When medical students are autonomously motivated to mentor: a pilot study on confidence in clinical teaching and psychological well-being

Quand les étudiants en médecine se motivent eux-mêmes pour faire du mentorat : une étude pilote sur la confiance dans l'enseignement clinique et le bien-être psychologique

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Abstract

Introduction: Near peer mentorship (NPM) programs can help support medical students' well-being. Most studies, however, have not accounted for students' underlying motives to mentor, nor focused on clinical skills development and teaching. These limitations represent opportunities to better understand what motivates medical student mentors, and how to support their autonomous motivation, clinical development, and well-being.

Methods: Informed by self-determination theory (SDT), we collected data from a group of medical student mentors involved in a NPM program at the University of Saskatchewan called PULSE. We then used correlation and regression to assess the relationship between students' autonomous motivation towards mentoring, perceived competence in teaching the clinical material, and psychological well-being.

Results: In line with our hypotheses, autonomous motivation towards mentoring (identified motivation in particular) was associated with higher perceived competence in clinical teaching, which in turn was associated with greater psychological well-being.

Conclusions: Why medical students choose to mentor in NPM programs appears to have important implications for their clinical confidence and overall well-being. Findings are discussed in terms of designing NPM programs that support student growth and wellness in Canadian medical education.

Résumé

Introduction : Les programmes de mentorat par les pairs peuvent contribuer au bien-être des étudiants en médecine. Cependant, la plupart des études n'ont pas pris en compte les motivations sous-jacentes des étudiants à devenir mentor, ni ne se sont concentrées sur le développement des compétences cliniques et l'enseignement. Ces limites ouvrent des perspectives pour mieux comprendre ce qui motive les étudiants en médecine mentors, et comment soutenir leur motivation autonome, leur développement clinique et leur bien-être.

Méthodes : En nous appuyant sur la théorie de l'autodétermination, nous avons recueilli des données auprès d'un groupe d'étudiants en médecine mentors participant à un programme de mentorat par les pairs à l'Université de la Saskatchewan appelé PULSE. Nous avons ensuite eu recours à la corrélation et la régression pour évaluer la relation entre la motivation autonome des étudiants envers le mentorat, leur perception de leur compétence dans l'enseignement clinique et leur bien-être psychologique.

Résultats : Conformément à nos hypothèses, la motivation autonome envers le mentorat (la motivation identifiée en particulier) a été associée à une plus grande compétence perçue dans l'enseignement clinique, qui à son tour a été associée à un plus grand bien-être psychologique.

Conclusions : Les raisons pour lesquelles les étudiants en médecine choisissent d'être mentors dans les programmes de mentorat par les pairs semblent avoir des implications importantes pour leur confiance en clinique et leur bien-être général. Les résultats sont discutés en termes de conception de programmes de mentorat par les pairs qui soutiennent la progression et le bien-être des étudiants dans le secteur de l'enseignement de la médecine au Canada.

Introduction

The transition to medical school represents a significant adjustment for students, who are known to experience psychological distress surrounding academic and social expectations.[1-3] Near-peer mentorship (NPM) programs, which connect mentees with mentors one or more years their senior, in the same educational program,[4] help ease this transition and facilitate meaningful connections between medical students.[5-6]

NPM programs are effective for various reasons, the main ones being cognitive and social congruence: mentors have a similar role (e.g., daily activities, workload, and interests) and knowledge base to mentees, and they can readily explain the material.[4,6-9] These aspects make it easier for mentees to seek and accept feedback.[6,10] NPM programs also increase mentee morale and resilience,[10-11] reduce perceived stress,[5,6] and improve social skills and relationships.[10,12]

For mentors, NPM programs improve problem-solving and communication,[10] time management, and teaching skills.[6] These skills are now being recognized as key for success in residency and independent practice.[4] And yet, from the published literature, very few NPM programs in Canadian medical education appear to provide opportunities for mentors to teach and practice clinical skills.[13] Peers United in Leadership & Skills Enhancement (PULSE) is a unique NPM program, based at the University of Saskatchewan College of Medicine, that targets medical students' clinical skill development.

PULSE allows first and second-year medical students to participate in regular, near-peer, semi-structured clinical skills sessions.[13-14] Mentors rotate each session, so both groups can gain different perspectives, share ideas, and focus on aspects of their clinical learning (e.g., history taking and physical exam skills). Of note, PULSE sessions were initially designed to be in-person but switched to a hybrid model (via Zoom) during the pandemic,[15] when the data for this study was collected.

PULSE is rooted in self-determination theory (SDT) — a contemporary theory of human motivation and well-being.[15] According to SDT, people's motivation to do something (e.g., mentor) will vary based on how deeply they internalize the value of that activity. SDT therefore identifies different types of motivation along a continuum of internalization: *amotivation* (no motivation for behaviour), *external* (based on incentives and punishments), *negative introjection* (based on internal pressures to avoid negative emotions), *positive introjection* (based on internal pressures to experience positive emotions), *identification* (based on personal importance), and *intrinsic* (based on interest and joy). The first three types are more *controlled* and generally associated with poorer well-being; the latter three types are more *autonomous* and are generally associated with better well-being.[15]

Research in SDT and mentorship supports these principles, including studies on PULSE.[13-14,17] However, it is still unclear why PULSE's mentors are specifically motivated to mentor, and how their motivation influences their clinical confidence and psychological well-being. A better understanding of this would help improve PULSE and possibly other NPM programs in medical education. Informed by SDT, we hypothesized that PULSE's learning environment would stimulate mentors' autonomous motivation and in turn facilitate their perceived competence in clinical teaching and ability to flourish in medical school.[13-14]

Methods

Participants & procedure

All 24 PULSE mentors for the year were invited to complete an anonymous online survey toward the year-end. Responses were collected over a two-month period (April-May 2022), after PULSE sessions had concluded for the year. Of these, 16 (66%) completed the survey. The surveys contained five author-created questions and three previously validated scales, which were oriented to the mentoring role in PULSE (see Measures and Appendix A for questions). Approval was obtained by the USask Research Ethics Board (REB # 1100).

Measures

Motivation towards mentoring. The Comprehensive Relative Autonomy Index (C-RAI) has 24 items and measures types of motivation towards engaging in some activity.[18] It has been used in studies with medical students.[19] In this study, the C-RAI was used to measure students' motivation towards mentoring in PULSE. Participants answered questions about why they mentor, on a scale from 1 (not true at all) to 7 (very true). The C-RAI has six lower-order (*amotivation, extrinsic, negative and positive introjection, identified,* and *intrinsic*) and two higher-order (*controlled* and *autonomous*) subscales. We assessed correlations for all subscales, then used a single RAI score for our regression analyses, which is calculated

by subtracting the *controlled* from the *autonomous* score. Higher scores indicate relatively more autonomy.

Confidence in clinical teaching. The Perceived Competence Scale (PCS) has four items and measures peoples' feelings of competence in an activity. It is a widely used scale with strong psychometric properties.[20-21] In this study, the PCS was used to measure PULSE mentors' perceived competence in teaching clinical skills. Participants answered questions about this, using a scale from 1 (not true at all) to 7 (very true). Scores were determined by averaging the four items, where higher scores reflect higher perceived competence.

Psychological well-being. The Flourishing Scale contains eight items and measures an individual's perceived success in important life areas (relationships, self-esteem, purpose, and optimism). It has previously been validated and is considered a reliable measure of psychological well-being.[22] Participants answer questions using a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). An overall well-being score is then calculated, ranging from 8-56, where higher scores reflect higher psychological well-being.

Statistical analyses

The software SurveyMonkey and SPSS were used for the survey and statistical analyses. There were no outliers and only a few missing data points, which we imputed with sample mean values.[23] We computed basic descriptive statistics for the author-created questions, and Cronbach alpha reliability estimates for all scales. We then assessed variable relationships with Pearson correlations, before running two linear regressions – one assessing how students' autonomous motivation towards mentoring in PULSE related to their perceived competence in clinical teaching, and the second assessing how their perceived competence in clinical teaching related to their psychological well-being.

Results

Sample characteristics

Six mentors (38%) reported being a PULSE mentee the year before. Mentors led an average of 1-3 PULSE sessions during the year (M = 1.6, SD = .72), and 50% indicated they would "very likely" recommend PULSE to their peers. The other 50% indicated "somewhat likely." For the open-ended question #5, the main reasons students cited for why they mentor related to giving back to first years the way that upper years had helped them and desiring to

teach and try something new. Some also saw teaching as a valuable tool for personal growth and improving their own clinical skills, particularly if they felt "behind" at the time. See Table 1 for a summary of reported strengths and weaknesses of PULSE.

Table 1. Summary of mentor comments on PULSE's strengths and weaknesses (Question # 4).

Strengths / Reasons to recommend PULSE
Great opportunity for students to practice clinical skills
A more comfortable learning environment where 2nd years can offer more support on key aspects students struggled with in 1st year
Fun to participate and highly rewarding to teach and help the mentees
Regular chances to review clinical skills, and many different time slots to choose from
Weekly posts/reminders to participate in the College of Medicine Facebook page
Ability to mentor/teach alongside a partner (i.e., not alone)
Not having to book clinical rooms myself
Weaknesses / Reasons not to recommend PULSE
Minimal feedback or guidance from mentees, which limits mentors' awareness of how effective their teaching was
Virtual sessions limit ability to demonstrate and practice physical exam skills
Roles for sign-up not always clear (e.g., is it history taking, or exam stations?)
Difficult to make time for sessions with our busy schedule, especially with required pre-reading and preparation time
One mentor seemed unwelcoming and took over the conversation, which was unfortunate

Autonomous motivation, perceived competence, and psychological well-being

As seen in Table 2, the mentors' motivation was more autonomous than controlled, and they scored high on perceived competence in teaching and well-being. The strength and direction of relationships were as expected based on SDT; however, what stood out was a) the strong negative correlation between *amotivation* and perceived competence in teaching, b) the strong positive correlation between *identification* and perceived competence in teaching, and c) the positive correlation between perceived competence in teaching and psychological well-being.

Each overall regression, assessing the relationship between mentors' autonomous motivation towards mentoring in PULSE and perceived competence in clinical teaching [R^2 = .259, F (1, 14) = p = .044), and between their perceived competence in clinical teaching and psychological well-being (R^2 = .251, F (1, 14) = 4.703, p = .048), was statistically significant. Autonomous motivation to mentor positively related to perceived competence in teaching (β = .509), which positively related to psychological well-being (β = .501).

Table 2. Pearson correlations between student motivation towards mentoring in PULSE, perceived competence in clinical teaching, and psychological well-being

	1	2	3	4	5	6	7	8	9	10	11
1. AMOT	(.86)										
2. EXTR	-.28	(.81)									
3. N-INT	.40	-.12	(.71)								
4. P-INT	.04	-.14	.23	(.93)							
5. IDEN	-.62**	.32	-.31	.18	(.86)						
6. INTR	-.67**	.16	-.55*	.14	.67**	(.91)					
7. CON	.92**	-.18	.72**	.12	.02	-.74**	(.76)				
8. AUT	-.51*	.12	-.23	.68**	.78**	.75**	-.48	(.87)			
9. RAI	-.73**	.16	-.44	.48	.82**	.85**	-.74**	.94**	(.82)		
10. PC-T	-.51*	-.11	-.04	.07	.63**	.40	-.42	.46	.51*	(.78)	
11. PWB	.03	.18	.01	.31	.47	.18	.04	.44	.32	.50*	(.89)
Mean	2.1	1.1	1.3	3.7	5.2	5.4	1.5	4.7	3.2	5.4	47.6
Std. Dev.	1.2	0.2	0.7	1.8	1.4	1.3	0.5	0.1	0.7	0.9	5.5

AMOT, amotivation; EXTR, extrinsic; N-INT, negative introjected; P-INT, positive introjected; IDEN, identified; INTR; intrinsic; CON, controlled; AUT, autonomous; RAI, relative autonomy index; PC-T, perceived competence in teaching; PWB, psychological well-being; Cronbach alphas along the diagonal.
$*\ p = .05.\ **\ p = .01$.

Discussion

The goal of this study was to ex how autonomously motivated PULSE's mentors were towards mentoring other medical students, and how the quality of their motivation to mentor related to their confidence in clinical teaching and well-being in medical school.

In line with our hypothesis, we found that mentors' autonomous motivation towards participating in PULSE was associated with increased perceived competence in clinical teaching. This finding aligns with other studies on medical students' intrinsic motivation and perceived competence in clinical settings.[24] What was interesting, however, was that it was their *identified* motivation (an extrinsic form of autonomous motivation) that was driving this relationship. This too makes sense, given how valuable the mentors said it was to help their junior colleagues, and to brush up for their own clinical learning and exams (Table 1). It further suggests that students' motives to mentor in PULSE might reflect their desire for growth and professional development, through teaching. In line with this idea, we subsequently found that increased confidence in clinical teaching was associated with better well-being – a well-evidenced pattern in SDT,[25] but one that had not been examined within the context of NPM programs in medical education.

Limitations

This study has several limitations. First, it was a pilot study with a small sample size, though the response rate was acceptable, and the results were nevertheless statistically significant. Second, we used a retrospective design, which may have influenced participant engagement in the survey, as well as their recollections about earlier PULSE experiences. Third, the questionnaires we used are self-report scales, which creates some potential for response bias. Finally, this study was done when PULSE was trialing its new hybrid (virtual and in-person) format. It is therefore unclear whether the results would change if PULSE was conducted solely in-person, and caution is recommended when interpreting the generalizability of this study.

Conclusion

Findings from this study suggest that a key reason why medical students mentor relates to how they identify with NPM programs, as these programs facilitate relationships and opportunities to share knowledge with others. At the same time, results highlight the value of incorporating clinical skills in NPM programs, since these elements may support mentors' confidence in their own (developing) clinical skills and psychological well-being. Further research is needed to determine causal relationships and then how we might cultivate individual motivations within NPM programs, how mentee motivations play into their participation, and how we can foster each group's engagement, development, and psychological well-being.

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Appendix A. Survey questions & scales

Demographic questions

1) "Did you participate in PULSE as a mentee in Year 1?" (Yes or no)

2) "What is the average number of sessions you attended as a PULSE mentor?" (1, 2, 3, 4+)

3) "How likely are you to recommend PULSE to your peers?" (1 = not likely, 2 = somewhat likely, 3 = very likely)

4) "Based on your previous answer, why would you or would you not recommend PULSE to your peers?"

5) "What were the biggest factors motivating you to participate in PULSE?"

Comprehensive Relative Autonomy Index (C-RAI)

The following questions relate to your reasons for going to PULSE sessions. Different students have different reasons for doing this, and we want to know how true each of the following reasons are for you.

I am going to PULSE sessions, because…

Amotivated:

1. AMO1: . . . I once had good reasons to go, but now I don't

2. AMO2: . . . Honestly, I don't know why I am going

3. AMO3: . . . I'm not sure, I wonder whether I should continue going

4. AMO4: . . . I used to know why I was going, but I don't anymore

External:

5. EXT1: . . . because important people will like me better if I do

6. EXT2: . . . because if I don't go, others will get mad

7. EXT3: . . . because I'll get in trouble if I don't go

8. EXT4: . . . because I don't have any choice but to go

Negative introjection:

9. IJN1: . . . because I would feel guilty if I didn't go

10. IJN2: . . . because I would feel ashamed if I didn't go

11. IJN3: . . . because I would feel like a failure if I didn't go

12. IJN4: . . . because I don't want to feel bad about myself

Positive introjection:

13. IJP1: . . . because I want to feel proud of myself

14. IJP2: . . . because I want to prove to myself that I am capable

15. IJP3: . . . because it boosts my self-esteem

16. IJP4: . . . because I want to feel good about myself

Identification:

17. IDE1: . . . because I strongly value going

18. IDE2: . . . because going is personally important to me

19. IDE3: . . . because it is my personal choice to go

20. IDE4: . . . because going is meaningful to me

<u>Intrinsic:</u>

21. INT1: . . . because I enjoy going

22. INT2: . . . because going is fun

23. INT3: . . . because it is a pleasure to go

24. INT4: . . . because going is interesting

Perceived Competence Scale (PCS; Learning Version)
Please respond to each of the following items in terms of how true it is for you, with respect to your mentoring role in PULSE sessions.

1. I feel confident in my ability to teach this material.

2. I am capable of teaching the material in PULSE.

3. I am able to achieve my goals in PULSE.

4. I feel able to meet the challenge of performing well by participating in PULSE.

Flourishing scale
Below are 8 statements with which you may agree or disagree. Using the 1–7 scale below, indicate your agreement with each item by indicating that response for each statement.

1. I lead a purposeful and meaningful life

2. My social relationships are supportive and rewarding

3. I am engaged and interested in my daily activities

4. I actively contribute to the happiness and well-being of others

5. I am competent and capable in the activities that are important to me

6. I am a good person and live a good life

7. I am optimistic about my future

8. People respect me