

# Supervisory Alliance in Medical Training: Associations with Educational Engagement and Satisfaction

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## ABSTRACT

**OBJECTIVES:** While medical education requires frequent interactions with attending physicians and supervisors, little research has explored the role of supervisory alliance in the learning process. In other learning environments, supervisory alliance, or the bond between a supervisor and trainee, is considered a key ingredient of effective supervision. Medical educators or attending physicians who aim to enhance learning and engagement in medical education may benefit from understanding specific factors that increase or decrease engagement and how those might intersect within a context that requires learning through supervision. This cross-sectional study examined associations between supervisory alliance and (a) program satisfaction, (b) educational engagement, (c) and career purpose.

**METHODS:** Participants were medical trainees from the rural Northeast ( $n = 108$ , response rate = 81%) who completed an electronic and anonymous survey.

**RESULTS:** Multiple linear regression was used to examine whether total supervisory alliance independently predicted behavioral and emotional engagement in learning while controlling for hours slept, hours worked, and burnout. Supervisory alliance predicted trainees' career purpose, program satisfaction, and emotional engagement in learning.

**CONCLUSIONS:** Findings from this study lay groundwork for consideration of the role of supervisory alliance in medical learning processes. Future research might explore whether targeted mentorship programs or faculty enhancement training that focuses on the supervisory relationship might positively impact learning outcomes.

**KEYWORDS:** Medical education, educational engagement, rural, supervisory alliance

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## Introduction

The Accreditation Council for Graduate Medical Education (ACGME) in the United States emphasizes learning environments for resident and fellow physicians who are working under the supervision of qualified professionals. They note that supervisors “give value, context, and meaning to those interactions.” While medical education requires frequent interactions with attending physicians and supervisors, little research has explored the role of supervisory alliance in the learning process and educational satisfaction.

There are several conceptualizations of supervisory alliance. For most, the process of supervision involves a collaboration between a trainee and supervisor. Key components of this collaboration include responsiveness of the supervisor, rapport between the parties, perceptiveness, and identified learning tasks that work towards achieving a goal.<sup>1</sup> The supervisory alliance is considered a key ingredient of effective supervision, regardless of the type of treatment, population, or supervision model being used.<sup>1–4</sup>

Supervisory working alliance is a pan-theoretical model that includes: (a) the bond between the supervisor and supervisee, (b) collaborative goals that guide supervision, and (c) mutually agreed upon tasks that serve the purpose of working towards

supervision goals.<sup>5</sup> In his conceptualization, Bordin noted eight types of goals that could be used to facilitate supervisory alliance, including, but not limited to: increasing awareness of self and impact on the process, mastery of skills, and overcoming personal and intellectual obstacles of learning.

Research has explored the impact of alliance in psychotherapy supervision in psychology, counseling, or social work programs. These studies have indicated that stronger supervisory alliance is associated with greater supervisee self-efficacy, and lower alliance is associated with greater stress and burnout.<sup>1</sup>

The impact of supervision and supervisory alliance has been studied more often in graduate psychology, social work, and counseling education. Supervisory alliance has been shown to predict greater self-efficacy, job satisfaction, and more availability of coping resources among psychotherapy trainees.<sup>1,6</sup> Among medical trainees, one study has examined the impact of the educational alliance on medical students' use of educational feedback.<sup>7</sup> Other research has suggested that medical educators might enhance the educational relationship by using an “educational alliance framework” to enhance the educational relationship<sup>8,9</sup> or involve trainees in development of professional activities.<sup>10</sup> These studies highlight the relevancy of the medical educator in feedback processes, but do not



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address or explore the impact of supervisory alliance on the medical trainee. In medicine, exploring the importance, mechanisms, and impact of supervision is in its infancy compared to other behavioral health disciplines, despite Common Program Requirements (ACGME; see <https://www.acgme.org/programs-and-institutions/programs/common-program-requirements/>)<sup>11</sup> that highlight a set of standards that facilitate a learning environment for resident and fellow physicians under the supervision of qualified professionals, who “give value, context, and meaning to those interactions.”

Academic engagement is a construct that typically includes behavioral, emotional, and cognitive components.<sup>12</sup> *Behavioral components* include how behaviorally engaged or disengaged the learner is with the activity (eg, working as hard as one can, or pretending to work, respectively). *Emotional components* include emotions that are present while engaging in the classroom (eg, feeling happy or angry while in class). *Cognitive components* involve aspects that require critical thinking skills, problem solving, or review of educational content. Engagement in learning enhances trainees ability to understand and apply concepts.<sup>13,14</sup> In addition, overall engagement in learning processes predicts achievement.<sup>15</sup> However, the role of the supervisory alliance in enhancing educational engagement is unclear, and previous research has not examined this within a population of medical trainees.

Medical educators that aim to enhance learning and engagement in medical education may benefit from understanding specific factors that increase or decrease engagement and how those might intersect within a context that requires learning through supervision. This study examined associations between supervisory alliance and (a) program satisfaction, (b) educational engagement, and (c) career purpose.

## Materials and Methods

### Procedure

Medical trainees were recruited during scheduled resident meetings from October 2023 to January 2024 and asked to complete a voluntary and anonymous, one-time, cross-sectional, electronic survey using a QR code in exchange for a \$5 food voucher. The reporting of this study conforms to the STROBE checklist for cohort studies.<sup>16</sup>

### Materials

The survey included a demographic questionnaire, the MiniZ,<sup>17</sup> the Physician Wellness Inventory,<sup>18</sup> questions about program satisfaction, supervisory alliance, and engagement in learning. The demographic questionnaire included questions related to year in program, specialty, age, race/ethnicity, and gender identity. Demographic information was included to aid in description of the sample and allow for generalizability of results. The Mini-Z was used to measure

burnout and has been used in previous research with medical trainee samples.<sup>19</sup> It asks respondents to indicate their level of burnout from 1(I feel completely burned out. I am at the point where I may need to seek help) to 5(I enjoy my work. I have no symptoms of burnout).

The career purpose subscale of the Physician Wellness Inventory<sup>18</sup> is a 14-item scale that uses a five-point Likert scale to assess three primary factors: career purpose, cognitive flexibility, and distress. The career purpose subscale (five items) was used to examine trainee’s career purpose. Sample items include “Working with patients brings me satisfaction” and “I am generally satisfied with my career choice.”

Perceived working alliance between medical trainees and attending physicians was assessed using the rapport subscale from the Brief Form of the Supervisory Working Alliance Inventory.<sup>20</sup> This five-item measure uses a Likert scale from 1(almost never) to 7 (almost always) to examine two aspects of working alliance, focus on client and rapport with supervisor. Items were adapted to use terminology consistent with a medical environment (eg, “patient” vs “client”, “attending” vs “supervisor”).

There were four questions used to address job satisfaction. Respondents rated questions from 1 (strongly disagree) to 7 (strongly agree). These questions have been used in previous studies with rural medical providers.<sup>19,21</sup> Sample statements include, “I am satisfied with the educational curriculum of my residency program” and “I would recommend to others that they come to this residency program.” Engagement in learning was assessed using a modified, 18-item self-report scale,<sup>22,23</sup> which has been shown to have three latent factors, Behavioral Engagement, Behavioral Disaffection, and Emotional Engagement. Respondents use a Likert scale to indicate how accurately statements describe them (1 = not true at all, 4 = very true). Sample items include, “I try to learn as much as I can in training,” or “I do more work than I have to in residency/fellowship.” Language was modified to reflect terms appropriate to a medical environment, for example, the word “training” was substituted for the word “class” and “residency/fellowship” was substituted for “school.”

### Participants

To participate in the study, individuals had to be 18 years or older, and working as a medical student, resident or fellow at Robert Packer Hospital and Guthrie Medical Group. Guthrie Robert Packer Hospital is a 267-bed tertiary care hospital affiliated with Guthrie Medical Group, which includes more than 490 multispecialty medical providers in 21 sites throughout rural Pennsylvania and New York. Residency programs include internal medicine, general surgery residency, family practice, orthopedics, anesthesiology, pharmacy, and emergency medicine. Residency program sizes ranged from a total of 12 to 36 residents. Fellowship programs include gastroenterology,

pulmonary disease, cardiovascular disease and critical care medicine. Program duration ranges from two to five years. All actions performed were considered exempt and informed consent was waived by the Institutional Review Board of the associated medical group. To protect anonymity, there was no record of who received a voucher. Verbal and written consent was not mandated by the Guthrie Institutional Review Board, this study was considered low-risk and additional ethics approval beyond the Institutional Review Board was not required for this study.

### Statistical analysis

Descriptive statistics were used to examine demographic characteristics of the sample. Linear regression was used to explore associations between supervisory alliance and educational engagement. Hours slept and worked were included as co-variables in all analyses, due to their potential influence on educational engagement. Power analyses were not conducted due to the nature of this educational study and use of a convenience sample.

### Results

Participants were medical trainees ( $n=108$ , response rate = 81%) rotating or training in a hospital in the rural Northeast. Participants were predominantly male ( $n=60$ , 55.6%) and identified as Asian/Pacific Islander ( $n=47$ , 43.5%) or white/Caucasian ( $n=41$ , 38.0%). Most trainees were internal medicine residents ( $n=24$ , 22.2%), followed by surgery ( $n=19$ , 17.6%), and family medicine residents ( $n=14$ , 14.8%). More respondents identified as male ( $n=60$ , 55.6%) and most were in their intern or second post graduate year (PGY) ( $n=53$ , 52%). Reliability analyses of the three factors related to Engagement in Learning for this study were .71, .75, and .73, respectively. Reliability of the Career Purpose subscale was .81. Internal consistency for questions related to job satisfaction was .77. The total scale reliability for the Brief Working Alliance Inventory was .91. Table 1 includes demographic characteristics of the sample. Table 2 summarizes regression analyses listed below.

### Educational engagement

Multiple linear regression was used to examine whether total supervisory alliance independently predicted behavioral and emotional engagement in learning while controlling for average hours slept per day in the past week, average hours worked per week, and burnout. First, supervisory alliance did not significantly predict behavioral engagement in learning, ( $\beta=.22$ ,  $t(90)=1.86$ ,  $p=.07$ ). Hours slept predicted behavioral engagement in learning, ( $\beta=-.24$ ,  $t(90)=-2.28$ ,  $p=.03$ ). Second, supervisory alliance predicted emotional engagement in learning, ( $\beta=.37$ ,  $t(90)=3.39$ ,  $p<.01$ ,  $f^2=.61$ ), as did burnout, ( $\beta=-.34$ ,  $t(90)=-3.60$ ,  $p<.01$ ). That is, there was a significant positive

**Table 1.** Demographic information ( $n=108$ ).

| Characteristic                 | $n(\%)$   | $M(SD)$   |
|--------------------------------|-----------|-----------|
| Age                            |           | 30.7(4.5) |
| Gender                         |           |           |
| Female                         | 46 (42.6) | -         |
| Male                           | 60 (55.6) | -         |
| Nonbinary                      | 1 (.9)    | -         |
| Year <sup>1</sup>              |           |           |
| Medical Student*               | 8 (7.4)   | -         |
| PGY1                           | 28 (25.9) | -         |
| PGY2                           | 25 (23.1) | -         |
| PGY3                           | 23 (21.3) | -         |
| PGY4                           | 10 (9.3)  | -         |
| PGY5                           | 8 (7.4)   | -         |
| Race/Ethnicity                 |           |           |
| American Indian/Alaskan Native | 2 (1.9)   | -         |
| Asian or Pacific Islander      | 47 (43.5) | -         |
| Black or African American      | 4 (3.7)   | -         |
| Hispanic/Latino                | 4 (3.7)   | -         |
| White/Caucasian                | 41 (38.0) | -         |
| Other                          | 10 (9.3)  | -         |
| Specialty                      |           |           |
| Medical Student                | 8 (7.4)   | -         |
| Anesthesiology                 | 6 (5.6)   | -         |
| Cardiovascular                 | 5 (4.6)   | -         |
| Emergency Med                  | 14 (13.0) | -         |
| Family Med                     | 16 (14.8) | -         |
| Gastroenterology               | 6 (5.6)   | -         |
| Internal Med                   | 24 (22.2) | -         |
| Orthopedics                    | 6 (5.6)   | -         |
| Pulmonary Disease              | 2 (1.9)   | -         |
| Surgery                        | 19 (17.6) | -         |

\*Medical Students were in their third or fourth year of medical training.

<sup>1</sup>PGY = Post Graduate Year

association between supervisory alliance and emotional engagement in learning, and those who reported higher supervisory alliance also reported greater emotional engagement.

### Educational disengagement

Multiple linear regression was used to examine whether supervisory alliance independently predicted educational

**Table 2.** Regression analysis summary for supervisory alliance predicting educational engagement, career purpose, and program satisfaction

| Variable <sup>1</sup>             | $\beta$ | $t$   | $p$  |
|-----------------------------------|---------|-------|------|
| Behavioral engagement in learning | .22     | 1.86  | .07  |
| Emotional engagement in learning  | -.24    | -2.28 | .03  |
| Educational disengagement         | .19     | 1.73  | .09  |
| Program satisfaction              | .62     | 7.14  | <.01 |
| Career purpose                    | .63     | 12.33 | <.01 |

<sup>1</sup>All analyses controlled for sleep, hours worked, and burnout.

disengagement, while controlling for sleep, hours worked, and burnout. Total supervisory alliance did not significantly predict educational disengagement, ( $\beta = .19$ ,  $t(90) = 1.73$ ,  $p = .09$ ). Hours slept and total hours worked in the past week did predict educational disengagement, ( $\beta = -.22$ ,  $t(90) = -2.17$ ,  $p = .03$  and  $\beta = -.26$ ,  $t(90) = -2.64$ ,  $p = .01$ ), respectively.

#### *Program satisfaction and career purpose*

Multiple linear regression was used to examine the association between supervisory alliance and educational/program satisfaction, while controlling for sleep, work hours, and burnout. Total supervisory alliance independently predicted program satisfaction, ( $\beta = .62$ ,  $t(90) = 7.14$ ,  $p < .01$ ,  $f^2 = .63$ ). Total supervisory alliance significantly predicted career purpose, ( $\beta = .40$ ,  $t(90) = 4.06$ ,  $p < .01$ ,  $f^2 = .51$ ), independent of hours worked, hours slept, and burnout. The higher the perceived alliance the greater the program satisfaction and career purpose.

## Discussion

Supervisory alliance predicted trainees' career purpose, program satisfaction, and emotional engagement in learning. These findings have several implications for those working in medicine. While causal inferences are limited by the design of this study, this study highlights an association that is consistent with previous research conducted with psychotherapy trainees,<sup>1</sup> and suggests that supervisory alliance may play a role in the cognitive and emotional aspects of the learning experience.

First, emotional engagement includes the positive attitude or expressive affect that occurs with learning. This engagement contributes to the learning environment and drives interactions that are necessary for learning.<sup>24</sup> Learners who are more engaged tend to have higher achievement with greater psychological adjustment.<sup>25</sup> Emotional engagement may be particularly relevant among medical providers, a population that experiences high rates of burnout and engages in work that requires active use of empathy within patient encounters. While causal inferences are limited by the study design, medical residency and fellowship provide crucial learning opportunities and require

consistent engagement with supervisors. While it is possible that those that are more satisfied and engaged in learning develop a greater connection with their supervisors, the reverse may also be the case, in which supervisors inspire greater engagement and satisfaction. Findings from this study lay ground work for future consideration of the role of supervisory alliance and learning processes in medicine. Future research might explore causal relationships and explore whether targeted mentorship programs or faculty enhancement training might positively impact learning outcomes.

Second, perceptions of development and job satisfaction are two factors that have been associated with intent to stay at a job.<sup>26,27</sup> Rural medical centers face provider shortages with even greater turnover rates,<sup>28</sup> and training programs often serve as a way to pipeline trained providers into an existing system. If supervisory alliance plays a role in these two factors, it may be useful to also explore whether satisfaction and purpose can be increased by enhancing the supervisory alliance, as a longer-term strategy to improve physician retention in rural areas.

While our study primarily aimed to examine associations with supervisory alliance, it was notable that hours slept predicted behavioral engagement and disengagement in learning. Research suggests that residents average less than seven hours of sleep per night,<sup>29</sup> which is considered sleep deprivation by the American Academy of Sleep Medicine.<sup>30</sup> Sleep deprivation results in numerous cognitive consequences that may impact learning (eg, impairment in attention, mood, motor skills).<sup>31</sup> Therefore, it is not surprising that residents who are sleeping less report greater difficulty engaging in learning processes. There are systemic issues in medical environments (such as challenges related to working overnight rotations or other work demands) that may negatively impact sleep opportunities, and addressing barriers to adequate sleep may be one way to enhance educational engagement.

#### *Limitations*

There were several limitations of this study. Given that the sample was from one rural and Northeastern sample, results may not generalize to other training programs. The survey design does not allow for causal inferences and is unable to make inferences about the impact of supervisory alliance over time. Some measures modified original language to be more relevant to the audience (eg, use of "residency" vs "class"). These modifications may have impacted the validity of the measure and were not previously validated before use. This study did not assess the quality or quantity of supervision received. Future research might examine the frequency, quantity and quality of supervision and how this impacts both supervisory alliance and rapport as well as other relevant learning outcomes. Furthermore, this study included a limited sample

size (no power analysis) and sample size may have been too small to detect and effect.

## Conclusions

Findings from this study lay groundwork for consideration of the role of supervisory alliance in medical learning processes. Future longitudinal research examining variables that may explain these relationships is needed to explore the intersection between supervisory alliance, burnout, and emotional engagement in learning.

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## Author's Contributions

Danielle Terry conceptualized, designed, and managed the project. She completed statistical analyses and assisted with manuscript preparation and write up. Laraib Sehrish contributed to manuscript preparation and write up.

## Consent

All actions performed were considered exempt and informed consent was waived by the Institutional Review Board of the associated medical group.

## Ethics

This study was considered low-risk and additional ethics approval beyond the Institutional Review Board was not required for this study.

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