



Characterization of Student and Faculty Perspectives of Mentorship During the Clerkship Year of Medical School: A Mixed-Methods Approach

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Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School

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Scholarly Report Title: Characterization Of Student And Faculty Perspectives Of Mentorship During The Clerkship Year Of Medical School: A Mixed-Methods Approach

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Abstract:

TITLE: Characterization of student and faculty perspectives of mentorship during the clerkship year of medical school: a mixed-methods approach.

AUTHORS: Achyut Patil and Grace Huang

PURPOSE: Mentorship is integral to academic medicine but the dynamics of the mentor-mentee relationships have not been not well-studied. We evaluated an existing structured mentorship program to identify aspects of positive and negative mentorship relationships.

METHODS: From 2010-2013, we performed a mixed methods study of mentor-mentee dyads within a mentorship program situated with the PCE at BIDMC. We analyzed quantitative data including Likert-type ratings of the relationship with chi-squared testing, multivariable linear regression, and other quantitative methods. Free text responses were analyzed qualitatively with a grounded theory approach.

RESULTS: Student and mentor “burden-benefit” scores were generally positive, indicating that both students and mentors viewed the relationship as a benefit. However, there was no correlation between a positive student and positive mentor burden-benefit score (chi-square = 1.45, $p = 0.23$). With a one-unit increase in frequency of meeting, the odds ratio for the student burden-benefit ratio to be positive increases 2.62-fold ($p = 0.00$), but this had no effect on the mentor burden-benefit ratio. Students considering the mentor to be an academic advisor ($p = 0.00$), personal counselor ($p = 0.01$), or role model ($p < 0.001$) was associated with a positive student perspective on the relationship. Students seeing the mentor as an evaluator was associated with a positive mentor perspective ($p = 0.01$), while seeing the mentor as a teacher ($p = 0.04$) or advocate ($p = 0.03$) was associated with a negative perspective from the mentor. Common professional interest ($p < 0.001$) was associated with a positive student perspective, but had no impact on the mentor. Multiple themes emerged, delineating availability, receptivity, and authenticity as important components of a strong mentorship relationship.

CONCLUSION: Student and mentor experiences do not completely align in a structured mentorship program. When mentors were felt to fulfill the specific roles of academic advisor or personal counselor, or if they role-modeled behavior or had common interests, student mentees found more value in the relationship. Strong mentorship relationships required availability from each party, receptivity to participation, and authenticity of the interactions. These insights can be used to help guide design and best practices in future medical student mentorship programs.

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Glossary of Abbreviations:

BIDMC: Beth Israel Deaconess Medical Center, Boston, MA

LCME: Liaison Committee on Medical Education, referring to the accrediting body for American undergraduate medical education at medical schools

PCE: Principal Clinical Year, referring to the clinical clerkship year for MD students at Harvard Medical School

SECTION ONE

Introduction:

Mentorship forms an integral component of the structure of academic medicine, allowing for mentors to impart advice and support and mentees to draw on collective wisdom in their future careers, in a relationship that is mutually fulfilling. Such relationships are of heightened importance during the principal clinical year of medical school, during which medical students are typically offered an intense and daunting experience that is unlike the classroom experiences with which they are familiar. Given these unique challenges, students are in need of mentorship, especially during the clinical year.

Systematic reviews of the effect of mentorship on career trajectory and scholarly productivity has shown that though disparities exist between demographics with regard to finding good mentors, mentorship has a significant impact on medical students, residents, and junior faculty in terms of guiding future careers and improving volume of scholarly work.¹ Benefits also exist for senior faculty mentors: the satisfaction of helping students, as well as the resulting sense of community and commitment to a role as teacher, have all been demonstrated in prior literature.²

However, these benefits are not evenly distributed. Women and minorities have been shown to often lack the same opportunity for mentorship, with studies noting that white males form a predominant proportion of American medical faculty and mentors.³ Given these benefits, multiple medical schools have implemented mentorship programs as part of the curriculum, in order to formalize such relationships and ensure broader benefit for the student body. However, these programs vary immensely with regard to their structure, purpose, function, and outcomes.⁴

Nevertheless, while the benefits of mentorship in academic medicine are well-studied at the level of junior faculty as mentees, these are not well-characterized at the medical student level.⁵

¹ Sambunjak D, Straus SE, Marušić A. Mentoring in Academic Medicine: A Systematic Review. *JAMA*. 2006;296(9):1103–1115. doi:10.1001/jama.296.9.1103

² Stenfors-Hayes T, Kale' n S, Hult H, Dahlgren LO, Hindbeck H, Ponzer S. Being a mentor for undergraduate medical students enhances personal and professional development. *Med Teach* 2010; 32: 14853.

³ Sambunjak et al, 2006.

⁴ Fornari A, Murray TS, Menzin AW, Woo VA, Clifton M, Lombardi M, Shelov S. Mentoring program design and implementation in new medical schools. *Med Educ Online*. 2014 Jun 23;19:24570. doi: 10.3402/meo.v19.24570..

⁵ Carapinha, René PhD, MA(SW); Ortiz-Walters, Rowena PhD; McCracken, Caitlin M. MA; Hill, Emorcia V. PhD; Reede, Joan Y. MD, MPH, MS, MBA. Variability in Women Faculty's Preferences Regarding Mentor Similarity: A Multi-Institution Study in Academic Medicine. *Academic Medicine*: August 2016 - Volume 91 - Issue 8 - p 1108–1118

Mentorship programs are common at the level of undergraduate medical education, with the LCME noting that 140 medical schools in 2013-2014 organized students into mentorship groups, with 82 schools having students organized in these groups in the third year (the traditional primary clinical year).⁶

Furthermore, the characteristics of a strong mentor-mentee relationship at the faculty-medical student level have not been well-characterized. Limited data from a 2016 study of mentorship of junior faculty implicate commonality of department and institution as an important preference for mentees.⁷ Another 2005 study of informal mentorship of medical students noted that mentors found their time investment meaningful and identified a number of qualities for both mentors and mentees that improved the relationship, such as availability and flexibility. However, this study concedes that the relationships formed in formal mentorship programs are “qualitatively different” from informal relationships studied. Thus, there remains a paucity of insight on the characteristics of a successful and meaningful formal mentorship relationship at the undergraduate medical education level.⁸

Understanding the effectiveness of one such formalized program implemented specifically for the clinical year of medical school (traditionally regarded as a time of significant change for medical students as it represents a stark transition from classroom learning to hospital work) would be effective in not only guiding future changes for a particular program, but to understand which aspects of a formalized medical student – faculty mentorship program allow it to be fulfilling for both mentee and mentor.

Therefore, the purpose of our mixed-methods study was to examine data from mentor-mentee pairs to characterize the aspects of the mentor-mentee relationship that were associated with greater satisfaction from each party, and to establish concordance or discordance of these factors between mentors and mentees.

⁶ LCME. LCME Annual Medical School Questionnaire Part II, 2012-2013 through 2013-2014. Published 2014. Accessed 2/10/2018. <https://www.aamc.org/initiatives/cir/454136/19b.html>

⁷ Carapinha, et al.

⁸ Rose, Gail L. PhD; Rukstalis, Margaret R. MD; Schuckit, Marc A. MD. Informal Mentoring Between Faculty and Medical Students. *Academic Medicine*: April 2005 - Volume 80 - Issue 4 - p 344-348

SECTION TWO

Student Role:

Within this project, the role of the student (AP) occurred after the acquisition of quantitative and qualitative data. In particular, AP spent time reading through background medical education literature. This included studies focused on the role of mentorship at the graduate and undergraduate medical education level. It also included other medical education studies focused on other metrics, utilizing qualitative, quantitative, and mixed methods, in order to understand the optimal methods for analyzing the quantitative and qualitative survey and feedback data that had been generated for this project.

The student then utilized this perspective to learn the Stata statistical analysis software in order to perform quantitative testing. Further role included generation of a Masterfile of aggregated data, transforming variables to analyzable forms, and then performing the full battery of quantitative analysis for the project. After this, AP also led the qualitative analysis, performing coding of survey free text excerpts using a grounded-theory approach, eventually classifying these codes into families and themes in an iterative, constant-comparative approach with the mentor (GH).

After data analysis, the student and mentor worked equally in conceptualizing manuscript framework. The student (AP) was primarily involved in drafting of the SIM scholarly report. Overall, the student had a primary or equal role with the mentor within the quantitative and qualitative data analysis, conclusions, and further discussion and writing.

SECTION THREE

Methods:

Study setting

Student participants in the study consisted of third-year medical students at Harvard Medical School based at BIDMC for their longitudinal integrated clerkship, termed the Principal Clinical Experience (PCE), during the 2009-2010, 2010-2011, and 2012-2013 academic years. (The study was temporarily halted for the academic year 2011-2012 due to loss of administrative support to conduct surveys; this year was qualitatively no different from the other years in terms of the

structure of the advising program.) Students were assigned to a clinical year site based on a weighted lottery and could express preference for BIDMC.

All students in the PCE at BIDMC were randomly assigned at the beginning of the academic year to a faculty mentor. Faculty mentors were established clinician-educators at BIDMC with experience teaching medical students and had volunteered for these roles. The expectation communicated to both faculty and students was that they would meet together one-on-one every 6-8 weeks throughout the 12-month PCE year. Mentors would have access to the student's evaluations, but were in a non-evaluative role themselves. Faculty mentors were paid a small stipend to mentor 7-9 medical students per year. All faculty mentors and all medical students agreed to participate in the study. There were no inclusion or exclusion criteria for participants other than not completing the survey.

Data Collection

In an iterative, collaborative fashion, we developed a survey instrument for students. We collected data about the frequency of their meetings with mentors and then asked students to rate the level of similarity with their mentors (demographic background, professional interest, extracurricular activities) and to rate the degree to which mentors served in a variety of different functions (career coach, academic advisor, project advisor, personal counselor, teacher, evaluator, role model, spokesperson, advocate, or friend). We also asked students to rate the mentoring relationship on the "burden-benefit" scale, a bipolar Likert-type scale ranging from "tremendous burden" to "tremendous benefit." Lastly, students were provided space for free text comments about the relationship.

Likewise, we developed a survey instrument for faculty members, which asked faculty mentors to rate their mentoring relationships with each individual mentored student on the same "burden-benefit" Likert-type scale, as well as provide free text comments

We obtained exemption for the study from further IRB review from Harvard Medical School.

Distribution

We distributed the surveys to participating students and faculty mentors at the conclusion of the PCE. We disseminated surveys both in paper-based format as well as online. The survey was completed and returned by 244/246 (99%) students, and by all mentors (11 in 2009-2010, 6 in 2010-2011, and 6 in 2012-2013).

Quantitative analyses

Surveys were collected and anonymized by a third-party with no role in evaluation of students, faculty, or the mentorship program. Surveys are available in subsequent appendices (Appendix A, B). We stored anonymized results via a centralized and password-protected Microsoft Excel master-file.

We used Stata 13 IC (College Park, TX) for all descriptive and inferential statistics.

In detail: Using a Likert-type scale with “4” being neutral, “7” representing “tremendous benefit,” and “1” representing “tremendous burden,” student and mentor burden-benefit scores were tabulated. We employed a Pearson’s chi-square test to assess for the association between positive student and mentor burden-benefit scores (on a scale of 0-7, with the neutral 4 being dichotomized as “negative”). To analyze the impact of a mentor fulfilling a particular “role” as identified on the student survey, multivariable linear regression was performed with all independent variables (predictors) being ordinal forms of the variables for each “role” in which a student saw a given mentor, regressing the student burden-benefit and mentor burden-benefit scores on these variables separately. To assess the impact of the frequency of meeting between student and faculty on student and mentor burden-benefit scores, we performed logistic regression using the frequency of meeting, with the dichotomous dependent variable being positive student or mentor burden-benefit scores dichotomized as above. To analyze the impact of a mentor and student having certain interests or traits in common as identified on the student survey, multivariable linear regression was performed with all independent variables (predictors) being ordinal forms of the variables for each “commonality” which a student saw in a given mentor, regressing the student burden-benefit and mentor burden-benefit scores on these variables separately.

Qualitative analyses

We analyzed qualitative data using a grounded-theory approach. Free text comments from surveys by both faculty mentors and students were anonymized and logged in Microsoft Excel. The goal of these comments was to further an understanding of the features of successful and unsuccessful mentorship relationships, including specific needs met and impact made, as well as the characteristics of a good mentor or mentee from both perspectives.

In open coding, two investigators (GH, AP) each independently read through transcripts of all student and faculty comments and identified themes with a framework approach, and from these themes developed codes. The team met every 2-4 weeks to ensure inter-reader reliability and coordinate next steps. After initial reading and code-generation, both investigators independently read through responses and assigned appropriate codes to each based on mutually delineated criteria, continuing to meet periodically to ensure reliability. We used Dedoose (Manhattan Beach, CA) for all coding of free text comments as well as generation of initial qualitative figures.

After coding, lists of all excerpts corresponding to each code were generated. In a collaborative fashion, the investigators grouped codes based on larger themes and categories. The investigators independently revisited the excerpts associated with each code and larger theme, and drew insights, meeting periodically to discuss these and to establish consistency in the larger themes and insights.

SECTION FOUR**Results:***Quantitative*

In total, two hundred and forty-six students participated in the program over the three years surveyed, with 244 (99%) of students returning completed surveys. Five students provided questionnaires that did not provide a “burden-benefit” ratio, twenty-four students did not provide free text comments. There were eleven faculty mentors in 2009-2010, and six in each of 2010-2011 and 2012-2013, all of whom returned completed surveys, with “burden-benefit” ratio

missing from faculty for one student, and free text comments not provided for twenty-one students in total.

Student burden-benefit scores were positive (mean = 5.55, standard deviation = 1.39), as were mentor burden-benefit scores (mean = 5.07, standard deviation = 1.24).

There was no correlation between positive mentor and student perspectives on burden/benefit, as positive student and mentor burden-benefit ratios were independent (chi—square = 1.45, $p = 0.23$).

There was an association between frequency of meeting and student perspective on burden/benefit: with each one-unit increase in the frequency of meeting, the odds ratio for the student burden-benefit ratio to be positive increases 2.62-fold ($p = 0.00$). There was no such association for the mentor burden-benefit ratio ($p = 0.27$).

The effect of the role in which the student saw the mentor on student and mentor burden-benefit ratios is summarized in Table 1. Multivariable linear regression was performed with all independent variables (predictors) being ordinal forms of the variables for each “role” in which a student saw a given mentor.

These models showed that a student viewing a mentor as fulfilling the roles of “Academic Advisor,” ($p = 0.00$) “Personal Counselor,” ($p=0.01$) or “Role Model” ($p = 0.00$) are associated with an increase in the student burden-benefit ratio (improved student satisfaction). There were nonsignificant negative associations of the student burden-benefit ratio with the roles of “Teacher,” “Evaluator,” or “Spokesperson.” Furthermore, a student viewing a mentor as fulfilling the role of “Evaluator,” ($p = 0.01$) was associated with an improvement in mentor satisfaction, while the student viewing the mentor as “Teacher” ($p = 0.04$) or “Advocate” ($p = 0.03$) was associated with decreased mentor satisfaction.

The effect of similarity or commonality between student and mentor on student and mentor burden-benefit ratios is also summarized in Table 1. Multivariable linear regression was

performed with all independent variables (predictors) being ordinal forms of the variables for each “area of similarity” which the student saw the mentor as having in common.

These models showed that a student having “Professional Interest” ($p = 0.00$) in common with the mentor is associated with an increase in the student burden-benefit ratio. However, commonality in any of the four surveyed areas (career goals, professional interest, demographics, or hobbies) was not associated with a change in the mentor burden-benefit ratio.

Qualitative

Frequency of codes used to classify the free-text responses from students and mentors is summarized in Figure 1.

From close reading of the qualitative data as organized by codes and overarching themes, a few key components for formation of a meaningful mentorship relationship emerged: availability, receptivity, and authenticity.

First, both mentors and students needed availability to participate in a relationship:

“was always available for me and reachable in person and by e-mail-without them I would've had so much trouble and despair!”

“I found myself turning to other mentors; this was partially because they seemed more available time-wise”

This availability was modulated by multiple factors, including the logistics of the student’s clinical year experience, or a perceived lack of need by the student.

“I did not find as much time to get away from the wards & meet ... as I would have liked”

“Was fantastic in being always available... I did not take the initiative to have more meetings

Furthermore, if both parties were available, they still required receptivity: both the student and mentor had to be willing to participate in the relationship. Mentors and students alike decried situations in which the other did not share their goals or level of engagement with the relationship.

“I felt my mentor had a specific agenda... He was not particularly open to discussions about other specialties”

“[The student] seemed to have little / no interest in addressing the deeper issues”

Importantly, trust and transparency were paramount once both parties were engaged. Authenticity in the relationship was also a two-way street. Mentors noted frustration with inability to help students if they felt the student was not forthcoming about important issues, while students noted the importance of the mentor as a non-evaluative faculty in encouraging them to be transparent about their issues, though this was not the case in all relationships.

“I didn't feel I ever fully connected with her and that I never got her authentic "scoop" on her PCE journey.”

“I really liked that she was never an evaluator of me, this helped me be completely honest about my concerns.”

In addition to these key components of mentorship relationships, there were other aspects which were not critical to the formation of a positive relationship, but predictors of a more deep and meaningful bond. One of these was the type of role the mentor fulfilled. Both students and mentors often described mentors as “advisors” or resources – providers of advice or guidance during the year, both in the academic and logistic sense.

“She provided valuable advice and insight throughout the course of PCE.”

“They were very helpful as an advisor and counselor.”

“I was able to provide him with solid guidance.”

Students also often saw value in the mentor as an advocate, both in real and hypothetical cases of hardship.

“Felt like I had someone who could advocate for me if I had a personal problem.”

Commonly, given the gap in age and career development, students saw mentors through the lens of potential persons to emulate or role models, judging their value in part based off their will to emulate the person in the future.

“They are a role model & inspire me to one day do the same.”

Another predictor of depth included the extent of need. Need took on a number of forms for students: most commonly academic performance and future and specialty-specific advising, but also included family emergencies, emotional stresses, mistreatment, clerkship logistics, and health difficulties. Though student needs were multifaceted, the ability to meet a need portended greater depth of the relationship. In many cases where there was no clear “need,” students and mentors engaged perfunctorily but cordially in the relationship.

“Seems to have a clear sense of what he wants, where he is going etc. I am not sure that he required any additional mentoring.”

“Nice to have, but I didn't have any issues I really felt a mentor would help me with.”

“A valuable resource when I was anxious about a difficult rotation and my future planning.”

“Willing to help me in the best of their abilities, particularly during emotionally stressful times.”

Another key predictor included the ability to match (or subsequent mismatch) of students and mentors. Relationships success was in part predicated on commonalty between the mentor and mentee. Commonly, this could be developed by the student knowing the mentor in another context, either concurrently during the PCE year, or due to a pre-existing longitudinal relationship. This context created a common experience for the pair.

“Might have been helpful if I knew the mentor in other settings.”

“I first met my mentor during 2nd year... so it was nice to continue on ... they were able to encourage me and provide support in a way that was more meaningful because I [knew] them before.”

Most commonly, this question of mentoring match was with regard to the student's intended medical specialty or career goals. Mismatch between a mentor's specialty and student's intended specialty limited their utility, though this was also the case for discrepant career areas in general. However, students were aware of the difficulty of matching mentors based on career interests in the setting of the clerkship medical student's constantly changing career aspirations. Though the mismatch could manifest as a source of frustration, making the relationship feel like an obligation with the element of choice removed, it generally predicted that the relationship, though cordial, would be superficial.

“We weren't interested in the same fields so it wasn't the best match.”

“Because my mentor wasn't necessarily someone who felt excited about clinical medicine, I was sometimes reluctant to share my excitement or model myself after her.”

“Who knew what I would have ended up being interested in at the beginning of the year???”

“Pleasant enough but would describe my interactions with him as superficial and pro-forma.”

One recurring theme through student and mentor responses was that of time as the modifier for the mentorship relationship. Time was identified as a major logistic challenge to the mentoring relationship in general. Especially in the context of the longitudinal clerkship experience, time was depicted as a gamble – the value from the time committed to meet a mentor had to be weighed against the risk of being off of the clinical wards, sacrificing both potential learning as well as evaluations by other faculty or residents. As students were required to meet mentors, this

aspect of time commitment was evident as students often rationalized their choice to see their mentors even if it was of limited utility.

“I at times had trouble getting excused from clerkships to get to meet with my mentor. My mentor was wonderful and I wish I had gotten to spend more time meeting with them.”
“It is hard to make meetings that take you away from clinical responsibilities but meetings with my mentor were 100% worth it.”

Ultimately, students and mentors described a number of outcomes that could be derived from the mentoring relationship. Some of these included transient fulfillment rooted in the mentoring relationship over the clerkship year. Both mentors and students mentioned finding value (or perceiving that the other derived value) from the relationship, often based on the extent of perceived impact that the mentor was able to make over the year. This impact could be in noting improvement in the student’s experience, or even from the perception that the student considered the mentor’s perspective. While students also tended to judge the outcome of the relationship based on its perceived utility (and described gratitude for the guidance they received), they also perceived meaning and impact from being thought of or cared for as a whole person.

“I felt a close connection and that I was able to make a real difference in her 3rd year experience.”
“Seemed to truly appreciate the support and guidance.”
“[I] am so incredibly grateful for [my mentor].”
“My mentor showed genuine interest in me as a person.”

Other outcomes were more lasting or permanent. This included ongoing longitudinal relationships that spanned future parts of medical school. It also encompassed the “bonus” or transactional products of the relationship, such as baked goods from a student or a letter of recommendation from a mentor. Thus, successful relationships were able to leverage positive aspects of the relationship into either short or long-term benefits for mentors and students.

“I was able to help her plan for next year and wrote a letter of recommendation on her behalf.”
“I felt like I rode her coattails a bit. She would bring me presents/food.”
“I had a great relationship with my mentor and knew him as a mentor and friend. I designed my 4th year schedule so that I can work with him.”

SECTION FIVE:

Discussion:

We identified the mentorship roles, similarities in interest, and relationship aspects that correspond to more positive or negative perception of a mentoring relationship, within the

context of a mentorship program at one institution for medical students in the longitudinal integrated clerkship year.

Quantitative analysis suggests that student and mentor satisfaction within a formalized mentoring program, while both positive, are in fact unrelated. We surmise that this may be due to misaligned expectations or goals for the relationship. While students were more satisfied with relationships in which they saw the mentor as an academic advisor or personal counselor, mentor satisfaction rose in relationships in which they were seen as evaluators. It is possible that the expectations of the student (to gain career advice or logistic guidance) entering a meeting did not meet the goals of the mentor (to review lapses in academic performance), suggesting that more explicit goals for the mentoring program might bridge this disconnect. This is backed by the qualitative comments: while students and mentors both mentioned advising as a predominant role for the mentor, mentors were more likely to emphasize issues of academic performance. *Maybe expand on the language of evaluation?*

Furthermore, we found that as student and mentor met more frequently, student satisfaction increased. This may be due to self-selection: with the insight of the qualitative data, it would appear that a number of students met infrequently due to a perceived lack of need, whereas few students even as remarked upon by mentors, would meet frequently, either because of a true personal challenges and performance concerns with which the mentor could help, or even due to “neediness” despite having few issues or concerns. These high-users derived significant value from the relationship as their perceived needs were being met, suggesting that the mere frequency of meeting may not have driven the increase in satisfaction, but rather the baseline characteristics of students who needed to meet frequently.

Additionally, we showed that student satisfaction with the relationship increased if they felt they had common professional interest with their mentor. This is backed by qualitative analysis showing that the most common source of frustration and mismatch was in discrepancy in the student’s intended specialty and the mentor’s specialty. This frustration is likely in part due to the role of the clerkship year in the medical student’s future career: it represents a pivotal exposure to major medical specialties, with comparatively little time outside of clinical

responsibilities to focus on planning for the coming subinternship and residency applications. While most mentors, being equipped with knowledge of the hospital and the student's evaluations, were prepared to deal with issues of performance, in the absence of a common specialty or career path they were likely less equipped to provide specific, actionable career advice insofar as this was specialty-specific. Notably, in these cases students often sought outside mentorship, noting role models they met through the school or during their time rotating on the wards, to fill this gap rather than pursuing further mentorship through this structured program.

In addition to supporting the insights made from the quantitative analysis, qualitative analysis offered other intriguing insights. Overall, the function of the mentor was largely defined by the advising role. This was founded primarily on the common experience of having gone through medical training, the same process through which the mentee is embarking. This function was modulated by the process of self-discovery and exploration, allowing students to explore their interests and future goals. The advice itself was best appreciated by students when it was perceived as both concrete and authentic, with students remarking on the importance of honest advice. And given the aforementioned insights, it is clear that commonality, especially in outside context or professional interest, can improve the quality and utility of this advice.

Close reading of comments by mentors also reveals a lexicon of mentorship that incorporates contrasting concepts, but in ways is nearly formulaic. While student comments focused primarily on the logistic challenges and perceived utility of the relationship itself, comments by mentors focused far more on the personality and academic performance of the student being mentored.

“He is very respectful and earnest.”
“Outstanding student, motivated, engaged.”

Notably, these included a “learned language” of evaluation: many comments describing a student as “pleasant” much as one might a patient in a templated note, and others with platitudes about the student's personality. These comments tended to focus on the essence of a person, providing a label for each student.

“Very pleasant student.”
“Studios, hard-working, motivated”

In addition, we see patterns in the ways in which mentor comments mimic faculty evaluations of students during the clinical year. These comments often began with a few adjectives to describe the student's engagement and performance, followed by anecdotal evidence of performance or ability to meet expectations. In this way, comments by mentors slip back into the evaluative language that is used elsewhere on the wards. In concert with the quantitative findings that mentor satisfaction improved when students saw mentors as evaluators, this suggests that just as a student may have difficulty being open with a faculty mentor, some mentors may have difficulty divorcing themselves from their typical and now comfortable roles as evaluators.

“Studious, hard-working, motivated. Met with me regularly and had a few areas of interest where I felt I could steer her toward useful people - particularly finding advice regarding her future career choices.”

“Very talented student, needed minimal guidance, I was able to help her plan for next year and wrote a letter of recommendation on her behalf.”

Limitations:

This study explicitly focused on characterizing the mentorship relationship between teaching faculty and clerkship-year medical students as part of a formalized, non-evaluative mentorship program at one institution. As a result, the scope and generalizability of these results is limited, especially with regard to the ways in which students and mentors can better engage in and fulfill their roles. The scope of such a formalized mentorship program is fundamentally different than that of informal mentorship at the undergraduate medical school level, which may be more rooted in common context and more focused on specialty-specific advice or work toward a common goal such as a research project. Similarly, the goals of mentorship for junior faculty or resident physicians are different than those of the clerkship-year medical student, so these results are not necessarily generalizable to mentorship at the graduate medical education level.

In addition, while this study assesses the concordance of student and mentor experiences, and characterizes the factors that are associated with each, it is not designed to evaluate the effectiveness of the mentorship program in achieving other metrics (such as student career goals, academic performance, etc.) and does not implement an intervention in the existing program to be studied, and thus cannot be used as an evaluative measure for aspects of a formalized mentorship program.

This study is thus best interpreted as a characterization of the aspects that are associated with more positive or negative formalized mentorship relationships at the undergraduate medical level, and offers insights for future study or evaluation of such programs.

Conclusions:

In this study, we identified mentorship roles, commonalities, and relationship characteristics that contribute to satisfaction of medical students and faculty mentors, within a formal mentorship program for medical students in the longitudinal integrated clerkship year.

Overall, student and mentor experiences, though positive, do not correlate. Students derived more satisfaction from mentors that they saw as academic advisors or personal counselors. Mentors, while also seeing themselves primarily as advisors, were more satisfied when perceived as evaluators. While students who met mentors more frequently were more satisfied with their relationships, we surmise this may be due to differential underlying need among students.

Meaningful mentorship relationships were grounded on three main factors: availability of both mentor and student (modulated by logistic concerns), receptivity of each party to participate, and authenticity and trust in the information that both students and mentors conveyed. If these criteria were met, other factors helped determine the depth of the positive relationship: the perceived need for advice and guidance, the role played by the mentor, and the match between student and mentor, which was partially predicated on common career interests but could be developed if student and mentor knew each other in other contexts. Overall, the benefits of a meaningful relationship were both intrinsic and fleeting feelings of value and gratitude, but could manifest as more permanent longitudinal relationships.

These findings have implications for both formal and informal structuring of future mentorship programs. In terms of design, student frustration with mismatched mentors stands out as an area for improvement. Incorporating a diverse pool of mentors in varied fields and practice styles, as well as flexibility for students to meet with other mentors within this pool, would allow a mentor to refer a student to a more helpful colleague if their career interests or goals are a better fit. Furthermore, while “need” in general can be difficult to predict, certain students will enter the

clerkship program with clear and specific needs. These students will require more thought in matching to mentors who have both the time and expertise to navigate these needs. Additionally, it is clear that time remains the significant currency during the clerkship year: programs must find ways to carve out time from the student schedule to allow for structured mentorship, while also ensuring that this commitment is worth the potential loss of clinical exposure. An option suggested within student comments is to establish a universal designated time at which students are expected to meet with their formal mentors. In this way, the student would not be at risk of jeopardizing their evaluation or education by requesting time to meet a mentor, and in the process the sense of obligation that goes along with the mentorship relationship could be allayed.

This study also offers insights for mentors and students within similar formalized mentorship programs during the clerkship year. These findings demonstrate that depth of relationship can come from meaningful time investment, focus on advising rather than evaluation, and willingness to meet the student's needs – even if that requires referral to a colleague who can better address concerns about common career interests. To this end, clear goal-setting and expectations can improve both parties' experience and engagement. And ultimately, even if one makes themselves available, receptive, and honest, satisfaction is not always concordant and success is not necessarily inevitable.

Future Directions:

This study represents an initial foray into the characterization of mentorship, especially as aimed at medical students at the clerkship level. Further work would involve expanding the scope of the characterization, or progressing from characterization to evaluation of such programs. Similar studies could be undertaken at other hospitals that host medical students for longitudinal clerkship activities to assess the generalizability of our insights. These insights could also be used to guide interventions within existing mentorship programs (for example, expanding the pool of mentors and allowing some students to switch to mentors other than those to whom they are initially matched, to assess the effect of flexibility in mentor-mentee match on satisfaction). More long-term, we could also assess the relationship of these factors we have identified, not on student and mentor satisfaction, but on later career outcomes to assess the effectiveness of mentorship. Ultimately, we hope to translate these insights into iterative changes in clerkship-

year mentorship programs that improve the satisfaction of both the faculty mentors and medical students participating.

SECTION SIX:

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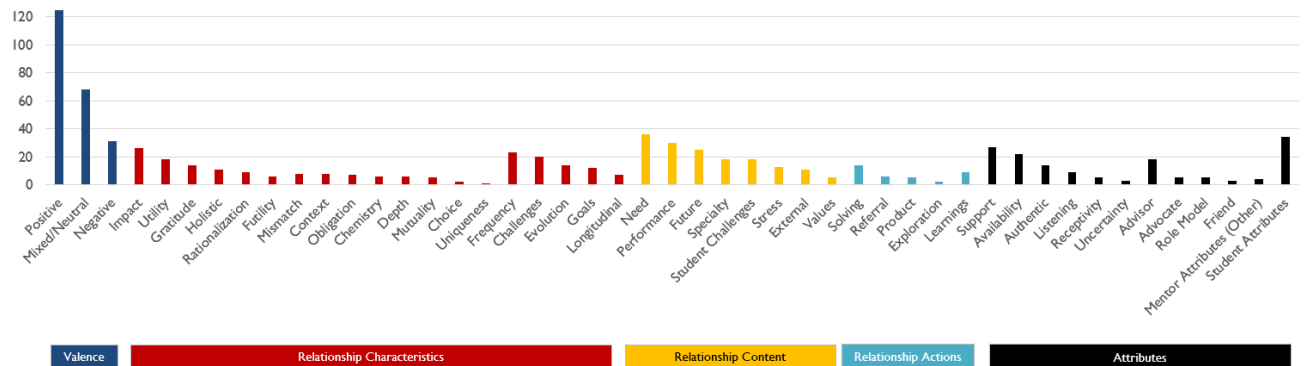
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TABLES AND FIGURES:

Table 1 – Relationship of mentor role or similarities between student/mentor on student and mentor burden/benefit perspectives

| Mentor Role | Student | | Mentor | |
|-----------------------|--------------------------|-------------------|-----------------------------|-------------|
| | Coefficient (95% CI) | p-value | Coefficient (95% CI) | p-value |
| Career Coach | 0.17 [-0.06, 0.40] | 0.14 | -0.02 [-0.38, 0.34] | 0.9 |
| Academic Advisor | 0.42 [0.17, 0.67] | < 0.001 | 0.15 [-0.24, 0.55] | 0.45 |
| Project Advisor | 0.11 [-0.11, 0.32] | 0.32 | 0.16 [-0.18, 0.49] | 0.36 |
| Personal Counselor | 0.34 [0.07, 0.60] | 0.01 | -0.10 [-0.52, 0.32] | 0.64 |
| Teacher | -0.05 [-0.28, 0.17] | 0.64 | -0.37 [-0.73, -0.02] | 0.04 |
| Evaluator | -0.06 [-0.29, 0.18] | 0.63 | 0.53 [0.15, 0.90] | 0.01 |
| Role Model | 0.62 [0.30, 0.93] | < 0.001 | 0.40 [-0.09, 0.89] | 0.11 |
| Spokesperson | -0.05 [-0.27, 0.17] | 0.65 | 0.19 [-0.16, 0.55] | 0.28 |
| Advocate | 0.13 [-0.11, 0.36] | 0.3 | -0.42 [-0.80, -0.04] | 0.03 |
| Friend | 0.24 [-0.05, 0.54] | 0.1 | -0.20 [-0.66, 0.26] | 0.39 |
| Similarities | | | | |
| Career Goals | 0.14 [-0.05, 0.32] | 0.16 | 0.05 [-0.16, 0.26] | 0.62 |
| Professional Interest | 0.44 [0.19, 0.69] | < 0.001 | -0.02 [-0.29, 0.26] | 0.91 |
| Demographics | 0.03 [-0.19, 0.25] | 0.76 | 0.13 [-0.11, 0.38] | 0.27 |
| Hobbies | 0.34 [0.02, 0.67] | 0.04 | -0.19 [-0.55, 0.16] | 0.28 |

Figure 1 – Frequency of codes in student/mentor comments, organized by overarching theme



APPENDIX A: Faculty Survey

Mentoring experiences

We seek your opinion of this year’s PCE mentoring experience to help guide our decisions as we revise the PCE mentorship program. Your responses to this survey will be used to make changes to the mentoring program and **will not be given to the student.**

| | |
|---|--|
| Background | |
| 1. Name | _____ |
| 2. How many students did you mentor for PCE 2009-2010? | _____ |
| 3. On average, how many times did you meet with each student since May 2009? | _____ |
| 4. Have you received formal training (seminar, coursework, online module) about being a mentor? | <input type="checkbox"/> yes <input type="checkbox"/> no |

| | | | | | | |
|---|----------------------------|--------------------------|---|---------------------------|-----------------------------|-------------------------------|
| Quality of mentoring | | | | | | |
| For the next few questions, respond for each specific student you mentored. | | | | | | |
| 5. Initials of student #1: _____ | | | | | | |
| 6. On the following scale, indicate how you would characterize the impact of your mentoring relationship with student #1 on yourself: | | | | | | |
| <i>Tremendous burden</i> | <i>Moderate burden</i> | <i>Slight burden</i> | <i>Neither burden nor benefit</i> | <i>Slight benefit</i> | <i>Moderate benefit</i> | <i>Tremendous benefit</i> |
| -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| Please explain your answer. | | | | | | |
| | | | | | | |

| |
|---|
| Quality of mentoring |
| For the next few questions, respond for each specific student you mentored. |

7. Initials of student #2: _____

8. On the following scale, indicate how you would characterize the impact of your mentoring relationship with student #2 on yourself:

| | | | | | | |
|------------------------------|----------------------------|--------------------------|---|---------------------------|-----------------------------|-------------------------------|
| <i>Tremendous burden</i> | <i>Moderate burden</i> | <i>Slight burden</i> | <i>Neither burden nor benefit</i> | <i>Slight benefit</i> | <i>Moderate benefit</i> | <i>Tremendous benefit</i> |
| -3 | -2 | -1 | 0 | +1 | +2 | +3 |

Please explain your answer.

Quality of mentoring

For the next few questions, respond for each specific student you mentored.

9. Initials of student #3: _____

10. On the following scale, indicate how you would characterize the impact of your mentoring relationship with student #3 on yourself:

| | | | | | | |
|------------------------------|----------------------------|--------------------------|---|---------------------------|-----------------------------|-------------------------------|
| <i>Tremendous burden</i> | <i>Moderate burden</i> | <i>Slight burden</i> | <i>Neither burden nor benefit</i> | <i>Slight benefit</i> | <i>Moderate benefit</i> | <i>Tremendous benefit</i> |
| -3 | -2 | -1 | 0 | +1 | +2 | +3 |

Please explain your answer.

Quality of mentoring

For the next few questions, respond for each specific student you mentored.

11. Initials of student #4: _____

12. On the following scale, indicate how you would characterize the impact of your mentoring relationship with student #4 on yourself:

| | | | | | | |
|--------------------------|------------------------|----------------------|-----------------------------------|-----------------------|-------------------------|---------------------------|
| <i>Tremendous burden</i> | <i>Moderate burden</i> | <i>Slight burden</i> | <i>Neither burden nor benefit</i> | <i>Slight benefit</i> | <i>Moderate benefit</i> | <i>Tremendous benefit</i> |
| -3 | -2 | -1 | 0 | +1 | +2 | +3 |

Please explain your answer.

Quality of mentoring

For the next few questions, respond for each specific student you mentored.

13. Initials of student #5: _____

14. On the following scale, indicate how you would characterize the impact of your mentoring relationship with student #5 on yourself:

| | | | | | | |
|--------------------------|------------------------|----------------------|-----------------------------------|-----------------------|-------------------------|---------------------------|
| <i>Tremendous burden</i> | <i>Moderate burden</i> | <i>Slight burden</i> | <i>Neither burden nor benefit</i> | <i>Slight benefit</i> | <i>Moderate benefit</i> | <i>Tremendous benefit</i> |
| -3 | -2 | -1 | 0 | +1 | +2 | +3 |

Please explain your answer.

Quality of mentoring

For the next few questions, respond for each specific student you mentored.

15. Initials of student #5: _____

16. On the following scale, indicate how you would characterize the impact of your mentoring relationship with student #6 on yourself:

| | | | | | | |
|------------------------------|----------------------------|--------------------------|---|---------------------------|-----------------------------|-------------------------------|
| <i>Tremendous burden</i> | <i>Moderate burden</i> | <i>Slight burden</i> | <i>Neither burden nor benefit</i> | <i>Slight benefit</i> | <i>Moderate benefit</i> | <i>Tremendous benefit</i> |
| -3 | -2 | -1 | 0 | +1 | +2 | +3 |

Please explain your answer.

APPENDIX B: Student Survey

PCE Mentoring experiences

We seek your opinion of this year's PCE mentoring experience to help guide our decisions as we monitor the PCE mentorship program and to do research to understand the nature of student-faculty mentoring. The duration of your participation is only for this academic year (2013-2014). We do not foresee any risks to you other than your time in filling out the survey. Your responses will **not** be used to provide specific feedback to your current PCE mentors but will only be reported in aggregate to help the program in general.

What is your name? _____

(This sheet will be kept separate from the rest of the data for research purposes, so your responses will not be linked to your individual identity.)

Background

- 17. Who was your mentor? _____
- 18. Did you meet your mentor during the Transition Course? yes no
- 19. Did your mentor review your PCE Self-Assessment at the beginning of the year? yes no
- 20. To your best estimate, how many times have you met one-on-one with your mentor since May 2013? _____
- 21. To your best estimate, how many of these were initiated by your mentor? _____
- 22. In addition to your assigned PCE Mentor, did another faculty member serve as an additional mentor this year? yes no

| Quality of mentoring | | | | | |
|---|-------------------|----------|---------|-------|----------------|
| Indicate your level of agreement with the following statements. | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| 23. My mentor and I had compatible personalities. | | | | | |
| 24. My mentor's specialty is in an area I am considering for my career. | | | | | |
| 25. My mentor's professional interests (proportion of time allotted to research, clinical service, teaching) are similar to what I envision for my future career. | | | | | |
| 26. My mentor and I had similar demographic backgrounds (e.g., ethnicity, geographic background, age, phase in life). | | | | | |
| 27. My mentor and I had similar extracurricular interests (e.g., sports, hobbies). | | | | | |

Function of mentoring

In the following possible roles for a mentor, how much did your mentor function as each of these roles?

- | | No | Somewhat | Yes |
|--|--------------------------|--------------------------|--------------------------|
| 28. <u>Career coach on specialty choice</u> – provided general guidance in discussions about my eventual career choice | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 29. <u>Academic advisor</u> – provided individualized guidance on my academic progress through the PCE year | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 30. <u>Project advisor</u> – provided guidance on a specific project I had during the PCE year | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- 31. Personal counselor – provided individualized guidance on my person life based on my interests
- 32. Teacher – imparted knowledge and skills in clinical medicine
- 33. Evaluator – formally assessed my performance as a student
- 34. Role model – served as an example I would like to emulate in my career and/or personal life
- 35. Spokesperson/ombudsperson – empowered me as a student by being willing to speak to clerkship directors, PCE directors, and other HMS faculty on my behalf about PCE issues
- 36. Advocate – empowered me as a person by being willing to speak to other people on my behalf about non-PCE issues (e.g., finding a research project, residency applications)
- 37. Friend – mutually exchanged information that allowed us to appreciate one another as equal peers

| Approach to mentoring | | | | | |
|---|-------------------|----------|---------|-------|----------------|
| Indicate your level of agreement with the following statements. | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| 38. Students should meet with their mentors every 3 months, regardless of need. | | | | | |
| 39. Students should meet with their mentors only as needed by the student. | | | | | |

Overall quality of mentoring

40. On the following scale, indicate how you would characterize your overall experience with having a mentor.

| | | | | | | |
|-------------------|-----------------|---------------|----------------------------|----------------|------------------|--------------------|
| Tremendous burden | Moderate burden | Slight burden | Neither burden nor benefit | Slight benefit | Moderate benefit | Tremendous benefit |
| -3 | -2 | -1 | 0 | +1 | +2 | +3 |

Additional comments

What did you get out of having a mentor?

What were disadvantages of having a mentor?

