What matters most? A prioritization of medical students' preferences for effective teaching

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ABSTRACT

Guided by rhetorical and relational goals theory, this study explores medical students' preferences for effective teaching using a "build-a-professor" design. Using a budget methodology, medical students ($N = 177$) created their ideal clinical or nonclinical medical school educator by prioritizing 10 teaching behaviors and characteristics from instructional communication literature. Overall, medical students prioritized clarity, relevance, and competence as necessity components for effective instruction, whereas other teaching behaviors and characteristics were characterized as luxury components. When comparing ideal clinical and nonclinical medical educators, medical students prioritized clarity less, but prioritized assertiveness and responsiveness more for clinical medical educators. Overall, results suggest that medical school educators might prioritize rhetorical teaching goals, especially teacher clarity, to meet medical students' pedagogical preferences. However, results also suggest that educators realize that relational teaching, including caring and responsiveness, becomes more important as medical students learn during clinical education.

Between the instructional communication and educational psychology disciplines, volumes of scholarship offer pedagogical insights regarding how instructors should teach their students. Among the many effective teaching behaviors in educators' repertoires, some of the most important include being fully prepared and organized for each lesson, teaching in a manner that is clear and understandable, and enacting instructional strategies that stimulate students' interest (Schneider & Preckel, 2017). However, despite how educators think they should teach (or prefer to teach), students enter the classroom with their own preferences for the instruction they receive and how they want to learn (e.g., Strage, 2008). Discerning students' preferences for teaching is important because it can assist educators in meeting their students' diverse expectations, needs, and goals (Mottet et al., 2006). When educators are able to recognize and adapt their teaching to meet their students' preferences, their engagement in the learning process can be meaningfully enhanced (Reynolds, 2019).

One way in which educational researchers have explored students' preferences is by prompting students to describe their ideal educators. Arnon and Reichel (2007) examined current and recently graduated student teachers' perspectives to conceptualize an "image of the ideal teacher" (p. 448), reporting that the ideal educator can be characterized by personality and professional knowledge. Similarly, Alrakaf et al. (2014) instructed pharmacy students to create their ideal pharmacy educator by combining a limited number of different qualities using a hypothetical budget methodology, revealing a preference for teachers who were (a) enthusiastic, (b) subject matter experts, and (c) clear presenters. In medical education, McLean (2001) prompted second-year medical students to identify and rank-order attributes they would ascribe to a "good educator" (p. 368), characterizing the ideal medical educator as (a) a good communicator, (b) approachable, (c) relatable, (d) helpful, (e) friendly, (f) a subject matter expert, (g) sensitive to student needs, (h) enthusiastic, and (i) patient.

However, studies suggest that not all students necessarily exhibit similar instructional preferences. Strage (2008) found that college students' instructional preferences varied largely due to age, with older students preferring instructors who were rigorous, serious, and directly connected course content to the "real world" while younger students preferred instructors who were funny, less challenging, more engaging, and employed less active instructional strategies. Senko et al. (2012) reported that college students exhibiting mastery goals preferred instructors who demonstrated subject matter expertise and intellectually challenged students, whereas students exhibiting performance goals preferred instructors who clearly presented course content and criteria for success. Similarly, Komarraju (2013) found that extrinsically motivated college students and students lacking self-efficacy preferred instructors who they characterized as caring.

Likewise, Goldman et al. (2017) discovered that academically entitled college students preferred instructors characterized as caring, responsive, and immediate. They also reported that undergraduate college students, in general, prioritized particular instructional preferences (e.g., for clarity, competence, and relevance) over others (e.g., for assertiveness, self-disclosure, and immediacy), differentiating between necessity and luxury components of effective instruction based on students' reported preferences. "Ideal educator" studies such as these demonstrate that students appraise particular aspects of their instructors' teaching as more (or less) valuable than others, exhibiting greater preference for certain teaching behaviors and characteristics depending on who they are and what they want across educational contexts.

One theory that explains the role of students' preferences in instruction is rhetorical and relational goals theory (RRGT; Mottet et al., 2006), which is founded on the premise that students enter educational environments with different needs and goals. A central argument in RRGT is that "students have both relational and academic needs; however, not all students are equally driven by each need" (Mottet et al., 2006, p. 267). Given this, Goldman et al. (2017) argued "whether intentional or not, students assign a rank value to certain needs and features of their own education … including their instructors' behaviors in the classroom" (p. 282). These rank values, in turn, inform students' preferences regarding the instruction they receive, such that students inherently exhibit greater preference for teacher behaviors and characteristics conducive to satisfying their needs and goals.

While instructional communication scholars have adopted RRGT as a theoretical framework for examining college students' preferences for teaching (e.g., Goldman et al., 2017; Kaufmann & Frisby, 2017), this literature is predominantly based on data from studies employing samples of undergraduate students enrolled in traditional (communication) college courses. Although these findings are informative, Sellnow and Sellnow (2018) articulated the importance of exploring instructional communication as it occurs in contexts beyond the traditional college classroom, which Strawser and Sellnow (2019) reaffirmed in their argument that "instructional work provides a distinct perspective on describing, interpreting, prescribing, and critiquing communication in and through instructional contexts regardless of grade level, setting, or subject matter" (p. 478). Our study sought to expand upon previous instructional communication research by applying RRGT to examine medical students' preferences for teaching behaviors and characteristics among their clinical and nonclinical medical school educators.

Above and beyond the obvious differences in curriculum difficulty, medical students are regularly exposed to stressors that are highly unique to their area of study. Curriculum for medical students is typically separated into a basic science curriculum during students' first two years of instruction and a clinical curriculum in students' last two years, and this curriculum is literally concerned with matters of life and death. Medical students must routinely contend with both conceptual and actual exposure to death and illness, spend considerable time studying subject matter related to death and dying, and interact with terminal patients face-to-face (MacLeod et al., 2003; Rappaport & Witzke, 1993). While a student error or mistake in traditional undergraduate education might lead to a lower score on an assignment or assessment, the consequences of medical students' errors can be fatal (Makary & Daniel, 2016). Medical students thus experience considerable pressure to learn instructional content and apply it effectively for their future patients.

Medical students must also navigate highly competitive environments characterized by high-stakes examinations (e.g., the National Board of Medical Examiners and the United States Medical Licensing Examinations) and "informal curriculum" that occurs when no faculty are present (e.g., adopting a dehumanized perspective of patients, using a "see one, do one, teach one" (p. 1615) approach for learning invasive procedures; Dyrbye et al., 2005). Further, where research suggests that contemporary undergraduate students spend only 27 hours per week on academic activities—"less time than a typical high school student spends at school" (Arum & Roksa, 2011, p. 3)—medical students may work as many as 80 hours within the span of a single week in continuous shifts ranging from 12 to 24 hours (Friedman et al., 2011).

This extensive workload, coupled with challenging performance pressures, distinguishes medical education as a unique instructional context from the undergraduate college classroom. Given these differences, it is feasible that medical students have different teaching preferences than undergraduate students. Recall that McLean (2001) reported that medical students exhibited a preference for medical school educators who provided assistance in navigating high-stakes medical education environments, characterizing them as helpful, sensitive to student needs, approachable, and friendly, to name a few. Further, McLean (2001) found that medical students believed it was important for a medical educator to be a "good communicator" (p. 368). That said, it would appear that medical students have preferences regarding the ways in which

their teachers communicate. However, the findings of McLean (2001) do not necessarily inform which specific aspects of medical educators' communication behaviors and characteristics that medical students perceive as good, nor illuminate whether particular aspects of their instructional communication may be more or less preferred than others. Therefore, taking this lack of specificity as an opportunity to extend RRGT (Mottet et al., 2006) beyond traditional classroom contexts, we examined medical students' preferences concerning their instructors' communicative behaviors and characteristics in both didactic and clinical medical education learning environments.

Rhetorical and relational goals theory

RRGT is based on the premise that instructors and students enter educational environments with a variety of different characteristics, and this variety culminates in instructors and students having different goals in the classroom—specifically, rhetorical goals and relational goals (Mottet et al., 2006). *Rhetorical goals* entail an emphasis on the presentation and retention of course content, particularly regarding how teachers design instructional messages to facilitate students' learning (e.g., clarity, relevance). *Relational goals* encompass the ways in which teachers communicate with their students to develop positive relationships (e.g., immediacy, self-disclosure) and enhance affective outcomes (e.g., motivation, interest). Mottet et al. (2006) argued that rhetorical and relational goals play an important part in influencing instructors' and students' educational experiences, forwarding six propositions in framing RRGT as far as how this influence occurs:

1. every student has rhetorical and relational needs that simultaneously shape their objectives and drive their behaviors;
2. instructors have both rhetorical and relational goals for their students, and these goals influence their teaching styles and behaviors;
3. effective teaching takes place when instructors communicate with students in ways that are conducive to satisfying rhetorical and relational goals;
4. meeting students' rhetorical and relational needs enhances students' overall satisfaction, motivation, and learning;
5. grade level and context influence instructors' goals and the strategies they enact to achieve them;
6. students' relational and rhetorical needs emerge as an outcome of their educational experiences, changing as a result of academic contexts they encounter.

Goldman et al. (2017) adopted RRGT as a theoretical framework for contextualizing the findings of their study exploring undergraduate students' instructional preferences. Employing Nussbaum's (1992) definition of effective teaching behaviors as "those in-class behaviors of the teacher that are related directly either to positive student outcomes or positive evaluations of teaching" (p. 167), they synthesized a list of instructional behaviors and characteristics which were (a) conducive to enhanced student learning and could therefore be conceptualized as aspects of effective teaching, (b) historically prominent in instructional communication literature, and (c) representative of both rhetorical and relational perspectives of instructional communication. Using these

criteria, they identified 10 instructional behaviors and characteristics (assertiveness, responsiveness, clarity, relevance, competence, character, caring, immediacy, humor, and self-disclosure) across which they prompted study participants to invest hypothetical funds for the purpose of building an ideal instructor. Goldman et al. (2017) concluded that undergraduate students exhibited a preference for primarily rhetorical behaviors (clarity, competence, relevance) based upon their allocation of hypothetical funds. These findings were generally consistent with those of Senko et al. (2012), who employed a similar methodology and reported that college students participating in their study also exhibited preferences for aspects of teaching which could be characterized as more rhetorical (e.g., topic expertise, clear about how to succeed) than relational (e.g., warm/compassionate personality) in nature. When students describe their instructional preferences, they seem to typically describe their ideal educators as clear, knowledgeable, and enthusiastic (Alrakaf et al., 2014; Arnon & Reichel, 2007; McLean, 2001).

When instructors are cognizant of which instructional needs their students believe are most important to fulfill, they may be better able to adapt their teaching in ways which more directly and effectively satisfy those needs (Mottet et al., 2006)—thereby aligning their teaching with students' instructional preferences. To examine students' teaching preferences and assess the applicability of RRGT beyond the traditional college classroom, we explored medical students' preferences for the teaching behaviors and characteristics of both clinical and nonclinical medical school educators using the qualities of effective instruction identified by Goldman et al. (2017). As argued by Goldman et al., these teaching behaviors and characteristics "represent a broad spectrum of instructional communication practices that teachers use to meet their own goals in addition to students' rhetorical and relational needs" (p. 284). Descriptions of each behavior, adapted from Goldman et al. (2017), are presented in Table 1 (see Goldman et al. [2017] for a review of each behavior).

Table 1. Description of teaching behaviors and characteristics.

Assertiveness	This [clinical/nonclinical] medical school educator defends their beliefs in the classroom, has a strong personality, is independent, competitive and even forceful or dominant
Responsiveness	This [clinical/nonclinical] medical school educator is compassionate, sympathetic, helpful, sincere, friendly, warm, and sensitive to the needs of students
Clarity	This [clinical/nonclinical] medical school educator presents knowledge in a way that students understand, answers questions clearly, has clear course objectives, and is straightforward in lecture
Relevant	This [clinical/nonclinical] medical school educator uses examples, explanations, and exercises to make course content relevant to students' career and personal goals or needs
Competence	This [clinical/nonclinical] medical school educator is an expert in their field, is intelligent, and well trained in instruction
Character	This [clinical/nonclinical] medical school educator is honest and trustworthy to students, works under a set of morals and ethics, and is genuine
Caring	This [clinical/nonclinical] medical school educator cares about their students, understands their students, and has their students' best interest at heart
Immediacy	This [clinical/nonclinical] medical school educator smiles at students, uses expressive hand and facial gestures when lecturing, nods their head in understanding when students talk, makes eye contact with students when lecturing, and changes vocal tones when lecturing
Humor	This [clinical/nonclinical] medical school educator uses humor in the classroom frequently, they are funny, and easily incorporate jokes into lectures
Disclosure	This [clinical/nonclinical] medical school educator reveals an appropriate amount of positive information about themselves to students during lecture, when doing so is relevant to the topic being taught

Note. Descriptions adapted from Goldman et al. (2017).

Student preferences using a budgeting method

Students' preferences for teaching play an important part in shaping their overall instructional experiences and outcomes, particularly when the teaching that students prefer from their instructors does not align with the teaching they actually receive (Houser, 2006). Employing a "budget" method (see Li et al., 2002) based on the work of Senko et al. (2012), Goldman et al. (2017) explored college students' instructional preferences by prompting them to create an ideal professor; instructing students to invest hypothetical funds across the 10 teaching behaviors and characteristics identified previously. Students created their ideal professor twice: once using a necessity budget of $20 and once using a luxury budget of $60. As explained by Senko et al. (2012), "the more that people spend on one attribute … the less they have left over to spend on other attributes" (p. 423). Students thus needed to carefully consider which teaching behaviors and characteristics were absolutely necessary when limited to only a necessity budget. In contrast, students were able to invest increasingly more on desirable but nonessential aspects of instruction when provided with a luxury budget. Using this approach, Goldman et al. (2017) reported that college students participating in their study demonstrated consistent preferences for clarity, competence, and relevance as necessity components of instruction, characterizing self-disclosure and immediacy as luxury components. From a perspective grounded in RRGT (Mottet et al., 2006), these findings suggest that college students may prioritize their preferences for teacher behaviors and characteristics aligned with fulfilling their rhetorical needs more than those aligned with fulfilling relational needs, despite finding both desirable.

Looking beyond traditional college classrooms, research suggests that RRGT may also be an appropriate theoretical framework for describing the instructional preferences of medical students. Sutkin et al. (2008) reported that "excellent teaching, although multifactorial, transcends ordinary teaching and is characterized by inspiring, supporting, actively involving, and communicating with students," concluding that "perhaps what makes a clinical educator truly great depends less on the acquisition of cognitive skills … and more on inherent, relationship-based, noncognitive attributes" (p. 457). Gibson et al. (2018) identified seven dimensions of high-quality medical educators encompassing a variety of skills and characteristics, ranging from instructors' personal attributes (e.g., sincere, passionate) to their teaching skills (e.g., demonstrates, explains techniques) and the extent to which they stimulate collaborative learning (e.g., values student input, interprofessional opportunities), understand expectations (e.g., understands outside pressures, understands assessment and evaluation expectations), are skillful in providing feedback (e.g., constructive, prompt), are organized (e.g., provides schedules, structured rotations), and fulfill their expected roles as medical professionals (e.g., good leader, clinically competent). Scholarship suggests that medical students, like college students in general, enter their medical trainings with different preferences as far as the types of instruction they receive. However, it is still unclear as far as which specific preferences might take precedence for students in medical education contexts, as well as whether these preferences remain consistent for medical students participating in different types of medical instruction—particularly nonclinical instruction received by MSI (i.e., first-year) and MSII (i.e., second-year) students and clinical instruction received by MSIII (i.e., third-year) and MSIV (i.e., fourth-year) students. To explore how medical

students prioritize their preferences for the teaching behaviors and characteristics identified by Goldman et al. (2017), as well as to extend RRGT beyond the context of undergraduate college classrooms, the following research questions were posed:

RQ1: What teaching behaviors and characteristics do MSI and MSII medical students prefer most from their nonclinical medical school educators?

RQ2: What teaching behaviors and characteristics are considered by MSI and MSII medical students to be a luxury rather than a necessity from nonclinical medical school educators?

RQ3: What teaching behaviors and characteristics do MSIII and MSIV medical students prefer most from their clinical medical school educators?

RQ4: What teaching behaviors and characteristics are considered by MSIII and MSIV medical students to be a luxury rather than a necessity from clinical medical school educators?

RQ5: Are there differences in MSI and MSII medical students' preferences for teaching behaviors and characteristics from nonclinical medical educators compared to MSIII and MISIV students' preferences from clinical medical school educators?

Method

Participants and procedures

Participants were 177 medical students enrolled at a large university. The sample comprised 83 men and 94 women whose ages ranged from 21 to 41 years ($M = 25.09$, $SD = 2.72$). There were 136 participants who identified as white/Caucasian, 13 participants who identified as Asian/Asian American, 11 participants who identified as Hispanic, six participants who identified as Middle Eastern, six participants who identified as "other," and five participants who did not respond. Participants were 46 MSI students, 48 MSII students, 47 MSIII students, 35 MSIV students, and one student who did not specify their current year.

After obtaining IRB approval, participants completed an online survey asking them to create the ideal medical educator using a similar budget method to the one adapted from Senko et al. (2012) by Goldman et al. (2017). Given that medical students do not participate in clinical medical trainings until their third year of medical school, MSI and MSII were instructed to create an ideal *nonclinical* medical educator, while MSIII and MSIV students were instructed to create an ideal *clinical* medical educator. Participants who completed the survey were entered into a raffle for one of 10 Amazon gift cards ranging from $25 to $100 in value. Upon accessing the survey, participants were presented with the following prompt:

Imagine you are assigned with the task of creating the ideal [clinical/nonclinical] medical school educator. You are given a total of $20 to buy attributes/characteristics that you would want him or her to have. Below, a number of characteristics and behaviors are listed and described. You may invest—in single dollar increments—up to $10 in any one of these characteristics or behaviors. The more money you invest in a characteristic, the more valuable it should be to you. Your total should sum to $20.

Participants constructed their ideal medical educator from a list of 10 potential teaching behaviors and characteristics, each of which was accompanied by a brief description (see

Table 1). The order in which teaching behaviors and characteristics were listed was randomized for each participant to account for the influence of ordering or presentation on participants' responses. After creating their ideal medical educator using the hypothetical $20 (i.e., necessity) budget, participants were presented with a second prompt instructing them to complete the same task again using a $60 (i.e., luxury) budget. Using this method, participants constructed two different versions of their ideal medical educator: one based on a necessity budget and one based on a luxury budget. Previous research has demonstrated that this budget approach can provide insight regarding the ways in which students prioritize different aspects of the instruction they receive (e.g., Goldman et al., 2017; Senko et al., 2012).

Results

Our first research question involved MSI and MSII medical students' preferences for their nonclinical medical school educators' teaching behaviors and characteristics. A one-way repeated-measures ANOVA tested whether significant differences existed between medical students' hypothetical investments in the 10 teaching behaviors and characteristics provided. Given that Mauchly's test of sphericity indicated that the data violated assumptions of normality for both the necessity (χ^2 [44] = 315.15, $p < .001$) and luxury (χ^2 [44] = 110.92, $p < .001$) budgets, we corrected the degrees of freedom for our analyses using the Greenhouse-Geisser estimate of sphericity ($\varepsilon = .64$; see Greenhouse & Geisser, 1959) for the limited budget and the Huynh–Feldt estimate of sphericity ($\varepsilon = .89$; see Huynh & Feldt, 1976) for the luxury budget. The repeated-measures ANOVA yielded significant differences between medical students' investments in nonclinical teaching behaviors and characteristics for the necessity budget, $F(5.74, 533.40) = 76.123$, $p < .001$, $\eta_p^2 = .45$. Medical students' investments varied when they were provided with a limited budget of $20, ranging from .20 (1.01%) in assertiveness to 4.49 (22.45%) in clarity. Pairwise comparisons revealed that medical students prioritized clarity, relevance, and competence when creating their ideal nonclinical medical educators using the necessity budget, whereas assertiveness and self-disclosure received lowest priority. The repeated-measures ANOVA for medical students' hypothetical investments based on a luxury budget also yielded significant differences, $F(8.02, 745.58) = 153.32$, $p < .001$, $\eta_p^2 = .62$. Medical students' investments continued to differ when students were provided with an increased budget of $60, ranging from 1.28 (2.13%) in assertiveness to 9.29 (15.48%) in clarity. Pairwise comparisons revealed that medical students prioritized clarity, competence, and relevance when building an ideal nonclinical medical educator using a luxury budget, whereas assertiveness and self-disclosure received lowest priority. Percentages of MSI and MSII medical students' fund allocations for all 10 teaching behaviors and characteristics, as well as a summary of the significant pairwise comparisons, are presented in Table 2 for both the necessity and luxury budgets.

Our second research question was concerned with whether MSI and MSII medical students perceived particular teaching behaviors and characteristics more as luxuries than as essential components of nonclinical instruction. To address this question, the hypothetical funds which students invested were converted to percentages for both the necessity and luxury budgets, then compared across a series of paired samples t-tests. Teaching behaviors and characteristics were interpreted as luxury components of

Table 2. Comparisons of mean percentages for MSI and MSII medical student investments in nonclinical medical educators with necessity and luxury budgets.

| | Allotted funds | | | | | | | |
| | $20 budget | | $60 budget | | | | | |
Behavior/characteristic	M	SD	M	SD	Change in spending	t(93)	r	d
Assertiveness	1.01%[a]	2.27	2.13%	2.49	+1.12%^	4.24	.425	.438
Responsiveness	8.72%[b]	6.13	10.00%[f]	3.29	+1.27%	2.02	.267	.209
Clarity	22.45%	10.10	15.48%[g]	2.13	−6.97%^	−7.18	.417	.740
Relevant	16.92%[c]	9.79	14.06%[h]	3.45	−2.86%*	−3.05	.377	.315
Competence	16.76%[c]	9.88	14.42%[gh]	3.18	−2.34%*	−2.55	.456	.263
Character	8.83%[bd]	6.28	11.45%[fi]	3.73	+2.62%^	4.20	.356	.433
Caring	10.64%[b]	7.34	12.16%[i]	3.57	+1.53%	2.14	.364	.220
Immediacy	5.80%[e]	4.88	7.45%[j]	3.63	+1.65%*	3.32	.389	.342
Humor	6.06%[de]	5.13	8.62%[fj]	3.56	+2.55%^	5.13	.430	.531
Disclosure	2.82%[a]	5.80	4.24%	3.48	+1.41%	2.29	.241	.237

Note. For each budget column, values with unshared subscripts differ significantly at $p < .05$. Dollars were converted into spending percentages (i.e., funds spent/total funds allotted) across both budgets for purposes of comparison. Differences in spending percentages are flagged for significance, $*p < .01$, $^p < .001$. Positive increases from the necessity (i.e., $20) to the luxury (i.e., $60) budget represent luxury items, while decreases reiterate necessity classifications due to spending patterns with excess funds (see Senko et al., 2012). t = paired samples t-test, r = paired samples correlation, d = standardized mean difference accounting for r.

instruction when students invested a significantly greater percentage of their hypothetical funds in those items based on a $60 budget compared to the amount they invested in those same components when only provided with a $20 budget (Goldman et al., 2017; Senko et al., 2012). Using this approach, assertiveness, character, immediacy, and humor were characterized as luxury components of nonclinical medical instruction given that students invested significantly more of their hypothetical funds in each quality when provided a luxury budget (see Table 2).

Our third research question inquired about MSIII and MSIV medical students' preferences for teaching behaviors and characteristics when learning from clinical medical school educators. A one-way repeated-measures ANOVA explored differences between medical students' hypothetical investments in the 10 teaching behaviors and characteristics provided. Mauchly's test of sphericity indicated that the data violated assumptions of normality for both the necessity (χ^2 [44] = 256.00, $p < .001$) and luxury (χ^2 [44] = 137.74, $p < .001$) budgets; thus we once again corrected the degrees of freedom for our analyses using the Greenhouse–Geisser estimate of sphericity ($\varepsilon = .63$) for the limited budget and the Huynh–Feldt estimate of sphericity ($\varepsilon = .84$) for the luxury budget. The repeated-measures ANOVA yielded significant differences in medical students' investments in teaching behaviors and characteristics using the necessity budget, F (5.68, 460.41) = 35.48, $p < .001$, $\eta_p^2 = .31$. Students' investments varied when they were provided with a limited budget of $20, ranging from .49 (2.44%) in assertiveness to 3.45 (17.26%) in clarity. Pairwise comparisons revealed that medical students prioritized clarity, relevance, competence, and caring when building their ideal clinical medical educator using a necessity budget, while assertiveness and self-disclosure received lowest priority. Medical students' investments in relevance, competence, and caring—although descriptively greater—did not differ significantly from investments in responsiveness; nor did students' investments in competence significantly differ from investments in character. The repeated-measures ANOVA for medical students' hypothetical investments based on a luxury budget also yielded significant differences, F(7.52, 608.98) =

82.58, $p < .001$, $\eta_p^2 = .51$. Medical students' investments continued to differ when students were provided with an increased budget of $60, ranging from 1.74 (2.91%) in assertiveness to 8.52 (14.21%) in clarity. Pairwise comparisons revealed that students prioritized clarity, competence, relevance, and caring while assertiveness and self-disclosure received lowest priority. Medical students' investments in relevance and competence—although descriptively greater—did not differ significantly from investments in responsiveness and character, and students' investments in caring did not differ significantly from investments in character. Percentages of MSIII and MSIV medical students' fund allocations for all 10 teaching behaviors and characteristics, as well as a summary of the significant pairwise comparisons, are presented in Table 3 for both the necessity and luxury budgets.

Our fourth research question was concerned with whether MSIII and MSIV medical students perceived specific teaching behaviors and characteristics more as luxuries than as essential components of clinical instruction. To address this question, the hypothetical funds that MSIII and MSIV medical students invested were converted to percentages for both the necessity and luxury budgets, then compared across a series of paired samples t-tests. Similar to our analysis of RQ2, teaching behaviors and characteristics were interpreted as luxury components when students invested a significantly greater percentage of their hypothetical funds in those items using the luxury budget than they did using the necessity budget. Using this approach, immediacy alone was characterized as a luxury component of clinical medical instruction (see Table 3).

Our fifth research question was concerned with whether medical students prefer different teaching behaviors and characteristics from clinical and nonclinical medical educators. A series of Welch's t-tests (based on a significance level of $p < .01$ to mitigate Type 1 error) revealed significant differences in medical students' preferences for instructional clarity and assertiveness on the necessity budget (see Table 4) and clarity and responsiveness on the luxury budget (see Table 5). Specifically, MSI and MSII medical students prioritized clarity more than MSIII and MSIV students, while MSIII and

Table 3. Comparisons of mean percentages for MSIII and MSIV medical student investments in clinical medical school educators with necessity and luxury budgets.

| | Allotted funds | | | | | | | |
| | $20 budget | | $60 budget | | | | | |
Behavior/characteristic	M	SD	M	SD	Change in spending	t(81)	r	d
Assertiveness	2.44%[a]	3.95	2.91%[j]	3.06	+.47%	1.29	.589	.143
Responsiveness	10.54%[bdg]	7.45	11.46%[k]	3.52	+.92%	1.36	.585	.151
Clarity	17.26%[c]	9.66	14.21%[l]	3.17	−3.05%*	−3.15	.432	.348
Relevant	15.85%[bc]	10.03	12.74%[kl]	3.64	−3.11%*	−3.27	.544	.361
Competence	14.51%[bcd]	8.88	13.17%[kl]	4.12	−1.34%	−1.48	.392	.164
Character	10.24%[defh]	6.98	11.46%[km]	3.88	+1.22%	1.98	.602	.219
Caring	12.32%[bcf]	8.14	13.09%[lm]	3.86	+.77%	.96	.451	.338
Immediacy	6.40%[ei]	6.20	8.35%[n]	4.09	+1.95%*	3.30	.523	.364
Humor	7.50%[ghi]	6.40	8.78%[n]	4.52	+1.28%	2.18	.573	.241
Disclosure	2.93%[a]	3.93	3.82%[j]	3.42	+.89%	2.51	.621	.275

Note. For each budget column, values with unshared subscripts differ significantly at $p < .05$. Dollars were converted into spending percentages (i.e., funds spent/total funds allotted) across both budgets for purposes of comparison. Differences in spending percentages are flagged for significance, *$p < .01$, ^$p < .001$. Positive increases from the necessity (i.e., $20) to the luxury (i.e., $60) budget represent luxury items, while decreases reiterate necessity classifications due to spending patterns with excess funds (see Senko et al., 2012). t = paired samples t-test, r = paired samples correlation, d = standardized mean difference accounting for r.

Table 4. Comparisons between clinical and nonclinical medical student investments based on a necessity budget.

Behavior/characteristic	Nonclinical (MSI and MSII)		Clinical (MSIII and MSIV)		df	t	p	d	U₃
	M	SD	M	SD					
Assertiveness	.20	.45	.49	.79	125	2.99	.003	.616	73.1%
Responsiveness	1.75	1.23	2.11	1.49	157	1.76	.081	.264	60.4%
Clarity	4.49	2.02	3.45	1.93	173	−3.48	.001	.526	70.1%
Relevance	3.38	1.96	3.17	2.05	170	−.71	.480	.105	54.2%
Competence	3.35	1.98	2.90	1.78	174	−1.59	.115	.239	59.4%
Character	1.77	1.26	2.05	1.40	164	1.40	.162	.210	58.3%
Caring	2.13	1.47	2.46	1.63	165	1.43	.155	.213	58.4%
Immediacy	1.16	.98	1.28	1.24	153	.71	.478	.107	54.3%
Humor	1.21	1.03	1.50	1.28	155	1.63	.106	.250	59.9%
Disclosure	.56	1.16	.59	.79	164	.15	.884	.030	51.2%

Note. t = Welch's independent samples t-test, d = standardized mean difference, U₃ = percentage of medical students in the clinical educator group (MSIII and MSIV) that will be above the mean of the nonclinical educator group (MSI and MSII).

Table 5. Comparisons clinical and nonclinical medical student investments based on a luxury budget using Welch's t-tests.

Behavior/characteristic	Nonclinical educator (MSI and MSII)		Clinical educator (MSIII and MSIV)		df	t	p	d	U₃
	M	SD	M	SD					
Assertiveness	1.28	1.49	1.74	1.84	156	1.84	.068	.275	60.8%
Responsiveness	6.00	1.97	6.88	2.11	167	2.84	.005	.431	66.7%
Clarity	9.29	1.28	8.52	1.90	139	−3.08	.002	.475	68.3%
Relevance	8.43	2.07	7.65	2.19	168	−2.45	.015	.366	64.3%
Competence	8.65	1.91	7.90	2.47	151	−2.22	.028	.340	63.3%
Character	6.87	2.24	6.88	2.33	169	.02	.987	.004	50.2%
Caring	7.30	2.14	7.85	2.32	166	1.65	.102	.246	59.7%
Immediacy	4.47	2.18	5.01	2.45	163	1.55	.124	.233	59.2%
Humor	5.17	2.14	5.27	2.71	153	.26	.792	.041	51.6%
Disclosure	2.54	2.09	2.29	2.05	171	−.80	.425	.121	54.8%

Note. t = Welch's independent samples t-test, d = standardized mean difference, U₃ = % of medical students in the clinical educator group (MSIII and MSIV) that will be above the mean of the nonclinical educator group (MSI and MSII).

MSIV students prioritized assertiveness and responsiveness more than MSI and MSII medical students.

Discussion

This study explored the applicability of RRGT (Mottet et al., 2006) beyond the traditional college classroom, examining medical students' instructional preferences using a budget approach. Both clinical and nonclinical medical students exhibited a preference for medical school educators who (a) teach course content in comprehendible ways, (b) connect course content to students' interests, needs, and goals, and (c) demonstrate subject matter expertise. Clinical medical students also exhibited a preference for medical school educators who (d) behave in ways suggesting that they understand their students and have students' best interests at heart. Taken together, the results of our study and the work of Goldman et al. (2017) suggest that students' instructional

preferences are similar in medical school compared to undergraduate college classrooms. While RRGT proposes that students enter learning environments with different rhetorical and relational needs (Mottet et al., 2006), the ways in which learners prioritize these needs may be more similar than they are distinct—presenting a "very real possibility that certain [teaching] behaviors are more important than others" (Goldman et al., 2017, p. 290) across instructional contexts. Results of the current study, as well as those of Goldman et al. (2017), suggest that these needs might manifest in consistent preferences for rhetorical teaching behaviors across both medical school and traditional college classroom contexts, although medical students' preferences may change as they transition from nonclinical to clinical instruction.

Recall the high-stakes environments which medical students must continuously navigate. While undergraduate students in traditional college classrooms are generally expected to complete assessments as a component of their coursework, examinations such as the National Board of Medical Examiners and the United States Medical Licensing Examinations are both uniquely rigorous and professionally impactful for medical students. Indeed, sufficient performance on these examinations is an important prerequisite to obtaining medical licensure in the United States, and failing to pass either assessment can end a medical student's prospective career before it ever begins. Further, even after passing these high-stakes assessments and obtaining a medical license, medical students must retain the content they have learned well into their careers, and even minor mistakes in future applications of that content can lead to dire consequences for their patients (Makary & Daniel, 2016). Medical students who recognize the professional impact of learning instructional content may thus exhibit particular preferences for their instructors' use of rhetorical teaching behaviors, given the emphasis of those behaviors on facilitating students' retention and understanding of that content. That is, medical students may perceive that their instructors teaching clearly, demonstrating competence, and making content relevant is more directly connected to obtaining medical licensure and having successful future careers than relational teaching behaviors.

This is not to suggest that instructors should focus exclusively on enacting rhetorical behaviors, nor should they neglect to incorporate relational aspects of teaching. Best practices in medical education document the importance of facilitating interpersonal relationships with students, emphasizing the importance of inspiring, supporting, and involving students through communication (Sutkin et al., 2008) and describing relationship-building between students and their teachers as "underpinning the creation of professional identity" (Gibson et al., 2018, p. 438). Further, previous research exploring student perspectives as far as the qualities and characteristics of an "ideal" instructor have emphasized the importance of relational aspects of teaching, such as personality (Arnon & Reichel, 2007), enthusiasm (Alrakaf et al., 2014; McLean, 2001), and caring (Komarraju, 2013), and studies have repeatedly demonstrated that instructors can meaningfully enhance students' learning experiences and outcomes when they foster students' positive affective experiences by focusing on relational elements of teaching (e.g., Allen et al., 2006; Goodboy et al., 2018; Rodríguez et al., 1996). Given this, although medical students in this study may have exhibited greater preferences for medical educators' use of rhetorical teaching behaviors overall, this should not be interpreted as evidence that relational teaching behaviors are unimportant.

In fact, while medical students generally invested greater funds in rhetorical teaching behaviors and characteristics, students creating clinical medical educators exhibited greater preference for relational teacher qualities than students creating nonclinical medical educators, as well as relinquished some of their funds toward clarity. In addition, students' investments in clinical teaching behaviors and characteristics highlighted immediacy, alone, as a luxury component of clinical instruction, with investments in other relational qualities (e.g., caring, responsiveness) remaining relatively consistent across budgets. These findings suggest that medical students' instructional preferences may change as they progress from nonclinical to clinical education, with preferences for relational aspects of instruction becoming more salient as students continue in their studies. The consistency with which medical students currently undergoing clinical training invested hypothetical funds in relational behaviors across budgets suggests that, although they made greater investments in rhetorical behaviors overall, they nevertheless perceive teaching behaviors and characteristics such as caring and responsiveness as important components of the instruction they receive.

Why might medical students undergoing clinical training prefer relational teaching behaviors more than students receiving didactic instruction? Given the daunting challenges that medical students regularly face during clinical instruction (Dyrbye et al., 2005; Friedman et al., 2011; MacLeod et al., 2003; Rappaport & Witzke, 1993), medical educators' efforts to facilitate personal relationships may be perceived as more valuable than during initial nonclinical instruction (in which students participate in lessons structured more similarly to those occurring in traditional undergraduate classrooms) in that they provide a potential interpersonal resource which can be used to address those challenges. Similarly, considering medical students' heightened risk of stress (Schwenk et al., 2010), clinical educators' relational teaching behaviors may be particularly appreciated insofar as they arouse more positive affective states for students feeling overwhelmed in their clinical trainings. Conversely, clinical educators' use of relational teaching behaviors might constitute a welcome deviation from the norm for students. Unfortunately, previous research suggests that mistreatment and abuse from clinical faculty and staff are not uncommon occurrences for medical students (Cook et al., 2014; Oser et al., 2014). Given this, clinical educators who are responsive to students' relational needs may be particularly appreciated and preferred.

Overall, however, medical students exhibited greater preference for rhetorical aspects of instruction. As proposed by Goldman et al. (2017), it is likely that students prefer their instructors to teach in ways which incorporate both rhetorical and relational elements. However, as medical educators consider pedagogical strategies, our results suggest that students associate greater importance with rhetorical teaching behaviors and characteristics than their relational counterparts.

Implications for teaching and learning

The findings of this study have several pedagogical implications for medical educators. First, given that medical students in this study prioritized clarity, relevance, and competence, medical educators should strive to be as clear and as relevant as possible in their teaching—demonstrating subject matter expertise with straightforward explanations of material in a manner related to students' interests in their areas of emphasis. While

this may seem like an intuitive recommendation for educators in any instructional context, Berman (2015) reported that it can be particularly challenging in medical education, explaining that "medical education frequently has difficulty in clearly defining objectives for medical learners because of the complex nature of medical practice" (p. 388). Given this, Berman recommended that medical educators "should always begin by crafting clear learning objectives … in order to provide a compass for the learning activities planned for medical students," ensuring that those objectives are "clear to both student and teacher, specific, observable, measurable, and assessable," as well as "realistic and achievable" (p. 389). Once medical educators have established clear learning objectives, research suggests that those objectives may be best pursued by employing a combination of interactive and clinically integrated teaching (Khan & Coomarasamy, 2006). By teaching in interactive ways (e.g., requesting relevant facts and opinions to stimulate problem-solving and discussion, asking students to clarify complex concepts; Steinert, 1996) while providing students with real-life, clinical examples of course content (e.g., having students observe and assist in a medical educator's actual clinical practice), medical educators can more clearly exemplify material to their students while simultaneously serving as exemplars of best medical practice.

Second, medical school educators may benefit from reflecting on their pedagogy and prioritizing their own rhetorical and relational goals. Medical school educators would ideally like to accomplish all of their rhetorical and relational goals for instruction. Unfortunately, given the realities of teaching, no instructor is provided with unlimited time and resources with which to cover important course content and achieve learning objectives. Given this, instructors might try and identify which particular aspects of their instruction they personally perceive as most important and consider how closely their instructional goals align with their students' preferences. While medical students may prefer their medical educators to enact rhetorical teaching behaviors, they nevertheless still find value in relational behaviors, especially in clinical education settings. If medical educators are unable to sufficiently integrate time-intensive relational teaching behaviors into instruction, it may thus be beneficial to consider alternative ways in which they can address students' relational preferences (e.g., out-of-class meetings, one-on-one sessions; Yiu, 2005). Put simply, there is only so much that can be accomplished in a single class session when it comes to meeting all of students' rhetorical and relational preferences. Perhaps medical students' relational preferences can continue to be met outside of formal class meetings and in clinical education settings.

Limitations and future directions

This study had several limitations. First, while roughly 77% of the sample in the current study identified themselves as white/Caucasian, recent observational research based on data from the Association of American Medical Colleges suggests that this demographic only comprises 59% of students enrolled across 120 medical schools in the United States (Boatright et al., 2018). Given this, it is possible that this study's sample includes an over-representation of white/Caucasian medical students, potentially limiting the generalizability of this study's findings beyond the institution from which data were collected. Second, medical students were instructed to invest in isolated teaching behaviors and characteristics when creating their ideal medical educator. However, teaching is

multifaceted in nature (Sutkin et al., 2008); comprising numerous components that simultaneously interact, overlap, and expand upon one another. Competence, for example, is one of three teaching characteristics comprising students' overall impressions of instructor credibility, along with character and caring (McCroskey & Teven, 1999). Similarly, relevant teaching often entails the provision of personal or "real world" examples to reinforce course content (Muddiman & Frymier, 2009), thus enhancing clarity. Each of these examples reinforce Mottet et al.'s (2006) suggestion that teaching behaviors and characteristics do not exist in isolation, making it feasible that one aspect of an instructors' teaching may align with different student preferences simultaneously. While the results of our study inform how medical students prioritize isolated teaching behaviors and characteristics, they do not speak to the ways in which these behaviors and characteristics may interact with one another or contribute to the satisfaction of students' rhetorical and relational instructional preferences at the same time.

Third, student participants were asked to prioritize different teaching behaviors and characteristics based upon written descriptions rather than actual examples. As noted by Goldman et al. (2017), it is possible that some students may not necessarily recognize particular teaching behaviors and characteristics which influence their learning experiences based upon descriptions alone. While the budget method employed in this study provides insight into how medical students prioritize different aspects of the instruction they receive, future research may find that students prioritize teaching behaviors and characteristics differently when provided with concrete examples based on real, observable behaviors.

Fourth, this study did not collect open-ended data from participants regarding their rationale for investing in particular teacher qualities and characteristics over others. While our results highlight preferential differences for instruction between clinical and nonclinical students, they do not speak to how students' instructional preferences may be connected with other potential influences such as students' individual personalities, values, and goals. Goldman et al. (2017), for example, found that undergraduates' instructional preferences varied based upon students' sense of academic entitlement, and similar dispositional factors may also influence medical students' preferences. Similarly, it is feasible that medical students' preferences may fluctuate over time, with students prioritizing certain teacher qualities and characteristics (e.g., clarity, relevance) more under specific circumstances (e.g., when preparing for high-stakes examinations). Future research could inform "why" medical students prioritize particular teacher qualities and characteristics, as well as "when," by employing open-ended surveys, interviews, or focus groups.

Conclusion

This study replicated the work of Goldman et al. (2017) to extend RRGT (Mottet et al., 2006) to instructional contexts beyond the traditional college classroom, exploring how medical students' teaching preferences may be grounded in their rhetorical and relational needs. In particular, when instructed to prioritize specific teaching behaviors and characteristics in constructing an ideal medical school educator, medical students exhibited a greater preference for rhetorical behaviors than relational behaviors, similar to undergraduate students (Goldman et al., 2017). Our findings suggest that medical students

want their medical educators to prioritize the rhetorical elements of instruction—namely clarity, relevance, and competence, but during clinical education, more relational teaching behaviors are prioritized.

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