

Leaders or Team Players? An Investigation of Medical Student Interest in Leadership and  
Teamwork Training

by

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### **Abstract**

The central objective of this study is to address the following practical problem: Errors in healthcare occur as a result of poor team dynamics. By turning to theoretical frameworks such as Social Role Theory and the Power/Interaction Model of Interpersonal Influence, studies such as this one can begin to uncover why additional training in collaboration is so rarely pursued by active members of the medical community. To investigate this, an online survey was offered to current students attending medical school on a large western medical campus. This survey was designed to gauge student interest in pursuing leadership and teamwork training outside their traditional medical education, as well as their inherent manifest needs for dominance, autonomy, achievement and affiliation and their commitment to the institution as a whole. The results of the study indicated a strong overall disinterest in engaging with training material around both leadership and teamwork—findings which are consistent with prior research in the field and correlate significantly with the participants' scores on the Manifest Needs and Organizational Commitment scales.

*Keywords:* Teamwork, teamwork training, medical education, manifest needs

## **Leaders or Team Players? An Investigation of Medical Student Interest in Leadership and Teamwork Training**

How are we to combat errors in health care as a result of poor team dynamics? The solution may lie in what is known as “teamwork training.” Although some hospitals are integrating this training, oftentimes these programs are voluntary, which limits their effectiveness (Hughes et al., 2016). The current study aims to discover both who is currently interested in these programs, as well as how we can increase interest moving forward. Due to our understanding that a large part of decision-making in both personal and professional life is based on how people are rewarded by their environments, this study is designed to investigate the influence of organizational commitment, inherent manifest needs, and gender on student interest in individual versus collaborative achievement (Ahn & Picard, 2005). Ahn and Picard (2005) originally conducted their study with the intent of investigating how to improve communication in human-machine teams. However, their results also provided an incredibly impactful analysis of how reward operates in human motivation and decision-making processes. By distinguishing between internal and external rewards, Ahn and Picard (2005) were able to pinpoint the cognitive feedback loops that drive motivation and desire. The present study is concerned with external reward (rewards that an individual seeks from her surrounding environment)—how medical schools reward their students and, in turn, how that drives the internal motivation of those who study there. Specifically, this study aims to investigate if students are motivated to exhibit characteristics such as dominance, autonomy and achievement because those features are often rewarded by the institution they are a part of. To examine this, the present study expands on findings from O’Reilly and Chatman’s (1986) original research investigating how members of an organization express their commitment by complying with institutional expectations to attain

a specific reward. By examining how likely an organization member is to express certain attitudes and behaviors to achieve a reward from the institution, this study aims to identify the specific characteristics that will earn medical students rewards from their academic environments. As a result, it was anticipated that students who expressed high needs for dominance, autonomy and achievement would also report strong organizational commitment through compliance, since those characteristics are likely to be externally rewarded by medical institutions. After investigating how reward impacts organizational commitment, it naturally follows that those who are consistently rewarded by their organization might also likely express strong satisfaction with pursuing a medical degree at that institution. To investigate this, the present study also adapted measures of professional satisfaction from O'Reilly and Chatman (1986).

Examining each of these factors plays a key role in determining why outside educational programs such as teamwork training have not yet taken hold in the healthcare industry. This issue is both novel and substantial, as strong collaboration in medicine has been shown to positively impact physician effectiveness, patient care outcomes, and the workplace environment as a whole (Weaver et al., 2014). Weaver et al. (2014) conducted a narrative literature synthesis of articles written about group dynamics and teamwork training in medicine. Some of their key findings indicated that differing team types (i.e., longstanding teams of the same doctors vs. newly formed teams forced to collaborate on a trauma case) vastly impacted team effectiveness (Weaver et al., 2014). When doctors are thrown onto a team of strangers without specific prior knowledge of how to effectively operate in a new team setting, patient care often suffers tremendously (Weaver et al., 2014). Fortunately, teamwork training is one of the few types of programs that equips medical professionals with the necessary tools to successfully collaborate

on a team composed of doctors with whom they have not had the luxury of working with for years on end. However, trainings such as these are rarely prioritized in educational or professional settings in the healthcare industry. Perhaps one reason for this can be traced back to the industry's emphasis on the aforementioned characteristics of dominance, autonomy and achievement—all of which are associated with individualism rather than collaboration (Steers & Braunstein, 1976). The present study has been designed to investigate whether or not this is in fact the case. In order to do so, leadership training was also introduced into the study design. It was then hypothesized that medical students would demonstrate a stronger preference for leadership training than teamwork training because of the industry's emphasis on individual success and an inherent need to express dominance, autonomy and achievement.

In addition, this project is based on Social Role Theory (Eagly, 1987) and the Power/Interaction Model of Interpersonal Influence (Raven, 2008). Social Role Theory distinguishes between agentic versus communal roles and behaviors. Agentic characteristics are associated with leadership roles, often including assertiveness and dominance, while communal traits typically consist of nurturing behaviors and agreeableness (Eagly, 1987). As was mentioned above, since leadership roles are perceived as agentic, it is often anticipated that medical students and professionals will desire leadership training over teamwork training. Therefore, this research aims to show that this desire is influenced by the individual's climate, specifically that individual's need for dominance, autonomy and achievement, as a result of what is rewarded by his or her academic or professional environment. This study also aims to identify the impact of gender on individual interest in training as a result of the respective association of agentic behaviors with masculine characteristics and communal behaviors with feminine characteristics (Eagly, 1987). This means that female participants were anticipated to express a

stronger preference for teamwork training than their male counterparts because of historically established patterns of women exhibiting stronger communal traits and men exhibiting stronger agentic traits. However, agentic and communal traits are not the only indicators of interest in engaging in team dynamics. The natural tendency to trust one's peers is another major factor in determining whether an individual will be interested in working effectively on a team. As a result, the present study also included measures on individual propensity to trust, which were adopted from Evans and Revelle (2008).

The Power/Interaction Model of Interpersonal Influence differentiates between various bases of social power. The basis of power this study is interested in investigating is reward. As was previously mentioned, this study will examine whether individual student needs for dominance, autonomy, achievement and affiliation (Manifest Needs) are rewarded by the medical school. By measuring these factors, the results of the study will then indicate whether students feel that they must express their commitment to the organization by complying with institutional expectations that they exhibit agentic traits such as dominance, autonomy and achievement. Subsequently, the following hypotheses were formed.

### **Hypothesis 1**

Subject needs for dominance, autonomy, and achievement will be positively related to organizational commitment. This prediction refers back to the healthcare industry's emphasis on agentic characteristics (McDonagh et al., 2014). As a result, students who demonstrate these traits are predicted to express strong commitment to the school as a whole because those characteristics are often rewarded by their medical institution.

**Hypothesis 2**

It was then predicted that subjects' organizational commitment would be positively related to their satisfaction with pursuing a medical degree at this institution. This was anticipated because those who expressed strong commitment to the institution seemed likely to express stronger content with the program as a whole if they were consistently being rewarded by the organization.

**Hypothesis 3**

Next, it was hypothesized that organizational commitment would also be positively related to student levels of interest in both leadership and teamwork training. This prediction was made because it was thought that students who expressed strong commitment to the organization might seek additional rewards by engaging in outside programs such as leadership and teamwork trainings.

**Hypothesis 4a**

With regard to student preference of one type of training over another, a third hypothesis was formed. In reference to Social Role Theory, collaborative behaviors could be categorized as communal considering that they are more social in nature and require a greater amount of nurturing and agreeableness, while self-focused behaviors are more likely to be considered agentic (Eagly, 1987). For this reason, leadership behaviors are considered to be agentic while collaborative behaviors are considered to be communal (Hmieleski & Sheppard, 2019). Subsequently, it was predicted that medical students would show stronger interest in leadership training as opposed to teamwork training.



**Hypothesis 4b**

In many organizations, policies, practices, and procedures tend to reward individual rather than collaborative behaviors, creating environments which foster individual achievement, and the healthcare industry is no exception (Grant & Patil, 2012). Subsequently, it was hypothesized that a preference for leadership over teamwork training would be greater among students who reported high scores on their needs for dominance, autonomy and achievement (Manifest Needs scale), all of which are measures of agentic characteristics. This prediction was made because those who express strong agentic traits are anticipated to prefer a program that emphasizes these characteristics (leadership training) over a program that emphasizes communal characteristics (teamwork training).

**Hypothesis 5**

Once again referring back to Social Role Theory, traditional social expectations regarding agentic and communal traits are most commonly associated with gender, wherein agentic traits are associated with masculinity and communal traits are associated with femininity (Eagly, 1987). Consequently, student gender was anticipated to have a moderating effect on medical student interest in leadership versus teamwork training such that female medical students would express higher levels of interest in teamwork training than their male counterparts.

**Hypothesis 6**

The final hypothesis predicted that subjects who reported a lower propensity to trust fellow medical students would also express lower levels of interest in teamwork training. Because teamwork training and team dynamics in general emphasize collaboration, which can only be effectively achieved by trusting one's teammates, it was anticipated that those

who expressed a low propensity to trust their peers would also demonstrate low levels of interest in pursuing teamwork training.

## **Methods**

### **Study Design**

To collect data on each of these factors, an online survey was created via Qualtrics. This survey included demographics on gender, age, ethnic background, and year in medical school, two five-point scales of interest to gauge student interest in leadership and teamwork training, as well as five scales adopted from previous research studies. The scales adopted for this study were the Organizational Commitment scale, the Manifest Needs scale, the Propensity to Trust scale, the Professional Satisfaction scale, and the Kunin Faces scale. Subjects rated each item using a 5-point Likert scale format ranging from 1 (*I strongly disagree*) to 5 (*I strongly agree*).

### ***Organizational Commitment***

The Organizational Commitment scale was modified from its original version created by O'Reilly and Chatman (1986). It included 12 original items such as "*How hard I work for this program is directly linked to how much I am rewarded*" (see Table 1 in Results for the full scale).

### ***Professional Satisfaction***

This same study produced a scale on professional satisfaction, which was also included in the survey, using items such as "*If you have your own way, will you still be pursuing this field three years from now?*" (see Table 3 for the full scale).

### ***Manifest Needs***

The Manifest Needs scale was adopted from a study conducted by Steers and Braunstein (1976). This scale included 20 original items measuring individuals' needs for dominance,

autonomy, achievement and affiliation with statements such as “*I seek an active role in the leadership of a group*” (see Tables 4 and 5 for the full scale).

### ***Propensity to Trust***

The Propensity to Trust scale was taken from research conducted by Evans and Revelle (2008). Only four of the scale’s original items were used in this study in attempt to minimize the length of the study overall. This scale included items such as “*I believe that most of my classmates would cheat to get ahead*” (see Table 2 for the full scale). These four items were specifically chosen because they best fit the framework of the present study.

### ***Kunin Faces Scale***

Finally, the Kunin Faces Scale created by Kunin (1955) was included as the final item in the Medical Profession Satisfaction scale of this study (see Table 3).

## **Procedures**

The survey was available for completion for six months, from August 2019 to February 2020. Four separate trips were taken to the medical campus to update flyers and hand out recruitment business cards to increase participation in the survey. Once participants accessed the survey link, they were first presented with the Informed Consent section. This section emphasized the study’s interest in determining the current culture of medical education institutions such as contemporary medical student interest in pursuing leadership and teamwork training, as well as basic requirements for participation such as a legal age of 18 or over. If the subject agreed to participate, she was then directed to the initial demographics page, which asked each participant to indicate her age, gender identification, and year in medical school. Next, the subject was asked to rate her interest in leadership training and teamwork training on two separate 5-point scales of interest. This section specifically asked each student to indicate her

interest level in pursuing a training program outside her formal medical education that was designed to cultivate her skills in areas such as effective communication, conflict management, and team building. After this, she was asked to complete the Organizational Commitment scale. Once she completed this section, the participant was then asked to fill out the Manifest Needs questionnaire. Following the Manifest Needs section, the subject was asked to complete the Medical Profession Satisfaction scale and then the Propensity to Trust scale. Finally, the participant was asked to complete the remaining demographic questions, such as her ethnic background and valid medical school email address in order to receive compensation for completing the survey.

### **Participants**

The participant sample for this study was composed of current medical students attending a large western medical school. Every student was recruited via either flyers, which were posted throughout the medical campus, or business cards, which were handed out around the campus (see Appendix B). The flyers and business cards emphasized the study's interest in understanding how current medical students feel about pursuing leadership and teamwork development programs, as well as the fact that they would be compensated for the time they took to complete the survey. The final sample included 60 total participants: 29 males and 31 females. Fifty-six of the final 60 participants were compensated with a \$5 Amazon gift card. The four who were not compensated did not provide an email address to which the gift card could be sent.

Certain participants were excluded from the final sample in the case that they had completed the survey more than once, they had failed to complete the entire survey, their Qualtrics submission indicated a high fraud score, or they had completed the survey from a

location other than Aurora or Denver, Colorado. Because the survey was conducted online, there was a risk of fraud (i.e., robot participation) and the opportunity to complete the survey more than once. As a result, the survey acquired over 1,000 original completions, requiring in-depth participant refinement. Qualtrics takes preliminary efforts to reduce these risks by providing fraud scores, multiple completion scores, and location information. By examining these features, investigators can identify which survey participants completed the survey more than once, took the survey from a remote location, or was actually a survey bot rather than an individual person. Responses that received a fraud score of 30 or above indicated fraud (i.e., a survey bot) and those that received a score of 75 or above indicated multiple completions (i.e., this individual had taken the survey more than once). Combing through all the subject responses to eliminate fraudulent participants was incredibly time consuming but produced a highly reliable final participant sample of 60 respondents. Every final participant who received compensation provided a valid medical school email address.

Following data collection and the finalization of the participant sample, the results of the survey were exported from Qualtrics to be analyzed in RStudio, R version 3.4.3, using the “psych” and “dplyr” packages.

### **Results**

To begin data analysis, the internal consistency of each of the survey scales was examined by calculating coefficient alphas. After calculating initial coefficient alphas, specific items were removed from each scale to increase reliability. As can be seen in Table 1, the original Organizational Commitment scale adopted from O’Reilly and Chatman (1986) had 12 items with an initial coefficient alpha of .77. The results of this analysis suggested that items 7

and 10 be removed from the final scale in order to increase reliability. Once these items were dropped, the final 10-item scale produced a coefficient alpha of .85.

Table 1

*Organizational Commitment Scale Item Coefficient Alphas*

<u>Scale Item</u>	<u>Alpha if item is dropped from original scale</u>	<u>Alpha if item is dropped in final scale</u>
Scale Alpha	.77	.85
1. What this medical program stands for is important to me.	.74	.83
2. I talk up this school to my friends as a great program to attend.	.75	.84
3. If the values of this program were different, I would not be as attached.	.74	.84
4. How hard I work for this program is directly linked to how much I am rewarded. (R)	.75	.86
5. In order for me to be rewarded, it is necessary to express the right attitude.	.75	.84
6. Since joining this program, my personal values and those of the school have become more similar.	.74	.83
7. My private views about this program are different from those I express publicly. (R)	.82	--
8. The reason I prefer this program to others is because of what it stands for, that is, its values.	.73	.82
9. My attachment to this school is primarily based on the similarity of my values and those represented by the program.	.73	.82
10. Unless I am rewarded for it in some way, I see no reason to expend extra effort on behalf of this program. (R)	.78	--
11. I am proud to tell others that I attend this school.	.75	.84
12. I feel a sense of "ownership" for this program rather than being just a student.	.75	.83

*Note:* (R) = reverse coded item.

The final Propensity to Trust scale included items adopted from an original scale created by Evans and Revelle (2008). Referring to Table 2, the original Propensity to Trust scale used in the survey consisted of four total items. After measuring the scale's coefficient alpha, originally .57, the analysis suggested that item 2 be dropped. Once item 2 was removed, the analysis then suggested that item 3 also be dropped from the final scale. After reviewing the phrasing of these two items, it was clear that items 1 and 4 were stronger indicators of a likelihood to trust than items 2 and 3. Therefore, the final Propensity to Trust scale included only these two items with a final coefficient alpha of .72.

Table 2

*Propensity to Trust Scale Item Coefficient Alphas*

Scale Item	Alpha if item is dropped from original scale	Alpha if item is dropped in final scale
Scale Alpha	.57	.72
1. I believe that most of my classmates would cheat to get ahead. (R)	.41	.62
2. I find it easy to get along with most of my classmates.	.62	--
3. I value cooperation over competition.	.46	--
4. When I have a choice, I tend to avoid working with others. (R)	.48	.38

The Medical Profession Satisfaction scale, modified from O'Reilly and Chatman's (1986) Professional Satisfaction scale and the Kunin Faces Scale (Kunin, 1955), included five items. This scale was specifically designed to measure how satisfied the students were with pursuing a medical degree in their current program. As can be seen in Table 3, the scale retained all five of its original items and produced a coefficient alpha of .73.

Table 3

*Medical Profession Satisfaction Scale Item Coefficient Alphas*

<u>Scale Item</u>	<u>Alpha if item is dropped in final scale</u>
Scale Alpha	.73
1. To what extent would you prefer a different occupation than the one you are studying now? (R)	.60
2. Do you intend to finish your medical education in this program?	.72
3. To what extent have you thought seriously about changing fields of study since beginning your education in this program? (R)	.64
4. If you have your own way, will you still be pursuing this field three years from now?	.68
5. Please choose the expression that best fits how you feel about this program.	.74



With regard to the Manifest Needs scale, the survey items measuring dominance, autonomy and achievement appeared semantically similar. Subsequently, their coefficient alphas were measured as one large scale, while affiliation was analyzed separately. After running a combined coefficient alpha for these scale items, the analysis revealed an original alpha of .76. Items 8 and 13 decreased the overall alpha for the scale. For this reason, item 13 was dropped from the final Manifest Needs scale, but item 8 required further analysis. As can be seen in Table 4, item 8 was originally a reverse scored item, however the analysis showed that student responses to this item correlated negatively with many of the other items in the scale. Consequently, item 8 was unreversed and examined again in a new coefficient alpha. This analysis produced a final alpha of .83. Though reverse scored item 15 could have been dropped, it was kept in an attempt to maximize as much of the original scale as possible, and the alpha would have shifted only minorly if it were to have been excluded.



Table 4

*Manifest Needs Scale Item Coefficient Alphas*

<u>Scale Item</u>	<u>Alpha if item is dropped from original scale</u>	<u>Alpha if item is dropped in final scale</u>
Scale Alpha	.76	.83
<i>Dominance</i>		
4. I seek an active role in the leadership of a group.	.74	.82
8. I avoid trying to influence those around me to see things my way. (R)	.80	.83
12. I find myself organizing and directing the activities of others.	.73	.80
16. I strive to gain more control over the events around me in my academic setting.	.74	.81
20. I strive to be "in command" when I am working in a group.	.71	.79
<i>Autonomy</i>		
3. In my assignments, I try to "be my own boss."	.74	.82
7. I go my own way, regardless of the opinions of others.	.74	.82
11. I disregard rules and regulations that hamper my personal freedom.	.73	.81
15. I consider myself a "team player." (R)	.77	.84
19. I try my best to work alone.	.73	.81
<i>Achievement</i>		
1. I do my best work when my assignments are fairly difficult.	.74	.81
5. I try very hard to improve on my past performance.	.77	.83
9. I take moderate risks and stick my neck out to get ahead.	.73	.81
13. I try to avoid any added responsibilities to my classwork. (R)	.80	--
17. I try to perform better than my peers.	.75	.82

The Affiliation scale produced the least reliable results of any of the five final scales.

With an original coefficient alpha of .15, it was clear that some adjustments had to be made.

After removing items 10, 14 and 18, items 2 and 6 produced a much stronger coefficient alpha of .56. As a result, these two items composed the final Affiliation scale (see Table 5).

Table 5

*Affiliation Scale Item Coefficient Alphas*

Scale Item	Alpha if item is dropped from original scale	Alpha if item is dropped in final scale
Scale Alpha	.15	.56
2. When I have a choice, I try to work in a group instead of by myself.	.28	.40
6. I pay a good deal of attention to the feelings of others in my academic environment.	-0.017	.16
10. I prefer to do my own work and let others do theirs. (R)	.19	--
14. I express my disagreements with others openly. (R)	.14	--
18. I find myself talking to those around me about non-academic related matters.	.02	--

Following the coefficient alpha analyses, each final scale was then analyzed in a *t*-test to determine how participant gender related to scores on each scale. The only scale in which student gender was significantly related to the participants' responses was the Organizational Commitment scale (see Table 6). At a mean level, female participants consistently reported higher scores for each of the scales, though the differences were not statistically significant for any scale except Organizational Commitment. This means that females demonstrated a significantly stronger level of commitment to their medical program than their male counterparts.

Table 6

*Means, Standard Deviations and T-tests of Each Final Scale by Gender*

Scale	Female Mean	Male Mean	Female SD	Male SD	t-test for Gender
Manifest Needs (k = 14)	3.58	3.52	.60	.57	-0.37
Affiliation (k = 2)	3.97	3.88	.68	.86	-0.42
Organizational Commitment (k = 10)	4.28	3.96	.48	.60	-2.29*
Propensity to Trust (k = 2)	4.19	4.00	.70	.93	-0.88
Medical Profession Satisfaction (k = 5)	3.99	3.75	.73	.75	-1.25
Interest in Leadership Training (k = 1)	2.32	2.03	1.05	.98	-1.10
Interest in Teamwork Training (k = 1)	2.23	2.00	1.20	1.04	-0.78

Note: k = number of items for that scale.

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Finally, intercorrelations between each of the final scales can be observed in Table 7.

This matrix was used to evaluate the relationships between each of the scales used in the survey.

Table 7

*Composite Factor Intercorrelations of Each Final Scale*

	Manifest Needs	Affiliation	Organizational Commitment	Propensity to Trust	Medical Profession Satisfaction	Interest in Leadership Training
Manifest Needs	--					
Affiliation	-0.01	--				
Organizational Commitment	0.52	0.19	--			
Propensity to Trust	-0.25	0.36*	0.13	--		
Medical Profession Satisfaction	-0.10	0.06	0.25	0.31*	--	
Interest in Leadership Training	-0.31*	-0.10	-0.19	0.13	0.16	--
Interest in Teamwork Training	-0.36*	-0.15	-0.21	0.18	0.21	0.78***

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

### **Hypothesis 1**

Hypothesis 1 predicted that students who scored highly on the Organizational Commitment scale would also report high scores on the Manifest Needs scale. This prediction was made because prior research has shown that the healthcare industry often values agentic characteristics, which are measured by the Manifest Needs scale (McDonagh et al., 2014). Thus, if students were to express strong commitment to the organization, it was hypothesized that they would demonstrate the agentic characteristics that are traditionally rewarded by the healthcare industry (since they would be seeking rewards via compliance with the institution's expectations). To investigate this claim, student scores on the Organizational Commitment scale were regressed on their scores on the Manifest Needs scale (mean centered) and their gender (contrast coded), and their interaction. This analysis produced a highly significant result,  $b = 0.49$ ,  $t(54) = 4.79$ ,  $p < 0.001$ , thus supporting the original hypothesis. Interestingly, gender also significantly interacted with Manifest Needs in predicting student scores on the Organizational Commitment scale such that males demonstrated an even stronger relationship between their Manifest Needs and Organizational Commitment scores than females,  $b = -0.21$ ,  $t(54) = -2.05$ ,  $p = 0.05$ . The correlation between the two scales for males was  $.67$ ,  $p < .001$ , and that for females was  $.36$ ,  $p = .05$ . This means that the Manifest Needs scores of the male participants were strongly aligned with their scores on the Organizational Commitment scale (i.e., high scores on dominance, autonomy and achievement also meant high scores on organizational commitment). Whereas for females, the same pattern appeared, but high scores on the Manifest Needs scale were less of an indicator that they would also express strong commitment to the medical institution.

## Hypothesis 2

Hypothesis 2 predicted that medical students would show stronger interest in leadership training as opposed to teamwork training. To test this hypothesis, student interest ratings were analyzed in a 2 (Type of Training: leadership v. teamwork) X 2 (Student Gender: male v. female) ANOVA with repeated measures on the first factor. At a mean level, the hypothesis was supported in that students expressed greater interest in leadership ( $M = 2.18, sd = 1.02$ ) than teamwork ( $M = 2.12, sd = 1.12$ ) training (see Figure 1). However, the main effect did not approach statistical significance,  $F(1, 58) = 0.50, p = 0.48$ . (The interaction will be discussed under Hypothesis 5).

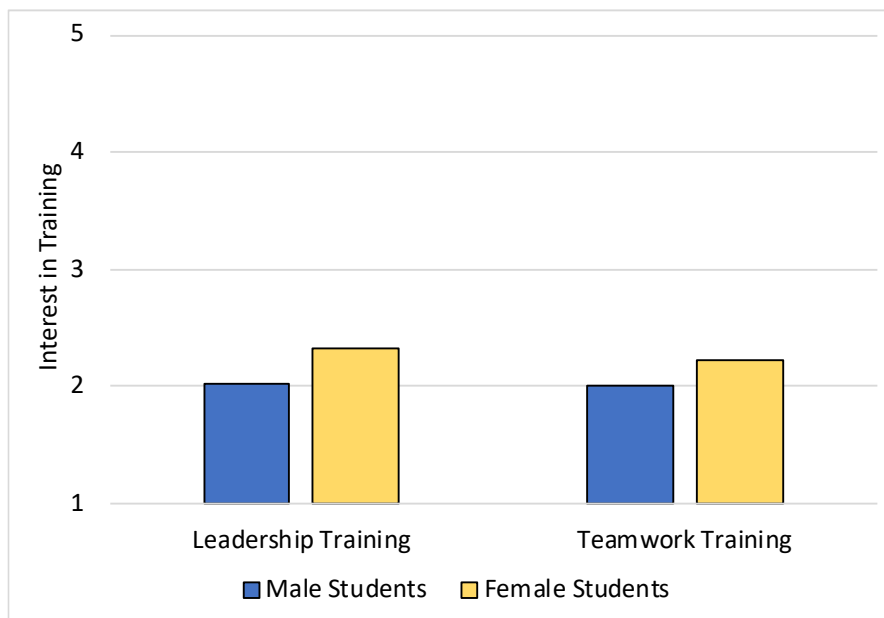


Figure 1. Bar chart of student interest in trainings by gender.

## Hypothesis 3

Hypothesis 3 predicted that this preference for leadership training would be higher among those students who scored highly on the Manifest Needs scale. To examine this, each student's interest in teamwork training was subtracted from his/her interest in leadership training. This difference was regressed onto student scores on the Manifest Needs scale (mean centered),

student gender (contrast coded), and the interaction between the two. High Manifest Needs scores were not significantly related to preferences for leadership over teamwork training,  $b = .13$ ,  $t(54) = .84$ ,  $p = .40$ , and thus Hypothesis 3 was not supported. High Manifest Needs scores were significantly negatively correlated with interest levels in leadership training,  $b = -.56$ ,  $t(54) = -2.25$ ,  $p = 0.02$ , and even more strongly negatively correlated with interest levels in teamwork training,  $b = -0.70$ ,  $t(54) = -2.90$ ,  $p = 0.006$ . This means that students who demonstrated high needs for dominance, autonomy and achievement also expressed significant disinterest in pursuing leadership training, and even stronger disinterest in pursuing teamwork training.

#### **Hypothesis 4a**

Hypothesis 4a anticipated that students who scored highly on the Organizational Commitment scale would also submit high scores on their satisfaction with pursuing a medical degree in their current program. This prediction was made because strong student commitment to the institution was intuitively thought to indicate strong satisfaction with their educational experience in the organization as a whole. A multiple regression where the Medical Profession Satisfaction scale was regressed onto the Organizational Commitment scale (mean centered) and student gender (contrast coded), as well as their interaction, revealed a positive but not statistically significant relationship between student scores on the Organizational Commitment scale and the Medical Profession Satisfaction scale,  $b = 0.16$ ,  $t(54) = 1.67$ ,  $p = 0.10$ . This means that the relationship between these two scales was not strong enough to predict that students would be satisfied with their medical education merely because they reported a strong fit with the organizational commitment. Gender did not have a statistically significant effect on student responses on the Medical Profession Satisfaction scale,  $b = .07$ ,  $t(54) = .10$ ,  $p = .47$ , nor did it interact with the Organizational Commitment scale,  $b = .16$ ,  $t(54) = .85$ ,  $p = .40$ .

**Hypothesis 4b**

Hypothesis 4b predicted that students who scored highly on the Organizational Commitment scale would report higher levels of interest in both leadership and teamwork training. However, the regression of overall interest in either type of training on the Organizational Commitment scale (mean centered) and student gender (contrast coded), as well as their interaction, produced a negative relationship instead,  $b = -.92$ ,  $t(55) = -1.87$ ,  $p = 0.07$ . Though this result was not statistically significant, it indicates that, according to this sample, students who expressed strong commitment to their medical program are often not interested in pursuing either leadership or teamwork training.

**Hypothesis 5**

The two-by-two factorial ANOVA was also used to determine whether or not gender moderated student preference for one type of training over another. However, the results of the ANOVA did not show a significant moderating relationship between student gender and training type preference,  $F(1, 58) = .11$ ,  $p = .74$  for the Type of Training by Participant Gender interaction. Instead, as can be seen in Figure 1, female students demonstrated a stronger preference for both types of training than their male counterparts, although the main effect of gender was also not significant,  $F(1,58) = .97$ ,  $p = .33$ .

**Hypothesis 6**

The final hypothesis anticipated that students who reported a high propensity to trust their peers would also report higher levels of interest in teamwork training. To test this, student interest in teamwork training was regressed onto the Propensity to Trust scale (mean centered) and gender (contrast coded), and the interaction between the two. This analysis revealed a positive but not statistically significant result in favor of this prediction,  $b = 0.22$ ,  $t(54) = 1.16$ ,  $p$

= 0.25. From this, we can deduce that students with a high propensity to trust their peers are likely to be more interested in teamwork training than those who demonstrate a low propensity to trust, but the relationship between these factors is not statistically significant enough to make this inference a foregone conclusion.

### **Discussion**

The primary purpose of this study was to gauge current medical student interest in leadership and teamwork training programs. Although these analyses did not yield statistically significant results in favor of many of the original hypotheses, they did express a trend of low overall medical student interest in pursuing either type of training, given that the means on each scale of interest fell below the scale midpoint of 3.0. When examining how the results of each hypothesis relate to one another, two major themes begin to arise. One, medical students in this sample express high mean desires for dominance, autonomy and achievement—traits which are commonly perceived as agentic—and they also express a strong commitment through compliance to the medical institution (i.e., they reported that they engage in behaviors to receive rewards from the organization). Secondly, students with high Manifest Needs and Organizational Commitment scores also express low interest levels in pursuing both leadership and teamwork training, regardless of whether one may be considered agentic and the other communal. Consequently, it is clear that regardless of gender, agentic perception or communal perception, these students are likely not anticipating that they will be rewarded for engaging in these types of trainings. Thus, in response to the question posed by the title of this study—leaders or team players?—it turns out the answer really is neither. There may be a whole host of reasons behind why these medical students lack interest in pursuing leadership and teamwork training, but the results clearly indicate that those who express strong commitment to their medical school also



demonstrate strong desires for dominance, autonomy and achievement, but do not express high interest in engaging with outside leadership and teamwork development programs. This goes directly against Hypothesis 3, which predicted that students who demonstrated high needs for dominance, autonomy and achievement would also express stronger levels of interest in leadership training than teamwork training. Though students with high Manifest Needs scores did show stronger disinterest in teamwork training than leadership training, both relationships were negative. One interpretation of this pattern, as was previously stated, may suggest that students with high needs for dominance, autonomy and achievement, and who also express strong organizational commitment, do not feel that they will be rewarded for engaging in either leadership or teamwork development programs.

These findings are consistent with prior research, which has demonstrated how programs in areas such as leadership and teamwork training often struggle to take hold in the healthcare industry. McAlearney (2006) identified several major issues that often limit these programs' success in medicine. Firstly, the medical community is lagging far behind other industries in instituting trainings such as these (McAlearney, 2006). Unlike the business sector, the healthcare industry does not often prioritize leadership or teamwork development. Because medical professions require such an extensive and intense educational career, programs aimed at teaching skills other than those needed to provide healthcare (i.e., leadership and teamwork skills) are the first to be pushed aside when time constraints arise (McAlearney, 2006). Secondly, the healthcare industry is known for segregating its different types of leadership (i.e., clinical vs. administrative leadership). So, instead of having medical professionals actively involved in day-to-day and long-term administration, these positions are often outsourced to professionals with managerial backgrounds (McAlearney, 2006). However, administration is far from the only

sector of the healthcare industry that requires strong leadership and collaboration skills, and without effective training in these areas, medical professionals who are placed into managerial positions (i.e., department heads) or engage in collaborative research or healthcare teams will likely not have the necessary skills to thrive in these positions. Thirdly, time constraints in both medical education and healthcare workplaces consistently force medical professionals to make tough decisions, including selecting which specific skills are the most vital for providing life-saving healthcare and omitting others to make room for them (McAlearney, 2006). However, effective leadership and teamwork skills are vastly disregarded as imperative proficiencies in the healthcare industry even though extensive research into the medical community tells us otherwise (McAlearney, 2006). Consequently, it is crucial that the culture of the industry shifts toward valuing educational programs such as leadership and teamwork training and begins rewarding its students and professionals for cultivating managerial and collaborative skills. Without a substantial culture shift, leadership and teamwork development programs will continue to be overlooked and major gaps in medical professional knowledge will continue to persist throughout the industry.

### **Limitations**

This study faced several limitations which may have impacted the significance and generalizability of the results. First and foremost, the final participant sample consisted of only 60 total subjects. The original goal of the study was to recruit 150+ participants. A sample size of this number may have impacted the statistical significance of the results, such that stronger patterns may have been found if the sample size had been larger. Additionally, a smaller sample size of this nature may not indicate highly generalizable results, although there were clear common threads expressed within the sample itself. In future studies, investigators should

consider collecting data from a more generalizable sample. For example, rather than recruiting only medical students, investigators could reach out to a larger variety of people involved in the healthcare industry including instructors, researchers and doctors all working in one institution. Secondly, the online survey length was limited in attempt to maximize participation. In the case that this study had access to more extensive resources, the survey could have been lengthened to collect more initial data and the participants could have received more compensation.

### **Directions for Future Research**

In future studies investigating similar hypotheses, researchers should consider expanding the organizational commitment construct to include organization-person fit as well. By examining how students and professionals in medical institutions believe their values fit within their institutions, future research could investigate how overall organizational culture impacts organizational commitment, expressions of the manifest needs constructs, and profession satisfaction. Future investigators could reference the Organizational Culture Profile (OCP) created by O'Reilly, Chatman and Caldwell (1991) to investigate this specific construct. By looking into additional factors such as organization-person fit, research in this field can begin to uncover why the healthcare sector is lagging so far behind other industries in implementing and prioritizing leadership and teamwork skill development. The original focus of this study was to investigate the culture of contemporary medical education, since trainings such as these are educational in nature and are most likely to be incorporated into the early development of medical professionals. However, the emphases of medical education will never shift without the greater influence of the healthcare industry as a whole. Consequently, investigation into why the culture of this industry in its entirety lacks sufficient support for leadership and teamwork development programs is essential for the progress of the medical community as a whole.

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## Appendix A

### *Qualtrics Survey Items*

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<u>Category</u>	<u>Item</u>
Training Interest	1. What is your interest level in leadership training? 2. What is your interest level in teamwork training?
Organizational Commitment	3. What this medical program stands for is important to me. 4. I talk up this school to my friends as a great program to attend. 5. If the values of this program were different, I would not be as attached. 6. How hard I work for this program is directly linked to how much I am rewarded. 7. In order for me to be rewarded, it is necessary to express the right attitude. 8. Since joining this program, my personal values and those of the school have become more similar. 9. My private views about this program are different from those I express publicly. 10. The reason I prefer this program to others is because of what it stands for, that is, its values. 11. My attachment to this school is primarily based on the similarity of my values and those represented by the program. 12. Unless I am rewarded for it in some way, I see no reason to expend extra effort on behalf of this program. 13. I am proud to tell others that I attend this school. 14. I feel a sense of “ownership” for this program rather than being just a student.
Manifest Needs	15. I do my best work when my assignments are fairly difficult. 16. When I have a choice, I try to work in a group instead of by myself. 17. In my assignments, I try to “be my own boss.” 18. I seek an active role in the leadership of a group. 19. I try very hard to improve on my past performance. 20. I pay a good deal of attention to the feelings of others in my academic environment. 21. I go my own way, regardless of the opinions of others. 22. I avoid trying to influence those around me to see things my way. 23. I take moderate risks and stick my neck out to get ahead. 24. I prefer to do my own work and let others do theirs. 25. I disregard rules and regulations that hamper my personal freedom. 26. I find myself organizing and directing the activities of others.

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Medical Profession  
Satisfaction

27. I try to avoid any added responsibilities to my classwork.
28. I express my disagreements with others openly.
29. I consider myself a “team player.”
30. I strive to gain more control over the events around me in my academic setting.
31. I try to perform better than my peers.
32. I find myself talking to those around me about non-academic related matters.
33. I try my best to work alone.
34. I strive to be “in command” when I am working in a group.
35. To what extent would you prefer an occupation other than the one you are studying now?
36. Do you intend to finish your medical education in this program?
37. To what extent have you thought seriously about changing fields of study since beginning your education in this program?
38. If you have your own way, will you still be pursuing this field three years from now?
39. Please choose the expression that best fits how you feel about this program.



## Propensity to Trust

40. I believe that most of my classmates would cheat to get ahead.
41. I find it easy to get along with my classmates.
42. I value cooperation over competition.
43. When I have a choice, I tend to avoid working with others.

## Demographics

44. Please indicate your age.
  45. Please indicate which gender you identify with.
  46. What is your current year in medical school?
  47. Please indicate your ethnicity.
  48. Please enter your **valid** CU email address to receive compensation for participating in this survey.
-

Appendix B

Recruitment Materials

EARN \$5 IN  
10 MINUTES



Leadership & Teamwork  
Development Online Survey

Please consider completing this 10-minute online survey investigating leadership and teamwork training in medical education. At the end, you will receive a \$5 Amazon Gift Card as well as access to leadership and teamwork training modules designed by experts in the field.

University of Colorado Boulder | Department of Psychology & Neuroscience  
Lindsay.M.Jackson@colorado.edu

*Recruitment Flyer*



**EARN \$5 IN 10  
MINUTES**

Online survey investigating  
leadership and teamwork  
training in medical education.

University of Colorado Boulder |  
Department of Psychology & Neuroscience  
[Lindsay.M.Jackson@colorado.edu](mailto:Lindsay.M.Jackson@colorado.edu)



*Recruitment Business Card*

## Appendix C

### IRB Approval



Office of Research Integrity  
UNIVERSITY OF COLORADO **BOULDER**  
**INSTITUTIONAL REVIEW BOARD**

**Institutional Review Board**  
563 UCB  
Boulder, CO 80309  
Phone: 303.735.3702  
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### APPROVAL

01-May-2019

Dear Lindsay Jackson,

On 01-May-2019 the IRB reviewed the following protocol:

Type of Submission:	Initial Application
Review Category:	Exempt - Category 2 -
Risk Level:	Minimal
Title:	Collaboration is Key: Teamwork in Medicine
Investigator:	Jackson, Lindsay
Protocol #:	19-0242
Funding:	Non-Federal
Documents Approved:	19-0242 Consent Form (1May19); Proposal Survey Items; Leadership Training Flyer; Teamwork Training Flyer;
Documents Reviewed:	Protocol; Modified Initial Application; HRP-211: FORM - Initial Application v8;

The IRB confirmed the Exemption of this protocol on **01-May-2019**.

You are required to use the IRB Approved versions of study documents to conduct your research. The IRB Approved documents can be found here: [Approved Documents](#)

In conducting this protocol you must follow the requirements listed in the [INVESTIGATOR MANUAL \(HRP-103\)](#).

Sincerely,  
Douglas Grafel  
IRB Admin Review Coordinator  
Institutional Review Board