

Leader-Follower dynamics within medical students' groups during clinical rotations

Jorge Sigler, Amanda Gray

Independent researcher, United States.

Abstract

Clinical practical training is a common practice and a requirement for many medical professions in the U.S.A. This training often lacks in managerial and leadership training, leaving many future practitioners poorly prepared for the challenges and requirements of leadership roles. The complexity of the healthcare system brings about new challenges in terms of leadership, with the development of leadership skills for practicing physicians becoming even more crucial. This study analyzed a sample of students and resident doctors in a psychiatric setting during their clinical rotation. The particularities of the observed emergence of leadership within the scope of multiple theoretical frameworks in the field of leadership were analyzed by calculating the median values of each set of survey responses. The study found that biological sex did not play a significant role in Leader emergence ($p=0.74$), Followers scored Leaders highly overall, and Leaders showed that they had a solid insight into their own capacities and limitations. Overall, strong leadership qualities were identified across all theoretical frameworks with valuable implications for the development of future leadership training. More research is needed to test this methodology in different medical settings and to identify the most effective type of leadership training for clinical education.

Keywords: *Leadership; authentic leadership; medical education; healthcare management; leadership training; public health.*

1. Introduction

Clinical practical training is a common practice and a requirement for many medical professions in the U.S.A. Depending on the profession and specialization, clinical training can last anywhere from 1 year to 8 years. Clinical experiential training lacks in managerial and leadership training, leaving many future practitioners poorly prepared for the challenges and requirements of leadership roles (Ackerly, et al., 2011). The complexity of the healthcare system brings about new challenges in terms of leadership, with many experts speaking up about the need to develop leadership skills for practicing physicians (Stoller, 2008; Stoller, 2009; Stoller, 2013; Blumenthol et al., 2012; Detsky, 2010; Anderson & Garman, 2014; & NCHL, 2014). Given the training that physicians, non-physician practitioners (N.P.P. – i.e. Physician Assistants and Nurse Practitioners) and other health care providers undergo, they present a viable population to undertake leadership roles in clinical care, improving the healthcare system, prioritizing patient care and effectively managing clinical settings (Gunderman & Kanter, 2009), achievable with comprehensive leadership training.

The present paper analyzed a sample of students and resident doctors in a psychiatric setting during their clinical experiential rotation over a one-year period for Followers, and a two-year period for Leaders, due to sample size limitations. The size and multi-institutional characteristics of the sample, as well as the particularities of the setting, offered fertile ground for the emergence of organic leadership traits within the group of present and future practitioners. Leaders and Followers were identified and separated for analysis, applying two series of leadership scales; one for Followers and one for Leaders. The aim of this study is to measure the particularities of the observed emergence of leadership within the scope of multiple theoretical frameworks in the field of leadership. The setting surveyed utilizes a management strategy for the educational component that has shown to generate an annual net saving of \$118,299.45 with an initial investment of \$11,170.88 (Whiteman et. al, 2018). Identifying leadership nourishment properties within the same strategy would add educational value to an already financially viable strategy.

The sample surveyed does not include all forms of practitioners in the medical field and should not be considered an absolute for the totality of practitioners. As explained in the setting, 35 of the 42 of the educational programs relate to physician assistant studies, with the rest spread between 5 M.D. and D.O. programs and 2 post-graduate residency programs. Due to the overwhelmingly large proportion of P.A. students in the study, the results may be more representative of this subset of the sample.

1.1. Research Background

The emergence of student Leaders occurred in an organic, unplanned manner. Initially, the facility had a small number of local affiliations which accounted for 0-3 students in a

regular rotation block. Most students came from one educational facility, providing no overlapping of rotations. By the end of 2014, the pool of students had expanded to include out-of-state institutions and P.A. programs. As a result, the number of students gradually increased, and their rotations started to overlap. Over time, as the number of students grew, the medical director and the clinical education coordinator started to identify, within the student group, individuals that would take it upon themselves to guide new students, propose improvements to procedures within the students' office and direct other students. Some of those individuals would openly express their disposition. Another noticeable factor was that students would allocate and centralize between themselves a person to organize their workload, modifying it based upon new student arrivals and students exiting upon completing their rotation. Both the medical director and the clinical education coordinator identified advantages into openly recognizing a student as Leader within the group.

Currently, student Leaders within the setting are not selected solely by their peers nor their preceptor. They are also not selected solely on the basis of merit, skills or knowledge. Selecting student Leaders contains a strong time component. Student Leaders are commonly selected by the acting student Leader after leveraging their abilities, aptitudes and remaining time in the rotation. Students with a longer remaining term in their rotation acting as Leaders will likely provide more stability than a student who only has a week or less to finish her/his rotation. The best candidate will be selected in a joint decision between the acting student Leader and the medical director. In some instances, there can be a secondary student Leader supporting the first student Leader. In other instances, the medical director will select the student Leader by himself; this occurrence tends to happen as a result of not having any overlapping students and all present students having no experience.

1.2. Leaders' Role

The leadership role presents the opportunity to enhance the experience of all the students. Clinical education rotations are meant to provide students with hands-on experience in each medical specialty. It is also a "real-life" simulation where students get to experience the every-day working characteristics of each specialty and their settings while under the constant supervision of their preceptor, allowing them to have a "safety-net". Inserting a student Leader enriches the "real-life" experience for all the students by adding a layer of support and guidance. The role of the student Leaders is mainly for communication purposes. Student Leaders serve as a bridge between the clinical education office and the students' offices, acting as a funnel to distribute necessary information. Student Leaders also help the medical director and preceptor ensure that all students have an equitable overall experience (patient load, initial psychiatric evaluation presence, group support, etc.).

It is relevant to point out that there are several layers within the students' role as a whole. Beyond the Leader-Follower relation, there are other support activities that all students participate in. On the first days of their rotation, students are matched by the student Leader with other students that have more experience with the facility. The purpose of this grouping is to have the experienced students familiarize the new students with the Electronic Medical Records (E.M.R.) system, other tools, and the facility layout. What the experienced student shows the new student has no direct repercussion on patients or patient care. None of the training or guidance provided by the experienced student has any clinical value or is directly related to patient care. However, the instructional value is high, as all students need to learn their way around the E.M.R. network and facility in order to effectively complete their duties. The medical director constantly supervises the training to ensure that no clinical indications are given.

The presence of a leadership position within the students' office does not undermine the influence or supervision of the preceptor towards the students. As part of the educational strategy, supervision from the preceptor aims to be seamless in order to encourage a more participative role from the students and help them develop their skills as providers in a transparent alignment with their own individual qualities and skills. The student Leaders do not supervise the work of the Followers in place of the preceptor; their role is to facilitate and support both the Followers and the preceptor.

2. Methodology

2.1. Setting and Sample

The setting used for this study is the psychiatric residential facility, Family Center for Recovery (FCFR), which has a total of 44 in-patient beds. Levels of care at the facility include: Intensive Detoxification (Detox), Residential Hospitalization, Partial Hospitalization (Day or Night with Community Housing) (PHP), Intensive Outpatient (IOP), and Outpatient (OP). FCFR also maintains these same levels for pregnant and adolescent patients, except for Detox in the case of adolescents. FCFR treats all levels and types of mental illnesses across the spectrum. The residential facility is privately-owned and managed by the medical director in-charge, Dr. Robert A. Moran M.D., a triple board-certified psychiatrist. The setting analyzed holds, as of 2018, a total of 5 Medical school affiliations, 35 Physician Assistant program affiliations and 2 residency program affiliations. Only a small proportion of the educational affiliations are local, with a large percentage being from a state different than that of the preceptor. In 2017, FCFR precepted a total of 223 students distributed as follows:

Table 1. Distribution of students

January	25 Students	May	20 Students	September	17 Students
February	16 Students	June	9 Students	October	28 Students
March	14 Students	July	16 Students	November	38 Students
April	19 Students	August	15 Students	December	6 Students
AVERAGE = 18.58 Students/month					

The distribution only marks the month in which their rotation started. However, particularities within different medical education programs create overlapping rotations.

The number of professionals trained during the period analyzed (2017) includes 3rd and 4th year M.D. and D.O. students, Physician Assistant (P.A.) students, and M.D. and D.O. resident doctors. Rotation durations were between 4-6 weeks, with a few instances where students and residents selected both a mandatory and an elective rotation with FCFR, which then totaled beyond 6 weeks in one continued block or two separate blocks within the year. Rotation blocks from different educational programs have different starting dates based on the particularities of each program and traveling requirements for students.

2.2. Scales methodology

For the purposes of this paper, the population was analyzed separately by group (Followers and Leaders). Only Followers whose rotation block started between January 1st, 2017 and December 31st, 2017 were analyzed. In the case of the Leaders, given the limited number of Leaders within a year, the Leaders from January 1st to December 31st, 2016 and 2017 were analyzed.

In order to assess the Leader-Follower dynamics, surveys were developed for the student Followers and for the student Leaders. The surveys for student Followers contained modified versions of the Leadership Trait Questionnaire (LTQ), Leadership Behavior Questionnaire, and Team Excellence and Collaborative Questionnaire. The surveys for the student Leaders contained modified versions of the Skills Inventory Assessment, Path-goal Leadership Questionnaire, Authentic Leadership Self-Assessment Questionnaire, and the Team Excellence and Collaborative Questionnaire. All surveys were adapted from similar questionnaires found in Northouse (2016). The surveys utilized may not be comprehensive enough to stand as definitive measures of leadership frameworks but are intended to assess the qualities of the Leaders in this study. An extra survey was generated for the Leaders in order to identify any prior exposure to leadership training that might have played a relevant role in their performance. Some of the assessment tools utilized suggest cross-referencing between the Followers' evaluation of the Leaders and Leaders' self-evaluations; however, given the sample size, overlapping particularities and other issues, such suggestions were

not implemented. The only tool administered to both Leaders and Followers was the Team Excellence and Collaborative Questionnaire for comparison purposes. All surveys mentioned were modified in order effectively target the population.

2.3. Statistical significance

For the purpose of student Followers, 191 Followers were identified for 2017, after removing 7 instances of invalid duplicates and one case of missing records during the pre-survey screening. Strong control mechanisms were implemented to ensure that the rotation block of each surveyed student was from the sampled time frame and that no duplicate results were present. Of the total surveys sent to Followers, 163 responses were received, making for a response rate of 85.34%. Of the 163 responses, 9 were removed after being identified as student Followers whose rotation block was in 2016, 4 were removed for not providing their name, 3 were removed after their name did not match their records, 1 was removed after the student was identified as Leader, 1 was removed after being identified as a duplicate response, and 1 was removed after identifying that the student did not complete the clinical rotation due to natural disasters. After removing 19 responses post-survey from the 191 originally identified Followers, we obtained a final population size of 172 Followers and a final number of respondents of 144.

For the purpose of student Leaders, 24 were identified for 2017 and 11 were identified for 2016; by adding them a total of $x=35$ ($n_{2017}+n_{2016}$) was obtained. Of the 35, 4 were identified post-survey as not having taken the role of Leaders, leaving a total of $x=31$ Leaders for 2016 and 2017. The response rate for the Leaders' surveys was 100%.

Given the total number of respondents, the overall margin of error, at a confidence level of 95%, equals 8%.

To determine if biological sex had an effect on leadership emergence, an N-1 Chi squared statistical test was applied to the data, comparing the proportion of females in leadership roles to the proportion of females in the overall sample population, using Medcalc statistical software (Medcalcsoftware, 2018).

3. Results and Discussion

3.1. General Findings

Among the population findings, biological sex played no role in leadership. 74% of the Leaders in the sample are biologically female and 26% are biologically male. Within the entire sample population, both Leaders and Followers, 71% of the population were female and 29% were male. Biological sex, therefore, played no role in leadership emergence in this study ($p=0.74$) (Medcalcsoftware, 2018).

The distribution of titles within Leaders is 87% P.A. students and 13% D.O. medical students. No other degree type held the Leader title within the years 2016 and 2017. Overall, including Leaders and Followers, P.A. students represent 72% of the entire student sample. D.O. medical students represent 25.14% of all students, M.D. students only represent 1.14% of the total population while D.O. resident doctors represent 1.71%. The high incidence of P.A. student Leaders may be due to the large body of P.A. students, along with the fact that some of the P.A. educational programs have rotations of 5 and 6 weeks. Students and residents with longer rotations are more likely to be selected for the position of Leader within the group as previously explained. No M.D. resident doctors were identified during the surveyed period.

3.2. Followers' Findings

The first survey presented to the Followers was a modified version of the Leadership Trait Questionnaire (L.T.Q.), based on one of the earliest systematic approaches attempting to conceptualize and study leadership. The trait approach revolves around the traits Leaders exhibit. The tool suggests Leaders to self-rate; however, only the Followers were surveyed. The questionnaire utilized quantifies how Followers perceive the Leaders, focusing on measuring 14 traits. The median results for the traits Articulate, Trustworthy, Outgoing, Sensitive, Persistent, Dependable, Conscientious, Empathic, Friendly and Diligent were "Strongly Agree". While for the traits Self-assured, Perceptive, Self-confident and Determined were "Agree". The results for this scale highlight that Followers had a very positive impression of the Leaders for every trait analyzed.

The second survey was a modified version of the Leadership Behavior Questionnaire, which consists of 20 statements to assess the Leader's behavior in two orientations; task and relationship. The task orientation concentrates on how the Leader focuses on helping others understand and define their roles within the group and measuring how much effort Leaders put on letting Followers understand what is expected of them. The relationship orientation quantifies how much effort Leaders put into ensuring group cohesiveness and that every member feels comfortable within the group. Followers ranked the Leaders as "Very High" in both task and relationship orientations, showing that Followers saw their Leaders as very dedicated at both integrating them to the group and ensuring they are knowledgeable about their role and what is expected of them.

The third survey is a modified version of the Team Excellence and Collaborative Team Leader. This particular instrument was completed by both the Followers and the Leaders, with results compared to identify the areas of greatest weakness. The instrument measures multiple items within the Team dynamic: Clear Elevating Goals, Results-Driven Structure, Competent Team Members, Unified Commitment, Collaborative Climate, Standards of Excellence, and External Support and Recognition. It also measures multiple items within

the Leadership's performance: Focus on the Goal, Ensure Collaborative Climate, Build Confidence, Demonstrate Sufficient Technical Know-How, Set Priorities, and Manage Performance. Scoring is done on a spectrum which contains: false, more false than true, more true than false, and true. Overall, Followers felt confident in all items of the team dynamic, scoring them all as "true", with "Results-Driven Structure" being the only dimension to score as "more true than false". In regard to Leadership's performance, Followers showed strong confidence in all items.

3.3. Leaders' Findings

All Leaders were asked to complete a survey relating to prior leadership training. A total of 30 out of the 31 student Leaders identified for the time period of the study answered the survey. The 30 students encompass a total of 12 different educational facilities. 46.6% of the respondents reported participating in some form of leadership training prior to their rotation. The most common forms of training reported include lectures (7 responses), group dynamics (6 responses) and case discussions (5 responses). The most common provider of the training was their current educational institutions, some as part of their curriculum (3 responses) but most as part of extra-curricular options (8 responses). Other providers of leadership information include undergraduate institutions, conferences, and sports training. Length of training varied between less than an hour and 2+ years, with the most common answer being 1-8 hours (6 responses). 11 of the respondents reported their training as being provided in-person while 2 reported it as being provided online and 1 reported a combination of both. Group size for the training varied with 10-30 participants being the most common number (5 responses). An open comments section was left for student Leaders to express any information they thought was relevant to their leadership skills. It is worth noting that some respondents mentioned military experience and sports training as a contributing factor to their leadership skills. Overall, no systemic relevant previous training or environmental factors were identified.

The first leadership survey applied to the identified Leaders was a modified version of the Skills Inventory Scale. The Skills approach in leadership focuses on abilities and skills that can be acquired and reinforced by individuals. The scale utilized in this study assesses the Leaders in technical, human, and conceptual skills. Since the skills inventory scale is a self-assessment, the result expresses mostly the level of comfort of the Leader in technical, human, and conceptual competencies. Leaders ranked themselves high in all 3 competencies (expressed as a median). Results indicate that they felt confident guiding Followers in their technical duties and addressing their personal concerns. In the Skills theoretical framework of leadership, lower management levels require a focus on technical and human skills and, as we progress up in the management ladder, the weight switches in favor of conceptual skills, as it is essential in order to understand to grasp the complexity of

large organizations, their goals and overall big picture. The high results on all 3 competencies show Leaders comfortable to navigate all levels of an organization.

The second survey applied to Leaders was a self-assessment modified version of the Path-Goal Scale. The Path-Goal theoretical framework delves into how Leaders encourage productivity while also promoting engagement and satisfaction in their Followers (Evans, 1970; House, 1971; House and Dessler, 1974; & House and Mitchell, 1974). The instrument utilized measures the respondents in four different styles of leadership: Directive, Supportive, Participative and Achievement-oriented. The results of the scale provide the Leaders with insight into their weaknesses and strengths, as well as the emphasis they place in each style. The median scoring was “High” for Directive Style, Participative Style and Achievement-oriented Style. Supportive style was ranked as “Common”.

The third survey was a modified version of The Authentic Leadership Scale. The scale is a self-assessment to help Leaders determine their own level within the authentic leadership theoretical framework. The scale measures the Leaders’ foundation on Self-Awareness, Internalized Moral Perspective, Balanced Processing, and Relational Transparency. The median score was “Medium” for the Internalized Moral Perspective, Balanced Processing, and Relational Transparency, and “High” for Self-Awareness. Based on the scoring on each individual component, we can see that surveyed Leaders have a very valuable foundation from the authentic leadership theoretical framework. There is room for improvement, but the self-assessment provides a good understanding of the current state of Leaders. Overall, the results indicate that the Leaders have a solid insight into their own capacities and limitations.

The fourth survey is the modified version of the Team Excellence and Collaborative Team Leader questionnaire that was also applied to the Followers. In contrast to the responses provided by the Followers, the Leaders were more critical of the team dynamics, scoring Results Driven Structure, Standards of Excellence, and External Support and Recognition as “more true than false”. All other aspects of both dimensions were scored as “true”.

3.4. Implications of Results and Future Research

In all instances, Followers scored Leaders higher than Leaders scored themselves. Given the low previous exposure to leadership roles or training, the observed difference in scoring can answer to lower confidence in their own leadership capacities. A notable observation was made on the results for The Team Excellence and Collaborative questionnaire which was applied to both Leaders and Followers with similar results observed amongst the two groups, except for the Leaders scoring the team dynamics slightly lower than the Followers scored them. Given the direct impact that leadership holds over the team dynamics, and the specific items that were ranked lower, the factors that affect them are external to the control

of the Leaders. These lower scores can answer to a lack, or perceived lack, of structure within the medium that holds the team (upper management). The results, overall, portray a synergistic team stable across multiple Leaders.

Several particularities of the surveyed sample might play a role in the development of observed leadership skills. Given that the sample includes resident doctors, physician assistant students, and both third and fourth year medical students, there is an unmeasured level of inter-professional education that may play a role and even stimulate leadership dynamics. The overlapping characteristic of their rotations is a strong stimulant of inter-professional education. More experienced students were observed acting as a mentor for newer students in non-clinical aspects, aiding the newer students in familiarizing themselves with their new environment, policies and procedures that govern their activities.

Some students have anecdotally reported that interacting with students pursuing different degrees, or even the same degree but from different educational institutions, has been a positive professional reinforcement on their overall career and educational institution choice. Students from recently opened educational programs have reported a huge sense of relief after clinically interacting alongside students from more established educational institutions, as they have been able to assess their learned skills and knowledge against that of their colleagues. A substantial portion of the surveyed sample attended an out-of-state educational program, some attending their clinical rotation alone or with another student/s from their educational program. Being in a foreign place for their rotation inserts an added level of challenge and discomfort due to the absence of known locations and individuals, which stimulates interaction with other students in a similar position outside of the clinical setting, promoting interpersonal bonds, as reported by multiple students.

Student Leaders were also Followers at some point in their rotation, which allows Leaders to relate with the challenges, anxieties and limitations of their own Followers. The Leader-Follower dynamic is a synergistic relationship, and given the results obtained, the leadership traits observed appear to create strong team synergies.

All of these factors can potentially play a hard-to-quantify role in the observed emergence of Leaders. The results of this study suggest the possibility of effective leadership training during the experiential clinical rotations while also generating significant savings for the precepting facility (Whiteman et al., 2018). More research is required to corroborate the results obtained.

4. Conclusion

Leadership development in healthcare providers is increasingly becoming a necessity (Stoller, 2008; Stoller, 2009; Stoller, 2013; Blumenthol et al., 2012; Detsky, 2010;

Anderson and Garman, 2014; & NCHL, 2014). Some authors even stress the need for Leaders within institutions to be care providers (Gunderman & Kanter, 2009; Hillman, Nash, Kissick, & Martin, 1986; Cutler, 2009; & Boehmer, 2009). Whether executives and managers of healthcare facilities should or should not be trained healthcare providers (i.e. physicians) is a topic of much debate with several pros and cons. However, the results of the present paper provide an initial image of the leadership qualities that can be seen in healthcare providers in-training. The positive results show promising providers capable of taking active roles in leadership positions. Most of the training reported by emergent Leaders in this study previous to this experience was informal. A deeper, more focused leadership training may cultivate the leadership many authors call for. More research is needed to assess the particular areas to focus on and the type of training that would be more effective for clinical education.

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