, Pediatric Residency Program and Medicine–Pediatric Residency Program, Department of Pediatrics, University of Rochester School of Medicine and Dentistry and Rochester General Hospital, Rochester, New York.

Dr. Lynn is assistant professor, Department of Pediatrics, University of Rochester School of Medicine and Dentistry, Rochester, New York.

Dr. Craig is associate program director, Department of Pediatrics, Madigan Army Medical Center, Tacoma, Washington. At the time of the study, he was a general pediatrics fellow, Department of Pediatrics, University of Rochester Medical Center, Rochester, New York.

Dr. Cellini is attending clinician, Department of Pediatrics, Bronx-Lebanon Hospital Center, and assistant professor, Department of Pediatrics, Albert Einstein College of Medicine, Bronx, New York. At the time of the study, she was a general pediatrics fellow, Department of Pediatrics, University of Rochester Medical Center, Rochester, New York.

Dr. Shone is director, Division of Primary Care Research, Department of Research, American Academy of Pediatrics, Chicago, Illinois. At the time of the study, she was associate professor of pediatrics and clinical nursing, Center for Community Health, University of Rochester Medical Center, Rochester, New York.

Dr. Harris is professor emeritus, Department of Pediatrics, University of Rochester School of Medicine and Dentistry, Rochester, New York.

Dr. Baldwin is professor, Department of Pediatrics, University of Rochester Medical Center, Rochester, New York.

References

- Deci EL, Ryan RM. Self-Determination Theory. <http://www.selfdeterminationtheory.org/theory>. Accessed August 18, 2014.
- Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol*. 2000;55:68–78.
- Ryan RM, Deci EL. Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemp Educ Psychol*. 2000;25:54–67.
- Pink DH. *Drive: The Surprising Truth About What Motivates Us*. New York, NY: Riverhead Books; 2009.
- Williams GC, Deci EL. The importance of supporting autonomy in medical education. *Ann Intern Med*. 1998;129:303–308.
- Ten Cate TJ, Kusurkar RA, Williams GC. How self-determination theory can assist our understanding of the teaching and learning processes in medical education. *AMEE Guide No. 59*. *Med Teach*. 2011;33:961–973.
- Williams GC, Saizow RB, Ryan RM. The importance of self-determination theory for medical education. *Acad Med*. 1999;74:992–995.
- Genn JM. *AMEE Medical Education Guide No. 23 (Part 1): Curriculum, environment, climate, quality and change in medical education—a unifying perspective*. *Med Teach*. 2001;23:337–344.
- Genn JM. *AMEE Medical Education Guide No. 23 (Part 2): Curriculum, environment, climate, quality and change in medical education—a unifying perspective*. *Med Teach*. 2001;23:445–454.
- Cooke M, Irby DM, Sullivan W, Ludmerer KM. American medical education 100 years after the Flexner report. *N Engl J Med*. 2006;355:1339–1344.
- Taylor P, Keeter S. *Millennials: A Portrait of Generation Next*. Washington, DC: Pew Research Center; 2010. <http://www.pewresearch.org/millennials/>. Accessed August 5, 2014.
- Eckleberry-Hunt J, Tucciarone J. The challenges and opportunities of teaching “Generation Y.” *J Grad Med Educ*. 2011;3:458–461.
- Knowles MS, Holton EF, Swanson RA. *The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development*. 7th ed. Oxford, UK: Elsevier Inc.; 2011.
- Irby DM, Cooke M, O’Brien BC. Calls for reform of medical education by the Carnegie Foundation for the Advancement of Teaching: 1910 and 2010. *Acad Med*. 2010;85:220–227.
- Kusurkar RA, Croiset G, Mann KV, Custers E, Ten Cate O. Have motivation theories guided the development and reform of medical education curricula? A review of the literature. *Acad Med*. 2012;87:735–743.
- Kusurkar RA, Ten Cate TJ, van Asperen M, Croiset G. Motivation as an independent and a dependent variable in medical education: A review of the literature. *Med Teach*. 2011;33:e242–e262.
- Kusurkar RA, Croiset G, Ten Cate TJ. Twelve tips to stimulate intrinsic motivation in students through autonomy-supportive classroom teaching derived from self-determination theory. *Med Teach*. 2011;33:978–982.
- Baldwin CD, Shone L, Harris JP, Craig MS, Cellini MM, Varade WS. Development of a novel curriculum to enhance the autonomy and motivation of residents. *Pediatrics*. 2011;128:633–636.
- Engel GL. The need for a new medical model: A challenge for biomedicine. *Science*. 1977;196:129–136.
- Cook DA, Beckman TJ. Current concepts in validity and reliability for psychometric instruments: Theory and application. *Am J Med*. 2006;119:166.e7–166.16.
- Downing SM. Validity: On meaningful interpretation of assessment data. *Med Educ*. 2003;37:830–837.
- Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15:1277–1288.
- Borges NJ, Manuel RS, Elam CL, Jones BJ. Differences in motives between Millennial and Generation X medical students. *Med Educ*. 2010;44:570–576.
- Levinson KL, Barlin JN, Altman K, Satin AJ. Disparity between resident and attending physician perceptions of intraoperative supervision and education. *J Grad Med Educ*. 2010;2:31–36.
- Shangraw RE, Whitten CW. Managing intergenerational differences in academic anesthesiology. *Curr Opin Anaesthesiol*. 2007;20:558–563.
- Schlitzkus LL, Schenarts KD, Schenarts PJ. Is your residency program ready for Generation Y? *J Surg Educ*. 2010;67:108–111.
- Eva KW, Regehr G. Self-assessment in the health professions: A reformulation and research agenda. *Acad Med*. 2005;80(10 suppl):S46–S54.
- Davis DA, Mazmanian PE, Fordis M, Van Harrison R, Thorpe KE, Perrier L. Accuracy of physician self-assessment compared with observed measures of competence: A systematic review. *JAMA*. 2006;296:1094–1102.
- Gordon MJ. A review of the validity and accuracy of self-assessments in health professions training. *Acad Med*. 1991;66:762–769.
- Colthart I, Bagnall G, Evans A, et al. The effectiveness of self-assessment on the identification of learner needs, learner activity, and impact on clinical practice. *BEME guide no. 10*. *Med Teach*. 2008;30:124–145.
- Vygotsky LS. Chapter 6: Interaction between learning and development. In: Cole M, John-Steiner V, Scribner S, Souberman E, eds. *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, Mass: Harvard University Press; 1978.
- Patel VL, Yoskowitz NA, Arocha JE. Towards effective evaluation and reform in medical education: A cognitive and learning sciences perspective. *Adv Health Sci Educ Theory Pract*. 2009;14:791–812.
- Dijksterhuis MG, Voorhuis M, Teunissen PW, et al. Assessment of competence and progressive independence in postgraduate clinical training. *Med Educ*. 2009;43:1156–1165.
- Carraccio C, Burke AE. Beyond competencies and milestones: Adding meaning through context. *J Grad Med Educ*. 2010;2:419–422.
- ten Cate O, Scheele F. Competency-based postgraduate training: Can we bridge the gap between theory and clinical practice? *Acad Med*. 2007;82:542–547.
- ten Cate O, Snell L, Carraccio C. Medical competence: The interplay between individual ability and the health care environment. *Med Teach*. 2010;32:669–675.
- Jones MD Jr, Rosenberg AA, Gilhooly JT, Carraccio CL. Perspective: Competencies, outcomes, and controversy—linking

- professional activities to competencies to improve resident education and practice. *Acad Med.* 2011;86:161–165.
- 38 Giudice E, Carraccio C. Best evidence calling for educational reform: Will we do the right thing? *J Grad Med Educ.* 2011;3:577–579.
- 39 Nasca TJ, Philibert I, Brigham T, Flynn TC. The next GME accreditation system—rationale and benefits. *N Engl J Med.* 2012;366:1051–1056.
- 40 Sterkenburg A, Barach P, Kalkman C, Gielen M, ten Cate O. When do supervising physicians decide to entrust residents with unsupervised tasks? *Acad Med.* 2010;85:1408–1417.
- 41 Vermont JD, Verloop N. Congruence and friction between learning and teaching. *Learn Instr.* 1999;9:257–280.
- 42 Kennedy TJ, Regehr G, Baker GR, Lingard LA. Progressive independence in clinical training: A tradition worth defending? *Acad Med.* 2005;80(10 suppl):S106–S111.
- 43 Downing SM, Haladyna TM. Validity threats: Overcoming interference with proposed interpretations of assessment data. *Med Educ.* 2004;38:327–333.
- 44 Hanson JL, Balmer DF, Giardino AP. Qualitative research methods for medical educators. *Acad Pediatr.* 2011;11:375–386.

Teaching and Learning Moments

The Day Life's Snooze Button Broke

“Much of my work is a glorified form of carpentry,” Dr. Sriram observed drily the first time I assisted him in the operating theater. The Hudson brace he was using to drill burr holes in his patient’s skull resembled a medieval lathe, and spirals of cashew-colored bone seemed to sprout up and grow with every turn. Yet the alarm bells I expected to herald some new clinical insight remained silent and still.

In 2007, I arrived in the city of Hyderabad, by way of Texas, hoping to reinvent myself as a medical student in India, my father’s homeland. My parents and older brother practiced medicine back in the United States, and I suppose I’d fallen prey to “my-family-of-doctors syndrome.” To say I was terribly afflicted would have been an understatement. “My-younger-son-the-doctor-syndrome” was in its latent phase for Mom and Dad, despite the symptoms they still exhibited from my older brother’s virulence.

Sriram was a neurosurgeon. He also happened to be my cousin. During outpatient clinics, his sense of humor and what Sir Arthur Conan Doyle might recognize as “peering benevolence” brought comfort to the frequently impoverished and illiterate patients under his care. His heart belonged to the dispossessed, despite a privileged upbringing. The cultural legacy of a Hyderabad once ruled by kings seemed to nurture in its more fortunate sons a sense of *noblesse oblige*.

As a professor at my medical college, Sriram provided me on numerous occasions with the chance to assist him in the operating theater. Despite this wealth of learning opportunities, from the herniated discs of the elderly to the subdural hematomas one might expect in the world’s largest market for motorcycles, the saccharine notion of a “family of doctors” seemed to drain these patients of color and drain me of even the slightest sense of authenticity.

This inertia of the intellect was shattered on August 25, 2007.

That day, an improvised explosive device detonated at an amusement park in the city, and 11 people lost their lives. Sriram would operate on one of the victims of the attack.

“The boy you’re about to see was seated with his classmates in the park bleachers just as the explosion occurred. He’s only 17 years old,” Sriram said from behind the surgical mask draped across his nose. He directed my attention to a backlit CT film on the wall. “These hyperdense objects are known as *charras*, or ball bearings. Unfortunately, they’re effective as shrapnel.”

Surgical masks emphasize the human eye’s innate capacity for expression. As my cousin cleaned and draped the operative site, he seemed to enter a trance. A deliberate act of savagery had brought this boy here, and the atmosphere of the operating theater was odious for it.

After performing a craniotomy, Sriram removed several indistinct-looking objects from the surgical field with a pair of forceps, placing them in a kidney tray. They clunked with a ringing sound, metal striking metal.

After completing the procedure, he went to speak with the boy’s parents. The father looked to be in his late 50s, with kind eyes and the quiet dignity of an Indian bureaucrat. The boy’s mother stood at his side, her forehead smeared with saffron paste—she’d spent the night praying in the hospital’s small temple. Sriram conveyed a guardedly optimistic prognosis before retiring to his office to write the postoperative notes.

Witnessing a mother and father’s grief aroused a sense of urgency I had never felt before. Sriram’s demonstration of compassion, rather than his surgical acumen, provided my first lesson from the hidden curriculum, one beyond the scope of textbooks and lectures. Reacquainted with medicine’s human dimension, I resolved to never lose sight of it. The alarm bells had rung.

Author’s Note: The author received permission from Dr. Sriram to name him in this essay.

Bharath Guntupalli, MBBS

Dr. Guntupalli recently completed his internship at MedCiti Institute of Medical Sciences, Hyderabad, Telangana, India; e-mail: guntupalli@gmx.com.