A Statistician's Guide to Leadership and Success

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ABSTRACT

It has long been presumed that statisticians tend to be more introverted and numbers focused. While this may be true, it does not need to be the primary way in which we are described. Statisticians can be both leaders and educators in our fields of work. This paper will describe how to communicate effectively with those who are not statisticians, how to maximize the value of those on your team, and how to reinforce positive behaviors in order to shape a stronger, more cohesive team. Using the skills and behaviors that will be described in this paper will aid in building a more solid team in which you are all equally valued and respected. In order to produce quality results, we need to work together and that begins with an understanding of each other's roles and responsibilities. By spending the extra time in the beginning to foster this environment, we will be better able to grow as a team and prevent issues down the road.

INTRODUCTION

Leadership can simply be defined as the art of motivating those around oneself to act toward achieving a common goal (Ward, S.). And, success can be defined as the accomplishment of said goal. To be a successful leader, one must strive to be a proficient listener and communicator. Before one is able to maximize the skills of those around them, he/she must understand the strengths and needs of those on their team. For the purpose of this paper, let us assume a group of individuals were recently placed together to work on a clinical trial involving a project manager, a data management group, and a statistical group. You will be the statistical lead. So, what do you do first?

GET TO KNOW YOUR STATISTICAL TEAM

When working within your own statistical team (statisticians and programmers), it is important to understand the backgrounds and experiences of those on your team. Communication and engagement are key factors in this process. Meet with your team members regularly and consistently. Discover the strengths and needs of those on your team. Be an effective listener. Ask probing questions to learn more about others with whom you will be working. Be creative. Find ways to get people to communicate with each other. Building a strong cohesive team starts at the beginning. A good leader will strive to build strong relationships within their team.

COMMUNICATION

Communication can be tough. People come from different backgrounds, with different experiences, and different methods of communicating. Some people have a challenging time saying 'no' and will take on more than they can handle. While others will sit back and let those around them do the heavy lifting. Below are some questions that can be useful to identify key personality traits and behaviors of those on your team:

- Does this person take on more work than they can handle, never says 'No'?

- Does this person voice their concerns, or keep them to themselves?

- How does this person manage their time, will they ask for help if it is needed?

- Is this person attentive to detail?

- Does this person quickly adapt to new situations and different directions in the study?

- Is this person open to new suggestions, or how do they handle criticism?

- Is this person a team player or an independent worker?

- Is this person invested in the team's overall success?

As the leader, it is best if you are able to figure out the personalities and traits of those on your team and identify any concerns. This is a task that will continue throughout the course of the study and will allow you to implement methods to steer the team and study in a more healthy and productive direction.

Once you have a better understanding of the types of people with whom you will be working, it is important to set some ground rules. For example, it is beneficial to have an open door policy where everyone is equally encouraged to speak up and voice their opinions. It does not matter if a programmer 2 questions a principal statistician, if the programmer 2 is able to identify a problem. The programmer 2 can learn something new and you are able to correct an issue early and prevent further problems down the road. As a leader one should try to establish open communication between team members as well as a safe environment in which to share one's thoughts and opinions. It is through this type of communication that individual members of a team can continue to blossom and grow in their own development as well as the success of the team.

ROLES AND RESPONSIBILITIES

As mentioned above, a leader should want everyone to feel equally heard and valued on their team. And while this equality is central, it is still important to make sure team members are aware of the hierarchy in the group as well as their own responsibilities. For example, while everyone is encouraged to research statistical methods used in a study design, ultimately the decision lies with the lead statistician assigned to the study.

Team work is instrumental to the success of a team, but team work involves everyone completing their individual parts in an effort to meet the group goal. While a statistician may help with a program, the completion of the programming still falls on the programming team. The same is true if a programmer is helping to troubleshoot a statistical method; ultimately, the person responsible for the statistical method will be the statistician. In the end, it is important that those on the team know their own roles and responsibilities as well as the roles and responsibilities of the rest of the team.

TEAM BUILDING

Now that we have highlighted what to look for and on what to focus, it is time to build your team. To begin, it is encouraged to have a statistical kick-off meeting. Give everyone a chance to speak and share information about their strengths. If time warrants, play a game to get to know each other. Research supports that those who feel more closely tied together will work harder with each other to meet a common team goal.

Make sure to go over the roles and responsibilities of the team members. Make sure there is a clear understanding of each person's responsibilities. Establish a plan for how to handle issues that may arise over the course of the study. Be straight-forward with the team, establish open communication and trust. At the close of the meeting, make sure to ask if there are any questions or concerns. Make sure to encourage a response, silence does not mean 'No'. If no one responds, ask again until you get a response. Asking the same question repeatedly will eventually lead to a response. And, as your team begins to feel more comfortable with each other, you will no longer need to actively probe to elicit a response. Make sure to offer email as an option for questions in case there are those on your team who are not quite ready to share concerns is an open forum. Always provide options.

GET TO KNOW YOUR NON-STATISTICAL STUDY TEAM

As a statistician/programmer, working with those outside of statistics can present challenges. Often times we find that those around us do not understand our work or are just not interested. Just like a statistical leader needs to know and understand their internal statistical team, it is also important to get to know the larger study team with whom you will be working. Again, communication is essential.

COMMUNICATION

When communicating with non-statisticians/programmers, it is important to understand if those around you have any interest or experience with statistics. Again, ask questions. Use the tools mentioned above

to get to know your team's strengths and needs. Be aware that some people are going to tell you they have a good understanding of statistics; however, recall there are many types of statistics and just because an individual has experience with one facet of the field does not mean they understand everything you are communicating.

When speaking with individuals, statistical or otherwise, make sure to clearly communicate what you are asking. Give examples and use anomalies involving information to which the person can relate. This will help to ensure the person understands exactly what you are trying to communicate. If you are still not sure whether the person has an accurate understanding of what you are discussing, ask them questions. It is important to make sure you are not involved in a conversation with a person who keeps responding 'Uh huh" or "Yes" in feigned agreement. On many occasions people will be too uncomfortable to ask questions for fear that they will be seen as less adept or knowledgeable. Make sure those to whom you are speaking understand that this work can be challenging to understand and if they do not get it the first time, another approach can be considered. In the end, it is important that everyone understands to what you are assessing. Finally, recap the conversation in an email where you can clearly re-state the explanation in writing while providing documentation for later reference.

To make sure everyone understands the types of questions the statistician seeks to answer, it is also important to be aware of terminology and titles used by different groups. For example, if your study utilizes many levels of programmers it is important to clarify to whom you are referring when conversing with others. If the study has a statistical team (statisticians and programmers) who work specifically on the study outputs, then to the statistical group, the programmers are the people who create the study outputs. If on the same study, there are programmers who work with the data management (DM) group to perform various DM tasks, then to the DM group, the programmers are those who execute the DM tasks. Being aware of these similarities and differences can alleviate challenges and help to avoid miscommunication. If you are attending a meeting, and one group references that the 'programmers' will complete the task, you need to know to whom they are referring.

As well as similar occupations have different responsibilities based on work groups, it is also important to be aware that a simple word can have a different meaning subject to whom you are speaking. It is always good practice to make sure everyone is on the same page, with the same understanding prior to moving forward. As a leader, it is your responsibility to make sure you have clearly communicated with your team resulting in a common understanding. A strong leader asks questions and seeks clarification to make sure you are all moving toward the same goal.

ROLES AND RESPONSIBILITIES

As well as knowing the statistical roles and responsibilities, it is also important to understand the responsibilities of those on the larger study team. For example, the statistics group may be responsible for validating analysis datasets for which they have created; however, they may not be responsible for validating documents and/or datasets created and owned by other groups. Unless otherwise noted, the task of validation usually lies within the group who created the document and/or dataset. As a statistical leader, you should make sure you know who is responsible for what tasks so you do not end up in a situation where you are being asked why a dataset created and provided by the non-statistical team has an error.

Knowing the roles and responsibilities of those with whom you work on a study team will assist you in identifying the team member to approach with specific questions. As all of our work is highly enmeshed, a good leader will recognize the importance of working with those around them on their team outside of statistics. It is important to share the information and challenges discovered in working with the data and/or study. By continuing to work together and share information across groups, we increase the likelihood of fending off potential issues down the road and having a truly successful study.

TEAM BUILDING

Just as it is important to build a strong, cohesive statistical team, it is also important to build relationships with those on the larger study team. Communication is crucial, as it is easy to misinterpret those around you when you do not have a good understanding of each other's roles and responsibilities. Working together as a cohesive team will help to alleviate miscommunication and eliminate potential data

issues/concerns. As a leader, it is important to focus on making sure everyone is on the same page. Remember, we all come from different backgrounds with specific skill sets, and while it can be challenging, spending the extra time to make sure you all have the same understanding will move the team closer to success.

COURSE OF THE STUDY

Once you have established relationships, roles, and goals with those on both your statistical team and study team, it is time to get started on the rest of the work.

MEETING TIMELINES

Generally when a study has started, timelines are established. As a leader, you are responsible to make sure your timelines are met. Make sure to know when you have deliverables pending and how much time is needed to complete the task. Work with both the statistical team and study team to make sure you have all information necessary to complete your task. For instance, if you need a document from the client, confirm in writing when you should expect the document. Do not be afraid to be assertive regarding your needs. Let those around you know that if you do not have the necessary tools to complete your task, it will cause delays in your deliverables. Make sure this is communicated to the statistical team, study team, and project manager, as well as the client if applicable. Often times, the project manager will work with you to make sure you have the tools you need to complete your task.

Be as transparent as possible in your ability to meet your timelines. As soon as you notice an issue, make sure to alert the study team. Be prepared for the unexpected. Throughout the course of a study, statistical tasks may encounter several unexpected deviations along the way. A few examples may include:

- A quality issue with outside data which needs to be addressed by the internal statistical team

- A change in the statistical scope as a result of collected data

- A delay in obtaining key data spreadsheets which are necessary to create analysis datasets

All of these issues impact the statistical deliverables, and are often issues external to the statistical team. That is why it is important to listen and read study team minutes to stay abreast of any concerns that may impact the statistical deliverable.

ASKING QUESTIONS

Over the course of the study, both statisticians and programmers will encounter many challenges. One such challenge could be creating dataset specifications based on the statistical analysis plan (SAP). Hopefully, by now, the statistical lead has worked to foster strong relationships within the team so that people feel comfortable speaking up and asking clarifying questions. If not, this is another place that can lead to delays in the study. For example, if a programmer reads the SAP and interprets the code for the analysis based on what they find doing a google search, instead of asking the statistician, it could take months before any discrepancies are discovered which could lead to quite a bit of rework. This could have been avoided had the programmer asked clarifying questions prior to writing the code.

There are no stupid questions and this communication style needs to be reinforced consistently during the study's life cycle. If there is any uncertainty, ask for clarification. Make sure you are all on the same page. An important part of being a leader is how you respond to the questions. When a team member, statistician or otherwise, chooses to step outside of their box and ask a question, make sure it is a pleasant experience for them. Striving to create a pleasant experience will encourage the person to continue to step outside their box and ask questions, which will result in more clarification and less errors.

REINFORCING POSITIVE BEHAVIORS

Everyone appreciates recognition. Whether the recognition is public or private, we all like to be appreciated. Earlier it was stated that there are many personality types and behaviors. When a study starts it is important to identify key traits in those around you. Based on what you learn in early interactions, you will be able to recognize when a co-worker steps outside of their comfort zone and

makes strides toward accomplishing team goals. It is important for you as a leader to make sure these behaviors are recognized and reinforced.

For instance, at the beginning of a study you notice a colleague never tells a person 'no' when asked to take on additional tasks. As a result, this person is overworked, stressed, and their inability to complete all assigned tasks is now causing delays in other's work. When a person becomes overwhelmed, it can lead to mistakes, missed timelines, and poor health. As our work is enmeshed, if one person misses a timeline, it can create a snowball effect causing others to not be able to complete their tasks in a timely manner. As a leader, it is important to recognize this behavior and meet with your colleague to share your concern. Encourage them to say 'no' if they are too busy to take on a new task. Then, when the colleague does decline new work, make sure to support their decision. Acknowledge this growth in a positive manner and work with the team to find someone else who can assist with the task. While this may sound simple, when people take on too much responsibility, it can often lead to delays in deliverables.

As a leader you want to mold and shape behaviors in a manner that will be most conducive to the success of the team. Encourage people who are quiet to speak up. Reinforce people who are attentive to detail to keep up the good work and continue catching errors. Build on your team's strengths.

THE BIG FINISH

Your study has finally come to an end, and as the leader you have done a great job of setting goals, getting to know your teams, and establishing roles and responsibilities. Through strong communication the statistical team was able to catch errors in data before beginning table programming. The statistical team was able to correct data concerns pointed out by data management through good listening and attention to groups outside of their own. Throughout the course of the study, you all remained on the same page with a common goal and understanding. As the leader, you have seen the statistical team grow both personally and professionally. The statistical team is demonstrating increased confidence and pride in their work as evidenced by their ability to meet all timelines and take ownership for their deliverables. Through your leadership, the programming team has had opportunities to learn more and gain a better understanding of the statistical methods used in this study. As the leader, you have also grown and learned from your team who has pushed you to become both a better statistician and leader. Congratulations on all of your success!

CONCLUSION

There are several traits that make up a good leader. A strong leader is someone who is knowledgeable, empathetic, growth-oriented, and an effective communicator. Leadership involves not only fostering the growth of those around you, but also being open to your own growth. In our careers, we encounter people from all walks of life, who bring their own experiences and challenges to the table. Being able to identify these skills and expand on them to shape a more cohesive team is a part of leadership. Working together can be challenging, but with good leadership, trust, and respect for our teammates, we are bound to be successful!

REFERENCES

Ward, Susan. "Leadership Definition What is Leadership? And Can You Learn to Be a Good Leader?" The balance. July 17, 2017. https://www.thebalance.com/leadership-definition-2948275.

CONTACT INFORMATION

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