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How medical students' perceptions of instructor autonomy-support mediate their motivation and psychological well-being

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ABSTRACT

Purpose: Medical student well-being is an increasing concern in medical education. Understanding the role instructors and programs have in supporting well-being is an important puzzle piece. This study explores the relationship between medical students' perceptions of instructor autonomy-support, motivation, and well-being. Using self-determination theory, we aim to provide a practical framework through which medical instructors can support student autonomy and well-being in the learning environment.

Materials and methods: Students from the University of Saskatchewan completed a survey measuring perceptions of the learning climate (LC) (instructor autonomy-support), satisfaction/frustration of basic motivational needs (autonomy, competence, relatedness), and psychological well-being. Multiple linear regression was used to determine whether age, gender, and year of study affected students' well-being, before a mediation model was tested to assess the direct effect of the LC and indirect effects of students' basic need fulfillment on their well-being.

Results: The response rate was 183/400 (46%). Higher ratings of autonomy-support significantly predicted better student well-being. This was mediated completely by students' feelings of basic need fulfillment. Relatedness satisfaction contributed most to ratings of instructor autonomy-support.

Conclusions: Cultivating autonomy-support for medical students is critical to their well-being. Learning environments that optimize autonomy-support will also support students' feelings of relatedness and competence.

KEYWORDS
Medical student; autonomy-support; learning environment; motivation; psychological well-being

Introduction

Learner well-being is an area in medical education that has grown in importance in recent years, due to increased prevalence of medical student distress (Rotenstein et al. 2016). The learning environment (curricular structures and teacher actions) that medical students are immersed is an important contributor to a student's well-being. In particular, autonomy-supportiveness (e.g. perspective-taking, demonstrating relevance, and providing opportunities for choice and self-regulation) is a key component to promoting a positive learning environment where students can thrive. Although studies have identified the importance of autonomy-support to medical learners in general (Williams and Deci 1998; Baldwin et al. 2012; Kusurkar et al. 2013; Kusurkar and Croiset 2015), less is known regarding medical student well-being. To our knowledge, none have assessed the relationship between medical students' perceptions of instructor autonomy-support and their psychological well-being (PWB), and whether fulfillment of students' basic motivational needs (autonomy, competence, relatedness) mediates that relationship. We sought to answer this question using a test of self-determination theory (SDT), with assessment of whether demographic aspects (age, gender, and year of study) affected the variance in PWB – toward a better understanding of factors that contribute to medical student well-being (Shah et al. 2010; Rahimi et al. 2014). A better sense of the relationship between instructor autonomy-support and learner well-being in medical school can directly inform effective teacher practices used by physician residents, attending physicians, and medical teachers when interacting with students.

Practice points

- Supporting medical students' autonomy is critical to their psychological well-being.
- How medical students perceive autonomy-support is largely mediated by satisfaction or frustration of their basic psychological needs for motivation (autonomy, competence, and relatedness).
- Learning environments that foster autonomy-support best will also support medical students' motivational needs for relatedness and competence.

Background

The learning environment refers to the physical and psychosocial contexts in which students learn and is shaped by the interactions they have with peers, faculty,

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curriculum, and program infrastructure (Genn 2001a, 2001b). It is an important determinant of medical student attitudes, knowledge, behavior, and progress in their education (Genn 2001a, 2001b). It is becoming increasingly acknowledged that learning environments that foster student needs and goals are critical to their well-being (Grbic and Sondheimer 2014). In view of this, researchers are progressively exploring medical students' perceptions of the learning environment (Miles et al. 2012). This research demonstrates that negatively perceived learning environments in medical school encumbers a range of beneficial student qualities (Shochet et al. 2013), from academic performance (Wayne et al. 2013; Rusticus et al. 2014), to quality of life (Enns et al. 2016), to empathy for patients (Hojat et al. 2009). There is also a known association between students' negative perceptions of the learning environment, which are considered less student-centered (Dunham et al. 2017), and perceived stress and burnout over time (Dyrbye et al. 2009; Brazeau et al. 2010). An important consideration in creating supportive learning environments for medical students is the autonomy-supportiveness of instructors.

Autonomy-support represents a positive interpersonal orientation in which those in positions of authority (e.g. instructors) take learner perspectives into account (Williams and Deci 1998; ten Cate et al. 2011). Practically, this may come in the form of providing freedom and choices, listening attentively and suspending judgment to solicit and acknowledge learner perspectives, offering rationales and demonstrating relevance, and engaging learners in the learning process. In contrast, controlling teaching methods impose external pressures onto learners (e.g. using rewards and punishments as primary incentives), involve giving feedback harshly, hypercritically, or impersonally, and takes little account of learners' perspectives (Williams and Deci 1998). Here, we make an important distinction between *autonomy* and *autonomy-support*. Autonomy represents intrinsic motivation, acting with a sense of volition and self-regulation, out of genuine interest; e.g. studying to deeply understand a topic instead of memorizing content for a higher exam score (Ryan and Deci 2000). Autonomy-support pertains to how much learners feel their perspectives are acknowledged by their instructors and how much they believe their instructors give them choices and engage them; e.g. to find their own solutions to various problems (Williams and Deci 1998; Ryan and Deci 2017).

A growing body of evidence largely points to a benefit of supporting learner autonomy in educational settings (Williams and Deci 1998; Baldwin et al. 2012; Kusurkar et al. 2012), toward reducing anxiety, improving engagement and academic achievement, and increasing students' sense of competence, compared to students who perceive their instructors as more controlling (Deci et al. 1981; Grolnick and Ryan 1987). Studies on autonomy-support which have assessed learning environments in medical education, albeit limited, are complementary in terms of the clear benefit of instructor autonomy-support for medical learners (Williams and Deci 1996, 1998; Kusurkar et al. 2012, 2013). However, existing research on autonomy-support in medical education has largely focused on physician residents in unique medical specialties and learning environments (Williams et al. 2008; Burgis et al. 2012; Young et al. 2017), with less consideration of the medical undergraduate context. Thus, little is known regarding the nexus between medical students' perceptions of instructor autonomy-support in this environment, their motivation, and their PWB. SDT is a widely validated framework for the study of motivation and well-being that may be used for this purpose.

SDT concerns people's innate psychological needs and motivations to grow and flourish. It posits that all human beings universally require satisfaction of three basic psychological needs for optimal motivation, development, and well-being, regardless of individual or sociocultural differences (Chen et al. 2015). These basic motivational nutrients are autonomy (feeling a sense of freedom and volition in one's endeavors), competence (feeling effective and confident in one's environment), and relatedness (feeling a sense of closeness and trust with others) (Deci and Ryan 2008). In contrast, frustration of any of these basic needs predicts more controlled forms of motivation and ill-being; e.g. reduced psychological functioning, maladjustment, and psychopathology (Vansteenkiste and Ryan 2013). For a systematic review of supporting literature from the broader context of health professions education, dealing with basic psychological need satisfaction, refer to Orsini et al. (2016, 2018).

An important principle of SDT is that satisfaction of each of these basic needs is facilitated foremost by autonomy-support, whereas controlling contexts (e.g. educational environments) can disrupt not only autonomy satisfaction but also relatedness and competence need fulfillments (Ryan and Deci 2017). Although SDT research has shown that any one of the three needs may 'emerge' to take the lead in a given social environment, in most settings, having support for autonomy plays a critical role in allowing individuals to satisfy all three of their basic needs, which in turn supports more intrinsic motivation and individual well-being (Ryan and Deci 2017). Accordingly, SDT's principles surrounding basic psychological needs and the quality of motivation (i.e. intrinsic or 'autonomous' versus extrinsic or 'controlled') are of particular relevance to this study, because medical school learning environments are known to encompass highly controlling aspects (Williams and Deci 1998; Baldwin et al. 2012) and environments that engender controlled forms of motivation tend to produce need-frustration and undesirable wellness outcomes, compared to autonomous ones (Williams and Deci 1998; Black and Deci 2000).

In keeping with these principles, we hypothesized that higher medical student ratings of instructor autonomy-support would significantly predict higher student PWB, and fulfillment of medical students' basic motivational needs (autonomy, competence, and relatedness) would mediate that relationship (see Figure 1).

Materials and methods

Participants

A total of 400 students from all four years of the medical program at the University of Saskatchewan were invited to complete an anonymous online survey, which asked questions related to instructor autonomy-support, basic psychological need satisfaction/frustration, and PWB. The survey was open for 8 weeks toward the end of the academic

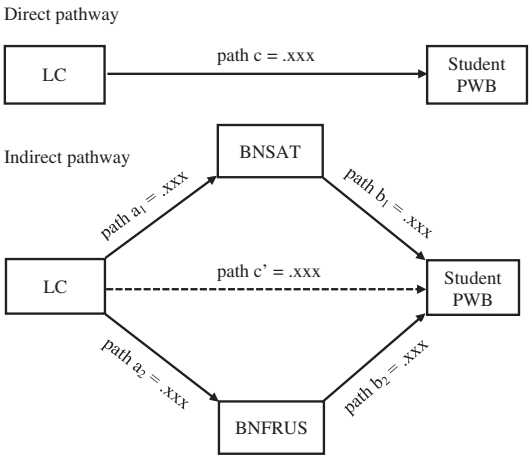

Figure 1. Hypothesized regression model depicting direct effect of medical students' perceptions of the learning climate and indirect (mediation) effects of basic psychological need satisfaction and frustration (incorporating autonomy, competence, relatedness) on psychological well-being. LC: learning climate (student perceptions of instructor autonomy-support); PWB: psychological well-being; BNSAT: basic psychological need satisfaction; BNFRUS: basic psychological need frustration; .xxx: path coefficients (a, b, c, and c') are standardized regression coefficients.

year. Students were sent two reminders to complete the survey, which they could only complete and submit once.

Ethical approval

This research received ethical approval from the University Research Ethics Board. All participants provided written informed consent, prior to participation in the study.

Measures

In addition to demographic information (i.e. age, gender, year of study), the following scales were utilized:

Learning Climate Questionnaire (LCQ): The 15-item LCQ was used to assess the learning climate (LC), by measuring students' perceptions of how autonomy-supportive their medical school instructors were. Since teaching is delivered by various instructors, the LCQ was modified to encompass students' general experience with all their instructors during their respective year in medical school, rather than with one specific instructor. The LCQ was chosen because the student–teacher interaction plays an important role in either supporting or hindering learner autonomy. This scale has demonstrated excellent internal consistency (Williams and Deci 1996; Williams et al. 1997; Black and Deci 2000).

Basic Psychological Needs Satisfaction and Frustration Scale (BPNFS): The 24-item BPNSF scale was used to measure learners' basic psychological need satisfaction of autonomy (AS), competence (CS), and relatedness (RS), or need frustration of the same three needs, autonomy (AF), competence (CF), and relatedness (RF) in the learning environment. For the purpose of assessing students' experiences across their year in medical school, we utilized the general form of this questionnaire. Variables for satisfaction or frustration of autonomy, competence, and relatedness were grouped into overall need satisfaction (BNSAT) or need frustration (BNFRUS) variables (Chen et al. 2015). The BPNSF scale was chosen for the current study because fulfillment of these basic needs are universally predictive of well-being (Bartholomew et al. 2011; Chen et al. 2015). It has demonstrated good internal consistency and construct validity (Chen et al. 2015).

Psychological Well-Being Scale: Ryff's PWB inventory is a 42-item measure of well-being, comprised of six factors: environmental mastery, purpose in life, autonomy, positive relations, personal goals, and self-acceptance (Ryff and Singer 2008). Average ratings across the six factors were combined and averaged into an overall PWB measure, with higher scores representing higher PWB (Nave et al. 2008). The PWB scale was chosen because it captures themes relevant to medical school; i.e. personal development, pursuing meaningful aspirations, overcoming challenges, and cultivating quality relationships (Ryff 1989; Ryff and Singer 2008). The PWB has demonstrated good internal consistency (Ryff 1989).

Statistical analyses

The software program SPSS version 24.0 (SPSS Inc., Chicago, IL) was used for our basic statistical analyses. Detection and removal of invalid or missing data was conducted. After assessing our data for normal distribution and linearity, we assessed our variables for correlation, with variance inflation factor (VIF) as an indicator of multicollinearity (acceptable VIF <5.0). As a measure of internal consistency, reliability tests were performed for all of our scales, using Cronbach's alpha coefficients. These ranged between 0.74 and 0.93 and were all deemed acceptable. Multiple linear regression analysis was used to determine whether age, gender, and year of study affected the variance in the dependent variable, PWB. Where applicable, Levene's test was utilized to assess homogeneity of variance among variables.

To explore the relationship between medical students' perceptions of their instructor autonomy-support, their basic psychological needs for motivation, and in turn, their PWB, a mediation model was tested. Mediation implies that an effect of an independent variable (IV) on a dependent variable (DV) can be explained by a third mediator variable (MED). Through this modeling, the overall effect between the IV and the DV can be unpacked into constituent parts, namely the direct effect of the IV on the DV, and the indirect effect of the IV on the DV through MED (i.e. the mediated effect). Partial-eta squared (sr^2) and Cohen's effect sizes (f^2) were included as standardized measures of the strength of the variable relationships, where Cohen's f^2 of 0.10, 0.25, and 0.40 represent small, medium, and large effect sizes, respectively.

Results

Demographics

The response rate of the medical students was 183/400 (46%). After accounting for missing data points, data from 160 participants were left – 67 males (42%) and 93 females (58%). There were 67 first years (42%), 35 second years (22%), 30 third years (19%), and 28 fourth years (18%). The mean age in our sample was 25.8 years (SD = 4.1). The gender and age distribution characteristics were similar to the

Table 1. Correlations between variables among medical students ($n = 160$).

	Year	Age	Gender	PWB	BNSAT	BNFRUS
Year	–					
Age	0.16	–				
Gender	0.09	−0.07	–			
PWB	−0.03	0.07	0.01	–		
BNSAT	0.01	−0.00	0.00	0.84*	–	
BNFRUS	0.03	−0.03	0.01	−0.83*	−0.83*	–
LC	−0.21*	0.03	0.01	0.48*	0.54*	−0.50*

Year (1–4); gender (0 = male, 1 = female); PWB: psychological well-being; BNSAT: basic psychological need satisfaction; BNFRUS: basic psychological need frustration; LC: learning climate.
*$p < 0.01$ (two-tailed).

overall population, so the sample was considered representative.

As seen in Table 1, the variables for gender, year, age, LC, PWB, basic need satisfaction (BNSAT), and basic need frustration (BNFRUS) were assessed for correlation. Several variables expectedly correlated; however, the collinearity statistics were all within acceptable limits (VIF values <3.0), confirming minimal multicollinearity. Next, we used multiple linear regression to assess the effects of our demographic variables on PWB, and it was found that neither year ($R^2 = 0.001$, $p = 0.728$), nor age ($R^2 = 0.004$, $p = 0.419$), nor gender ($R^2 = 0.000$, $p = 0.943$) significantly affected PWB. These demographic variables were therefore excluded from the subsequent PWB model.

Learning climate, basic psychological needs, and well-being

We explored how the independent variable (LC) predicted the dependent variable (PWB), and whether BNSAT or BNFRUST mediated that relationship. Prior to assessing this, we tested the necessary assumptions by confirming significant effects of (a) LC on PWB, (b) LC on BNSAT and BNFRUS, and (c) BNSAT and BNFRUS on PWB. LC significantly predicted PWB ($\beta = 0.480$, $p < 0.001$), BNSAT ($\beta = 0.538$, $p < 0.001$), and BNFRUS ($\beta = -0.496$, $p < 0.001$). In turn, BNSAT ($\beta = 0.837$, $p < 0.001$) and BNFRUS ($\beta = -0.829$, $p < 0.001$) were significant predictors of PWB. Therefore, all relevant assumptions for the mediation analysis were met. Based on these results, a regression was run assessing the direct effect of LC and indirect (mediation) effects of BNSAT and BNFRUST (incorporating autonomy, competence, relatedness) on student PWB.

As seen in Figure 2, path c shows the significant (direct) effect of LC on student PWB, F (1,152) = 45.58, $p < 0.001$, Cohen's $f^2 = 0.30$ (95% CI = 0.134–0.523). However, when BNSAT ($\beta = 0.523$, $p < 0.001$) and BNFRUS ($\beta = -0.397$, $p < 0.001$) were accounted for in the model, each (indirectly) attenuated this effect entirely (path c′), representing a complete mediation effect, F (3,150) = 179.04, $p < 0.001$, Cohen's $f^2 = 2.53$ (95% CI = 1.812–3.741).

The role of each basic psychological need in well-being

These findings led us to question, post hoc, how satisfaction or frustration of each basic need might individually contribute to student PWB. To determine this, we re-assessed our variables for correlation, this time for each basic need (see Table 2), then ran two regressions, to explore, more specifically, how autonomy, competence, and relatedness each contributed to PWB, when accounting for LC. Again, all variables demonstrated minimal multicollinearity (all VIF values <3.0).

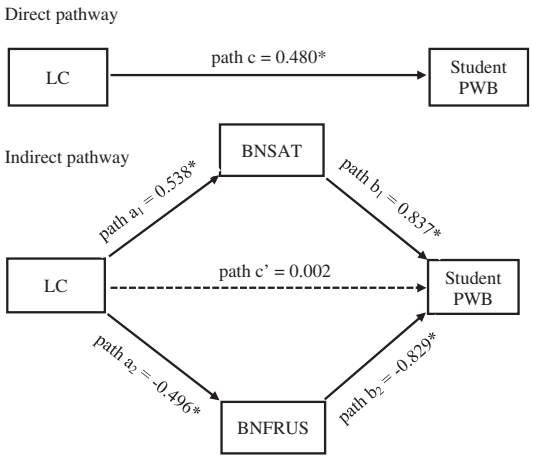

Figure 2. Mediation model depicting the direct effect of the learning climate and indirect effects of basic psychological need satisfaction and frustration on psychological well-being. LC: learning climate (student perceptions of instructor autonomy-support); PWB: psychological well-being; BNSAT: basic psychological need satisfaction; BNFRUS: basic psychological need frustration; path coefficients (a, b, c, and c′) are standardized regression coefficients; *Statistically significant at $p < 0.001$ level (two-tailed).

Table 2. Correlations between variables among medical students ($n = 160$).

	AS	CS	RS	AF	CF	RF	PWB
AS	–						
CS	0.55*	–					
RS	0.52*	0.54*	–				
AF	−0.68*	−0.57*	−0.52*	–			
CF	−0.44*	−0.77*	−0.53*	0.53*	–		
RF	−0.46*	−0.52*	−0.71*	0.54*	0.61*	–	
PWB	0.65*	0.68*	0.74*	−0.66*	−0.71*	−0.72*	–
LC	0.54*	0.42*	0.39*	−0.49*	−0.39*	−0.37*	0.48*

AS: autonomy satisfaction; CS: competence satisfaction; RS: relatedness satisfaction; AF: autonomy frustration; CF: competence frustration; RF: relatedness frustration; PWB: psychological well-being; LC: learning climate.
*Statistically significant at $p < 0.01$ level (two-tailed).

Table 3. Effect of the learning climate on student psychological well-being, accounting for the unique effects of satisfaction of each basic need.

Model	*B*	SE.*B*	*β*	*t*	*p*	sr^2
LC	0.015	0.017	0.046	0.899	0.370	0.001
AS	0.392	0.093	0.239	4.235	<0.001*	0.031
CS	0.583	0.093	0.336	6.274	<0.001*	0.068
RS	0.612	0.075	0.427	8.162	<0.001*	0.116

LC: learning climate; AS: autonomy satisfaction; CS: competence satisfaction; RS: relatedness satisfaction; B: unstandardized beta; SE.*B*: standardized error for the unstandardized beta; *β*: standardized beta; sr^2: semi-partial correlation squared; R^2: coefficient of determination.
F (4,149)=106.16, $p < 0.001$; overall R^2=0.740.
*Statistically significant (two-tailed).

Table 4. Effect of the learning climate on student psychological well-being, accounting for the unique effects of frustration of each basic need.

Model	*B*	SE.*B*	*β*	*t*	*p*	sr^2
LC	0.032	0.017	0.095	1.829	0.069	0.006
AF	−0.339	0.077	−0.259	−4.414	<0.001*	0.038
CF	−0.403	0.073	−0.326	−5.530	<0.001*	0.060
RF	−0.460	0.077	−0.352	−5.950	<0.001*	0.070

LC: learning climate; AF: autonomy frustration; CF: competence frustration; RF: relatedness frustration; *B*: unstandardized beta; SE.*B*: standardized error for the unstandardized beta; *β*: standardized beta; sr^2: semi-partial correlation squared; R^2: coefficient of determination.
F (4,149) = 90.05, $p < 0.001$; overall $R^2 = 0.700$.
*Statistically significant (two-tailed).

As seen in Table 3, satisfaction of each basic need significantly predicted PWB, F (4,154) = 106.16, $p < 0.001$, Cohen's $f^2 = 1.96$ (95% CI = 1.379–2.915). AS contributed least (3%) to the unique variance in PWB, followed by CS (6%), and RS (11%), which contributed most. Put together in the model, the four predictor variables explained 74% of the observed variance in PWB.

As seen in Table 4, frustration of each basic need also significantly predicted PWB, F (4,149) = 90.05, $p < 0.001$, Cohen's $f^2 = 1.62$ (95% CI = 1.120–2.428). AF contributed 3% to the unique variance in PWB, while CF and RF contributed relatively evenly, with 6% and 7%, respectively. The four predictor variables explained approximately 70% of the variance in PWB.

Discussion

The results of this study demonstrate how support or hindrance of medical students' basic psychological needs for motivation can explain (mediate) the relationship between their perceptions of instructor autonomy-support and their PWB. In keeping with the principles of SDT, higher perceived autonomy-support conduced to better student PWB, through students' experiential need satisfaction and frustration in the learning environment. This relationship was found to be completely mediated by medical students' feelings of fulfillment of their basic needs of autonomy, competence, and relatedness, with Cohen's f^2 values ranging between 1.62 and 1.96, indicating large effect sizes. Interestingly, although the LCQ measured perceived autonomy-support, it was medical students' relatedness satisfaction that 'took the lead' in terms of the variance in PWB – not autonomy satisfaction. These findings suggest that (a) supporting learner autonomy, competence, and relatedness is inherently valuable to their well-being in medical school and (b) provision of autonomy-support for medical students may, in theory, be best achieved through teacher-actions that promote feelings of relatedness and competence.

Outlined in Table 5 are various practical examples of how medical educators can support and hinder medical students' basic psychological needs. Here, we highlight the 'see one, do one, teach one' example, a common approach to clinical teaching in Medicine, which may be misconstrued as autonomy-supportive, when in fact it is more controlling, given its step-wise nature. While this method may be seen to support greater independence, according to SDT, independence and autonomy do not represent the same thing and can lead to different motivational outcomes (Ryan and Deci 2017). In other words, people can be autonomous in their choice to be relatively dependent in certain situations, but adhering to a strict 'see one, do one, teach one' approach may inappropriately pressure a student at a level for which they are not ready.

These findings complement other studies highlighting the importance of instructor autonomy-support to learners' autonomous motivation and well-being, both in and outside of medical education (Kusurkar et al. 2011; Baldwin et al. 2012; Campbell et al. 2015; Haerens et al. 2015; Crockett et al. 2019). A fitting example is a comparable study using SDT as a theoretical framework, in which law students' perceptions of supervisory autonomy-support significantly predicted changes in their well-being, which was mediated in the same way, by students' perceptions of basic psychological need support within their learning environment (Sheldon and Krieger 2007). While this study was not conducted in medical education and measured hedonic well-being (i.e. happiness) as opposed to eudaimonic well-being (i.e. full functioning of whole self), both studies derive very similar results based on SDT and converge well to highlight why supporting students' basic psychological needs matters – a concept which SDT expounds is highly generalizable across domains (Ryan and Deci 2017). This seems particularly relevant within highly

Table 5. Practical guide on actions that support and hinder medical students' basic psychological needs for motivation and well-being.

	Teacher actions that support it	Teacher actions that hinder it
Autonomy	• Providing choices and options • Determining what students want or need • Acknowledging student perspectives and trying to understand their viewpoints • Listening, asking questions, showing interest in learner(s) • Providing clear rationale/relevance • Active involvement in learning • Providing thorough responses to questions • Supporting self-directed/independent learning • Providing clear objectives • Pass/fail program structure	• Giving directives or commands • Using controlling language ('must,' 'need,' 'should') • Providing answers • Over-praising and spoon-feeding • Being dismissive and/or defensive • Being unaware of curriculum • Unfair judgment (if student has other areas of interest in medicine) • Not providing relevance of content or teaching • Using incentives (e.g. rewards and punishments) to motivate students
Competence	• Providing timely personalized feedback • Structured learning with clear expectations and guidance • Setting the optimal level of challenge for students (not too hard or too easy) • Providing opportunities to practice and apply concepts • Objectives/EPA's with clear milestones • Content management	• 'Pimping' (embarrassing, comparing, belittling, questioning beyond ability, intimidating) • 'See one, do one, teach one' • Not providing guidance, useful feedback, or resources • Inadequate supervision • Content overload • Fact-based examinations
Relatedness	• Getting to know students (goals, challenges, interests) • Being approachable and having a warm demeanor • Shared decision-making • Making students feel like part of the team • Showing empathy and humility	• Being inaccessible, impersonal, or harsh • Showing disinterest in students • Not acknowledging mistakes • Reinforcing hierarchies • Students made to feel as an 'outsider'

demanding and potentially controlling learning environments.

Limitations

There are several limitations of this study. Research utilizing SDT as a theoretical framework in medical education is still relatively scarce, and more studies are required to help generalize these and our findings. In addition, we relied solely on self-report measures, which allow inferences but not direct construct measurement. This raises the inherent possibility that medical students' perceptions, and not their instructors' autonomy-supportive actions, were driving our results. Self-report also invites the potential for bias, as does a relatively low and unequal sample size across subgroups. Despite equal variances, indicated by the non-significant Levene's tests in well-being across subgroups, caution is still recommended when interpreting these results, and more robust hypothesis testing, including larger sample sizes, is recommended. Additionally, this study looked at the general level of autonomy-support at a medical school, and not the autonomy-support per specific instructor or course, which would be even better for drawing strong conclusions. Future studies may therefore consider students' perceptions of autonomy-support at multiple time points, or among specific instructors, courses, block rotations, or electives in medical school.

Conclusions

In keeping with SDT, our findings suggest that cultivating autonomy-support for medical students is critical to their PWB. Learning environments that do this best will also support medical students' feelings of relatedness and competence, which seem equally, if not more integral to their perceptions of instructor autonomy-support. The beauty of experimenting and incorporating actions that support students' basic psychological needs for motivation is that they can be implemented in any curriculum and at any time, simply by putting the student at the center, just as physicians do with patients.

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Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Data availability statement

The data from this research project are available upon reasonable request.

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Glossary

Autonomy-support: Represents a positive interpersonal orientation in which those in positions of authority (e.g. instructors) take learner perspectives into account. It pertains to how much learners feel their perspectives are acknowledged by their instructors and how much they believe their instructors give them choices and engage them in the learning process.

Adapted from Williams GC, Deci EL. 1998. The importance of supporting autonomy in medical education. Ann Intern Med. doi:10.7326/0003-4819-129-4-199808150-00007.

Basic psychological needs: According to self-determination theory, all human beings require satisfaction of three universal psychological needs, for optimal development, flourishing, and psychological well-being: autonomy (the need to feel in control of one's own life, behaviors, and goals), competence (the need to feel challenged and master one's environment), and relatedness (the need to feel close with and have trusting relationships with others).

Adapted from Ryan RM, Deci EL. 2017. Self-determination theory: basic psychological needs in motivation development and wellness.

Eudaimonic well-being: Centers around growth and human fulfillment, through living a life of virtue and striving toward self-actualization. According to Ryff, this encompasses an integration of self-acceptance, personal growth, personal relationships, life purpose, autonomy, and environmental mastery.

Adapted from Ryff CD, Singer BH. 2008. Know thyself and become what you are: a eudaimonic approach to psychological well-being. J Happiness Stud. 9(1):13–39. doi:10.1007/s10902-006-9019-0.

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