The Relationship Between Residents' Perceptions of Residency Program Leadership Team Behaviors and Resident Burnout and Satisfaction

Liselotte N. Dyrbye, MD, MHPE, Andrea N. Leep Hunderfund, MD, MHPE, Richard C. Winters, MD, Susan M. Moeschler, MD, Brianna E. Vaa Stelling, MD, Eric J. Dozois, MD, Daniel V. Satele, and Colin P. West, MD, PhD

Abstract

Purpose

To explore the relationship between residents' perceptions of residency program leadership team behaviors and resident burnout and satisfaction.

Method

In February 2019, the authors surveyed all residents across the 77 graduate medical education training programs at Mayo Clinic's multiple sites. Survey items measured residents' perceptions of program director and associate program director behaviors (using a composite residency program leadership team score), resident burnout, and resident satisfaction with the program and organization. Multivariable logistic regression was performed to evaluate

relationships between these variables at the individual resident (adjusting for age, sex, postgraduate training year, program location, and specialty) and program (including only programs with at least 5 respondents) levels.

Results

Of the 1,146 residents surveyed, 762 (66.5%) responded. At the individual resident level, higher composite leadership team scores were associated with lower emotional exhaustion and depersonalization and higher overall satisfaction with the residency program and organization (all $P < .001$). In adjusted logistic regression models, each 1-point gain in composite leadership team score was associated

with 9% lower odds of burnout, 20% higher odds of program satisfaction, and 19% higher odds of satisfaction with the organization (all $P < .001$). At the residency program level, higher mean composite leadership team scores were associated with a lower rate of burnout ($r = -0.35$, $P = .03$) and higher program and organization satisfaction ($r = 0.67$ and 0.74, respectively, both $P < .001$).

Conclusions

The behaviors of residency program leadership teams influence residents' burnout and satisfaction. Additional studies are needed to determine if leadership training results in improved resident well-being and satisfaction.

Many resident physicians suffer from burnout. Burnout has negative implications for the residents personally, for their professional development, and for the care they provide to patients.[1–4] Burnout is caused by chronic work stress[5]; a high work load, poor learning environment, burdensome electronic health records, medical errors, and poor social support are associated with higher resident burnout.[1,3,6–9] Recognizing this, the Accreditation Council for Graduate Medical Education called for residency training programs to improve the learning environment, promote meaning in work, build social support, reduce

work intensity, train residents and faculty to recognize the symptoms of burnout, and provide access to self-screening tools, among other approaches.[10,11] However, few intervention studies have been conducted to evaluate these efforts,[12,13] and it remains unclear how best to direct efforts to promote resident well-being.

Previous studies suggest that faculty behaviors influence the likelihood of resident burnout,[1,14–19] and residency program leadership teams (i.e., program directors and associate program directors) play a critical role in shaping the experience of residents during training. Studies in physicians, nurses, and other health care workers have found that immediate supervisor behaviors predict employee burnout and job satisfaction.[20–27] Related studies conducted in non–health care professions suggest that leadership behaviors, which encourage individual professional development, provide advice, inspire a positive outlook, and build social support, can reduce work stress.[27] A better understanding of residency program

leadership team behaviors and how they relate to burnout and satisfaction among residents could inform future well-being interventions.

To fill this gap, we conducted a survey of all residents in our organization to examine the relationship between residency program leadership team behaviors and resident burnout and satisfaction. We hypothesized that less favorable leadership team behaviors would be associated with burnout and decreased satisfaction at both the individual resident and residency program levels.

Method

Study design and participants

In February 2019, we conducted a cross-sectional survey of all 1,146 residents in the 77 Mayo Clinic graduate medical education training programs in Rochester, Minnesota; Scottsdale and Phoenix, Arizona; Jacksonville, Florida; and the Mayo Clinic Health System, which includes community-based

hospitals and health care facilities in the Midwest. The Mayo Clinic institutional review board approved this study.

Survey instrument

The survey measured residents' perceptions of the leadership qualities of the residency program leadership team, professional burnout, and satisfaction with the residency program and organization.

Residency program leadership team behaviors. Items assessing residents' perceptions of the residency program leadership team's behaviors were derived from the Mayo Clinic Leadership Survey[20] and included 10 items representing actionable leadership behaviors, such as holding career development conversations with residents, treating residents with respect, and encouraging residents to suggest ideas for improvements. For the first 9 items, we asked residents to indicate their level of agreement using a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). The 10th item asked residents to indicate their overall level of satisfaction with the residency program leadership team, also using a 5-point Likert scale (1 = very dissatisfied; 5 = very satisfied). We considered ratings to be favorable if residents chose "strongly agree," "agree," "very satisfied," or "satisfied."

Burnout. We assessed burnout using 2 single-item measures from the proprietary Maslach Burnout Inventory (MBI): "I feel burned out from my work" and "I've become more callous toward people since I started this job."[28] Response options for each item ranged from "never" to "every day" on a 7-point scale. Studies of more than 10,000 physicians and medical students have provided validity data for these measures, which have been demonstrated to stratify the risk of burnout.[29,30] When compared with the emotional exhaustion and depersonalization domains from the 22-item MBI, the area under the receiver operating characteristic curve for the "I feel burned out from my work" item was 0.94 and for the "I've become more callous toward people since I started this job" item was 0.93. The positive likelihood ratios were 14.9 and 23.4, respectively. Reporting burnout symptoms at least weekly on either single-item measure (i.e., having

a high score) strongly relates to patient care and physician well-being outcomes with magnitudes of association similar to when overall burnout is measured by the 22-item MBI.[29,30] Therefore, we considered residents who reported a frequency of once or more per week on either item to have symptoms of burnout, consistent with prior approaches.[29–32]

Satisfaction with the residency program and organization. We assessed satisfaction with the residency program using the item: "Overall, how satisfied are you with your residency program at Mayo Clinic?" which had a 5-point Likert scale (1 = strongly dissatisfied; 5 = very satisfied). Similarly, residents were asked to rate their satisfaction with Mayo Clinic as a whole, using a 5-point Likert scale (1 = strongly dissatisfied; 5 = very satisfied).[20] We considered those who responded "very satisfied" or "satisfied" to be satisfied with the residency program and organization.

Data collection

We emailed residents in February 2019 inviting them to participate in the study. The email included a link to the online survey (Qualtrics, Provo, Utah). Residents who did not respond after 3 reminder emails received a paper-based survey. Participation was optional and anonymous.

Data analysis

We calculated response rates using the American Association for Public Opinion Research RR2 response rate definition[33] and reported basic summary statistics. Survey responses were analyzed at both the individual resident and training program levels. At the individual resident level, we used chi-square tests to compare burnout and satisfaction rates between residents with favorable versus not favorable responses to the residency program leadership team behaviors survey items. Next, we summed scores across these 10 items to create a composite leadership team score, consistent with previous methodology.[20] Potential scores on this scale ranged from 10 to 50, with higher scores representing more favorable leadership behaviors. The raw Cronbach alpha of this scale was 0.94, indicating good internal consistency reliability. We then used Kruskal–Wallis and 2-tailed bivariate Spearman correlations to examine relationships

between scores on the composite residency program leadership team scale and resident burnout and satisfaction. Multivariable logistic regression was conducted to determine the relationship between composite leadership team score and burnout and satisfaction, adjusting for age, sex, postgraduate training year, program location, and specialty.

To examine survey responses at the residency program level, we averaged the composite leadership team scores for each residency program leadership team, limiting the analysis to programs with at least 5 resident respondents to protect anonymity. We then used Spearman correlation coefficients to explore the relationship between mean composite residency program leadership team score and the prevalence of burnout and satisfaction among residents in each program. Sensitivity analyses were performed using mixed effect multivariable logistic regression models to assess the impact of the correlation within each residency program on burnout and satisfaction with the residency program and organization. All analyses were performed using SAS version 9.4 (SAS Institute; Cary, North Carolina), and a 2-sided P value of .05 was considered statistically significant.

Results

Of the 1,146 residents who received a survey, 762 (66.5%) responded. Among respondents, the mean (standard deviation [SD]) age was 30.1 (3.4) years old, 58.0% (442/762) were male, most were in the first (25.3%, 193/762), second (27.3%, 208/762), or third (26.4%, 201/762) year of postgraduate training, with fewer in the fourth (12.6%, 96/762), fifth (7.6%, 58/762), or later (0.8%, 6/762) years. Of respondents, 71.3% (543/762) were located in Rochester, Minnesota, with 12.6% (96/762), 14.0% (107/762), and 2.1% (16/762) in Scottsdale/Phoenix, Arizona; Jacksonville, Florida; and the Mayo Clinic Health System, respectively. Specialty training areas represented among respondents included family medicine, internal medicine, and pediatrics (33.2%, 253/762), other direct patient care specialties (e.g., dermatology: 18.5%, 141/762), general surgery (9.8%, 75/762), other surgical specialties (e.g., orthopedics: 20.1%, 153/762), anesthesia (7.6%, 58/762), and

Table 1

Residents' (n = 762) Prevalence of Burnout and Ratings of Their Residency Program Leadership Team's Behaviors, 2019

Leadership item	% of residents reporting burnout		
	Rated leadership item favorably[a]	Did not rate leadership item favorably	P value
My residency program leadership team …			
holds career development conversations with me.	28.2	40.2	< .01
empowers me to do my job.	28.1	51.0	< .001
encourages me to suggest ideas for improvement.	26.0	55.1	< .001
treats me with respect and dignity.	28.3	60.6	< .001
provides helpful feedback and coaching on my performance.	28.0	48.3	< .001
recognizes me for a job well done.	26.6	49.3	< .001
keeps me informed about changes taking place at Mayo Clinic.	24.4	50.0	< .001
encourages me to develop my talents and skills.	28.8	54.3	< .001
responds appropriately to issues or concerns that are raised.	26.6	55.9	< .001
Overall satisfaction with residency program leadership team	26.9	64.7	< .001

[a]For each item, respondents rated their residency program leadership team (program director and associate program director) favorably if they chose "strongly agree," "agree," "very satisfied," or "satisfied" in response to the survey item.

other nondirect patient care specialties (e.g., radiology: 10.8%, 82/762; see Supplemental Digital Appendix 1 at http://links.lww.com/ACADMED/A982 for details). Survey respondents were slightly younger than nonrespondents (median of 29 years old versus 30 years, $P = .001$). Otherwise, there were no statistically significant differences based on sex, postgraduate training year, or program location between respondents and nonrespondents (see Supplemental Digital Appendix 1 at http://links.lww.com/ACADMED/A982).

Among respondents, 26.3% (199/756) had high emotional exhaustion, 20.2% (153/756) had high depersonalization, and 31.2% (236/756) had overall burnout. The majority were satisfied (34.4%, 261/759) or very satisfied (57.2%, 434/759) with the residency program. Similarly, most were satisfied (37.8%, 281/743) or very satisfied (51.1%, 380/743) with the organization.

The prevalence of burnout was higher among respondents who did not rate their residency program leadership team favorably on each leadership dimension (see Table 1). The prevalences of satisfaction with the residency program and organization were higher among respondents who rated their residency program leadership team favorably on each leadership dimension (see Table 2).

Higher mean composite leadership team scores were reported by respondents who did not have burnout (mean [SD], 43.9 [6.22]) in comparison to those who had burnout (38.9 [8.20], $P < .0001$).

Table 2

Residents' (n = 762) Prevalence of Satisfaction with the Residency Program and Organization and Ratings of Their Residency Program Leadership Team's Behaviors, 2019

Leadership item	% of residents satisfied with residency program			% of residents satisfied with organization		
	Rated leadership item favorably[a]	Did not rate leadership item favorably	P value	Rated leadership item favorably[a]	Did not rate leadership item favorably	P value
My residency program leadership team …						
holds career development conversations with me.	95.1	80.6	< .001	93.2	75.8	< .001
empowers me to do my job.	96.3	62.3	< .001	94.2	56.7	< .001
encourages me to suggest ideas for improvement.	96.4	69.3	< .001	94.5	64.0	< .001
treats me with respect and dignity.	94.6	59.7	< .001	92.9	48.5	< .001
provides helpful feedback and coaching on my performance.	95.8	68.6	< .001	93.8	63.2	< .001
recognizes me for a job well done.	96.4	71.8	< .001	94.3	67.8	< .001
keeps me informed about changes taking place at Mayo Clinic.	96.0	79.2	< .001	94.8	72.7	< .001
encourages me to develop my talents and skills.	95.3	54.9	< .001	92.8	52.1	< .001
responds appropriately to issues or concerns that are raised.	96.7	63.9	< .001	94.2	61.3	< .001
Overall satisfaction with residency program leadership team	96.9	50.0	< .001	94.7	44.7	< .001

[a]For each item, respondents rated their residency program leadership team (program director and associate program director) favorably if they chose "strongly agree," "agree," "very satisfied," or "satisfied" in response to the survey item.

Similarly, higher mean composite leadership team scores were reported by respondents who did not have high emotional exhaustion (43.6 [6.47]) relative to those with high emotional exhaustion (38.9 [8.27], *P* < .0001) and by respondents who did not have high depersonalization (43.6 [6.36]) relative to those who did (37.6 [8.66], *P* < .0001). Higher composite leadership team scores were also associated with lower emotional exhaustion (r = −0.35, *P* < .0001) and depersonalization (r = −0.38, *P* < .0001) (see Figure 1). Higher composite leadership team scores were associated with higher satisfaction with the residency program (r = 0.56, *P* < .0001) and organization (r = 0.59, *P* < .0001). These relationships persisted after adjusting for age, sex, postgraduate training year, program location, and specialty (see Table 3). For each 1-point increase in the composite leadership team score, the odds of burnout decreased

by 9% (odds ratio [OR] 0.91, 95% confidence interval [CI] 0.88–0.93; *P* < .001), the odds of residency program satisfaction increased by 20% (OR 1.20, 95% CI 1.15–1.26; *P* < .001), and the odds of organization satisfaction increased by 19% (OR 1.19, 95% CI 1.14–1.24; *P* < .001).

Of the 58 total residency training programs represented in our survey, 39 (67%) had at least 5 resident respondents. Analyzing our data at the program level (using data from only these 39 programs) revealed statistically significant correlations between the mean composite leadership team score and rates of burnout and satisfaction among the residents (see Figure 2). Specifically, as mean composite leadership team scores increased, the rate of burnout among residents decreased (r = −0.35, *P* = .03) and the rates of program and organization satisfaction increased (r = 0.67 and 0.74,

both *P* < .001). The mean composite leadership team score remained a significant predictor of burnout, residency program satisfaction, and organization satisfaction in the mixed effect model sensitivity analyses (*P* < .001 for all 3 models; data not shown).

Discussion

The findings from our large survey of residents across multiple training programs and sites demonstrate that program director and associate program director behaviors, as reported by residents, are strongly associated with resident burnout, training program satisfaction, and organization satisfaction, even after adjusting for age, sex, postgraduate training year, program location, and specialty.

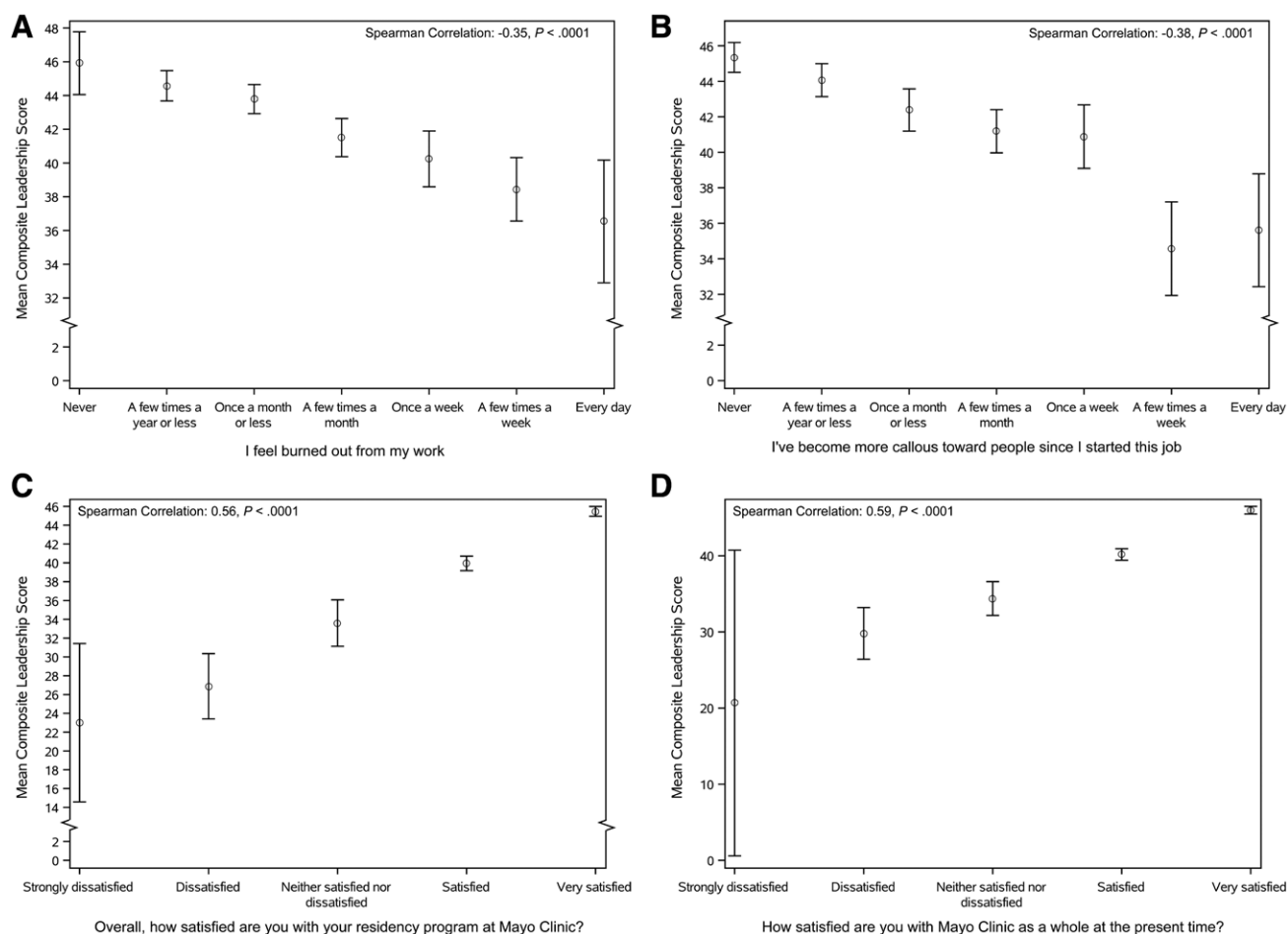In this cohort of residents, each 1-point gain in composite leadership team score

Figure 1 Relationship between mean composite leadership team score and residents' emotional exhaustion (panel A), depersonalization (panel B), overall satisfaction with the residency program (panel C), and overall satisfaction with the organization (panel D), from a study of the relationship between residents' perceptions of residency program leadership team behaviors and their burnout and satisfaction, 2019. Error bars indicate 95% confidence intervals.

was associated with 9% lower odds of burnout, 19% higher odds of satisfaction with the organization, and 20% higher odds of satisfaction with the residency program. These findings are of greater magnitude than those from previous research on practicing physicians, which reported that each 1-point gain in physicians' ratings of their supervisors across similar dimensions was associated with 3.3% lower odds of burnout and 9% higher odds of satisfaction with the organization.[20] Further illustrating the magnitude of our results, the noted association between a 1-point gain in composite leadership team score and the odds of burnout translates to 38% lower odds of burnout for the 5-point difference in composite leadership team scores we observed between residents with and without burnout. At the work-unit level, the correlations between composite leadership team scores and rates of burnout and satisfaction with the organization were similar for our study (r = −0.35 and r = 0.74, respectively) and the previous study of physicians (r = −0.33 and r = 0.68, respectively).[20] The direction of the effect, magnitude, and statistical significance of the findings in both studies collectively point to the potential influence of leaders' skills on the professional well-being and satisfaction of those they supervise.

Although additional longitudinal research is needed, our findings suggest that organizations may benefit from evaluating and strengthening the leadership behaviors of program directors and associate program directors. Leadership development programs are widely available,[34–36] but further investigation is required to understand which curricular elements best promote the leadership behaviors that effectively develop, support, empower, and recognize residents. Respectful behaviors and behaviors that address residents' concerns, solicit their input, and nurture their development may be the most impactful to target if trying to reduce burnout.

The strengths of our study include the relatively high response rate, use of a validated instrument to measure burnout, and inclusion of a large sample of residents from multiple specialties and training settings. Our study also has limitations. First, we included only residents from one organization.

Table 3

Results of a Multivariable Logistic Regression of Factors Associated With Residents' Burnout, Satisfaction With the Residency Program, and Satisfaction With the Organization, 2019

Variable	Odds ratio (95% CI)	P value
Burnout		
Composite leadership team score (for each additional point)	0.91 (0.88–0.93)	< .001
Gender (male vs female/other)	0.70 (0.49–0.99)	.05
Age (for each year older)	0.97 (0.91–1.03)	.30
Specialty training program[a]		.04[b]
Anesthesiology	1.32 (0.65–2.66)	.44
Family medicine, internal medicine, pediatrics and adolescent medicine	Ref.	Ref.
General surgery	1.21 (0.65–2.25)	.55
Other surgical specialties	0.69 (0.40–1.19)	.18
Other direct patient care specialties	1.15 (0.68–1.94)	.62
Other nondirect patient care specialties	0.43 (0.21–0.90)	.03
Site		.36[b]
Rochester, Minnesota	Ref.	Ref.
Scottsdale/Phoenix, Arizona	1.09 (0.64–1.86)	.76
Jacksonville, Florida	1.56 (0.95–2.55)	.08
Mayo Clinic Health System	0.93 (0.27–3.16)	.90
Postgraduate training year (for each additional year)	1.12 (0.95–1.32)	.18
Satisfaction with the residency program		
Composite leadership team score (for each additional point)	1.20 (1.15–1.26)	< .001
Gender (male vs female/other)	1.85 (0.93–3.69)	.08
Age (for each year older)	0.95 (0.86–1.06)	.39
Specialty training program[a]		.07[b]
Anesthesiology	0.19 (0.05–0.75)	.02
Family medicine, internal medicine, pediatrics and adolescent medicine	Ref.	Ref.
General surgery	0.47 (0.13–1.69)	.24
Other surgical specialties	0.67 (0.19–2.39)	.54
Other direct patient care specialties	0.24 (0.07–0.80)	.02
Other nondirect patient care specialties	0.56 (0.12–2.66)	.47
Site		.08[b]
Rochester, Minnesota	Ref	Ref
Scottsdale/Phoenix, Arizona	0.32 (0.14–0.76)	.01
Jacksonville, Florida	0.68 (0.25–1.87)	.45
Mayo Clinic Health System[c]	—	—
Postgraduate training year (for each additional year)	1.06 (0.78–1.44)	.71
Satisfaction with the organization		
Composite leadership team score (for each additional point)	1.19 (1.14–1.24)	< .001
Gender (male vs female/other)	1.36 (0.73–2.52)	.34
Age (for each year older)	0.90 (0.82–0.99)	.02
Specialty training program[a]		.005[b]
Anesthesiology	0.18 (0.05–0.64)	.01
Family medicine, internal medicine, pediatrics and adolescent medicine	Ref.	Ref.
General surgery	0.23 (0.07–0.74)	.01
Other surgical specialties	0.54 (0.17–1.75)	.30
Other direct patient care specialties	0.21 (0.07–0.66)	.01
Other nondirect patient care specialties	1.23 (0.24–6.21)	.80

(Table continues)

Table 3

(Continued)

Variable	Odds ratio (95% CI)	P value
Site		.91[b]
Rochester, Minnesota	Ref.	Ref.
Scottsdale/Phoenix, Arizona	0.74 (0.32–1.69)	.47
Jacksonville, Florida	1.03 (0.40–2.62)	.96
Mayo Clinic Health System[c]	—	—
Postgraduate training year (for each additional year)	0.91 (0.70–1.19)	.48

[a]Other surgical specialties include neurologic surgery, obstetrics and gynecology, ophthalmology, orthopedics, otolaryngology, peripheral nerve surgery, plastics, thoracic, vascular, oral and maxillofacial, orthodontics, surgical critical care, and urology. Other direct patient care specialties include dermatology, emergency medicine, child and adolescent neurology, neurology, physical medicine and rehabilitation, psychiatry, radiation oncology, and transitional year. Other nondirect patient care specialties include diagnostic radiology, interventional radiology-integrated, and pathology.
[b]Overall P value for the category.
[c]Unable to determine due to no residents reporting dissatisfaction.

However, Mayo Clinic has one of the largest cohorts of residents in the United States, and our study included residents training in multiple specialties and in academic and community-based settings across multiple states. Second, cross-sectional studies cannot establish cause and effect relationships, and the associations we identified should thus be interpreted with caution. It is possible that dissatisfied or burned out residents were more likely to rate their leaders less favorably. However, the larger effect size of composite leadership team scores in relation to satisfaction compared with the effect size in relation to burnout indicates that burned out residents rating their leaders less favorably was likely not the primary reason for these findings. Longitudinal studies are needed to further investigate the direction of this relationship and, importantly, if leadership training or leadership changes influence these results.

In conclusion, program director and associate program director behaviors, as reported by residents, are strongly associated with resident burnout, training program satisfaction, and organization satisfaction at both the individual resident and program levels. Additional longitudinal studies are needed to determine if residency
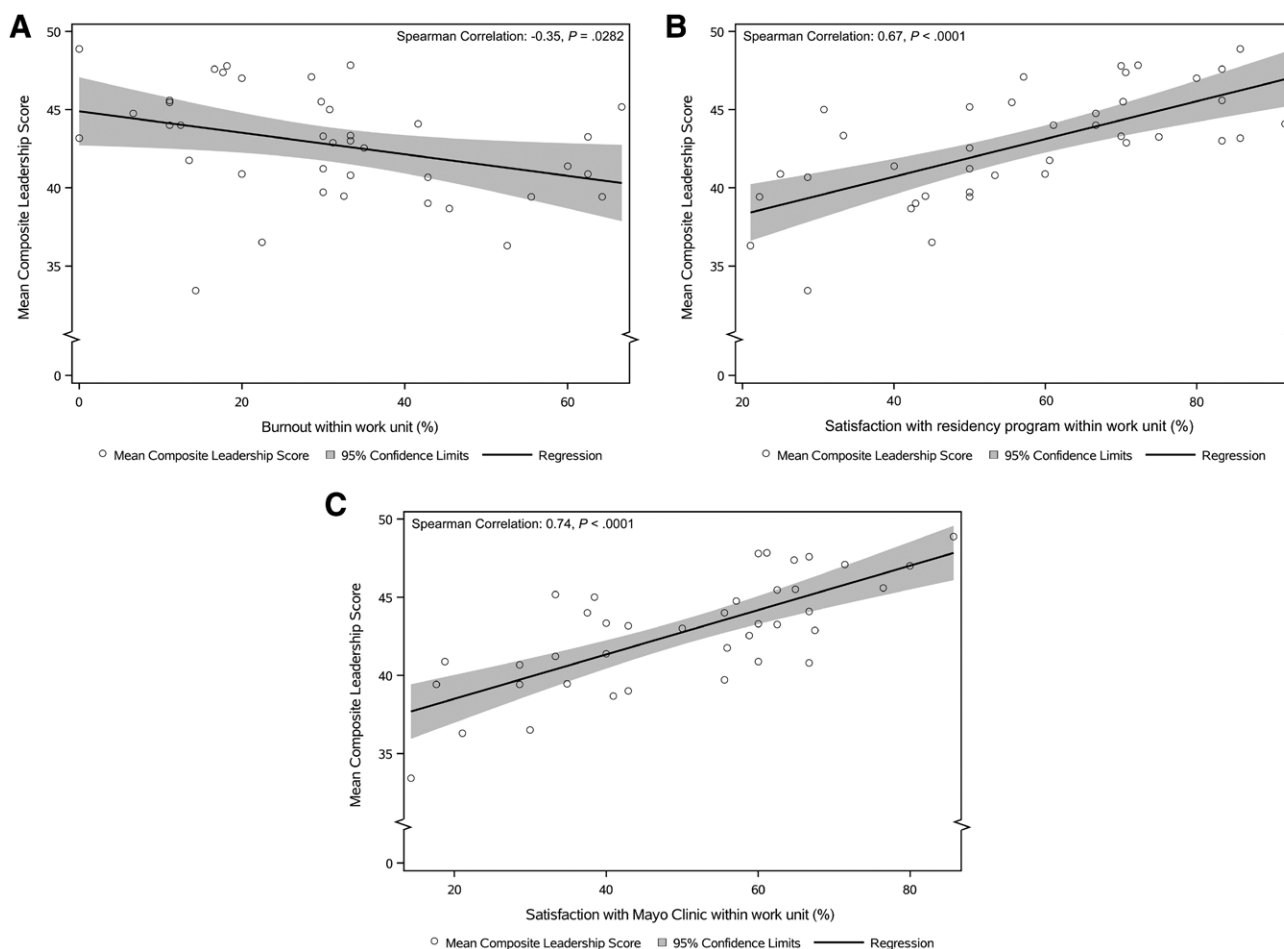

Figure 2 Mean composite leadership team score and program-level rate of resident burnout (panel A), rate of resident satisfaction with the training program (panel B), and rate of resident satisfaction with the organization (panel C), from a study of the relationship between residents' perceptions of residency program leadership team behaviors and their burnout and satisfaction, 2019. Each dot represents a given residency program.

leadership team behaviors predict future resident well-being and satisfaction and if leadership training for program directors and associate program directors ultimately improves the training experience and work lives of residents.

L.N. Dyrbye is professor of medicine and medical education, and co-director, Mayo Clinic Program on Physician Well-Being, Mayo Clinic, Rochester, Minnesota.

A.N. Leep Hunderfund is assistant professor of neurology, Mayo Clinic, and director for learning environment and educational culture, Mayo Clinic Alix School of Medicine, Rochester, Minnesota.

R.C. Winters is assistant professor of emergency medicine and medical director of professional leadership development, Mayo Clinic Care Network, Mayo Clinic, Rochester, Minnesota.

S.M. Moeschler is associate professor of anesthesiology, Mayo Clinic, Rochester, Minnesota.

B.E. Vaa Stelling is assistant professor of medicine, Mayo Clinic, Rochester, Minnesota.

E.J. Dozois is professor of surgery, Mayo Clinic, Rochester, Minnesota.

D.V. Satele is statistician, Department of Health Sciences Research, Mayo Clinic, Rochester, Minnesota.

C.P. West is professor of medicine, medical education, and biostatistics, and co-director, Mayo Clinic Program on Physician Well-Being, Mayo Clinic, Rochester, Minnesota.

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