**Paper MA03-2009**

# Empowering SAS® Programmers: The Role of the Manager

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## ABSTRACT

How does a manager empower SAS® programmers in a fast-paced environment? SAS programmers need skills, information and resources, authority and motivation to be successful. A manager can empower programmers by helping them to develop their skills, providing them with complete information and resources, giving them appropriate authority and motivating them. The manager that does these things will give their programmers the best chance for success.

## INTRODUCTION

I manage a SAS programming group for a company which develops diagnostic assays (e.g., testing blood for the presence of HIV). Previously, I have pointed out that programmers are empowered when they are a stakeholder in meeting deadlines (Smoak 2008). A part of being a stakeholder is attending clinical team meetings so that the programmer has direct knowledge of the progress of a clinical trial.

Of course there are factors in addition to attending clinical team meetings that empower programmers. Specifically, I will use the term empowering to mean that the programmer has the skills, information and resources, authority and motivation to do his/her job. This can be challenging because some of our diagnostic clinical trials last less than a month (Smoak 2007). Thus the programmer may have little time to program the analysis files, tables, listings and graphs. As a manager, empowering programmers is important so that he/she can meet deadlines in a fast-paced environment.

## EMPOWERING SAS PROGRAMMERS

### SKILLS

Skills include not only technical SAS programming skills but also soft skills, such as the ability to work with people. Certainly technical skills are primary to the successful programmer. Technical training can be acquired in many ways, through on-the-job training, taking classes and learning from other programmers.

However, I suggest that programming skills alone are not enough to be a successful programmer. People skills are also important for programmers to be able to interact and negotiate with biostatisticians, data managers, database programmers, clinical research associates, regulatory personnel, medical writers and other personnel involved in the conduct of a clinical trial (Smoak 2006).

### INFORMATION AND RESOURCES

Obviously, a SAS programmer needs information and resources such as the study protocol, annotated case report forms, statistical analysis plans, programming specifications and table shells. Beyond these basics it is helpful if the programmer has knowledge of how a clinical trial is progressing. This knowledge can be obtained indirectly through the study biostatistician or directly by attending clinical team meetings. I do recommend that programmers (at least the lead programmer) attend clinical team meetings so that they have direct knowledge of the progress of a clinical trial (Smoak 2008).

### AUTHORITY

Authority in programming means that the SAS programmer is allowed to work out problems whether they are technical or inter-personal in nature. Technical problems may include difficult programming tasks or data problems. Inter-personal problems refer primarily to dealing with difficult co-workers. The programmer needs to be allowed to work-out problems (technical or inter-personal) and to be encouraged to ask for assistance when needed.

### MOTIVATION

Motivation is a key to empowering SAS programmers. Motivation involves more than just willingness to do a job. Motivation is being willing to do whatever it takes to get the job done even when difficulties arise. Difficulties are normal in clinical trials. Therefore, for the programmer, this means asking questions or researching problems to come up with a solution. Persistence and resourcefulness demonstrates motivation in action.

## THE ROLE OF THE MANAGER

### SKILLS

The managers' role is to assess the skills of his/her programming staff and to assign tasks based on skill level. A manager can help a SAS programmer of any skill level to be successful.

Programming skills can be improved through a variety of opportunities such as classes, on-the-job training, and seminars. The manager needs to encourage SAS programmers to take advantage of opportunities to learn and grow. Additionally, the manager also needs to give programmers challenging tasks to give them the opportunity to implement what they are learning.

#### INFORMATION AND RESOURCES

The manager needs to be sure that the SAS programmer has the necessary information and resources to do his/her job. The manager may need to step in if information and resources like annotated case report forms, statistical analysis plans, programming specifications and table shells are not clear or not adequate. However, the manager should step in when necessary. An empowered programmer is one that takes initiative to obtain necessary resources and asks for the assistance of the manager when needed.

The manager also needs to allow the programmer to gain information about clinical trials directly by attending clinical team meeting and/or interacting directly with people like data managers and clinical research associates.

#### AUTHORITY

Managers can avoid micromanaging SAS programmers by carefully calibrating their degree of supervision to the programmer's skill level. While beginning programmers need more supervision to grow, advanced programmers need more freedom to work out problems. But even beginning programmers need to be challenged to work through problems if they are going to grow and develop. A manager needs to coach programmers in how to solve problems in a manner that helps them to learn.

#### MOTIVATION

A manager also needs to know how to motivate people. This can be challenging due to personality differences. Not everyone responds to motivation in the same way. Therefore, the manager must get to know his/her SAS programmers and find out what motivates them.

Getting to know a programmer may include understanding their personality. The Myers-Briggs Type Indicator (MBTI) is a standard personality test. Interestingly, people who have a MBTI profile of INTJ (Introvert, iNtuition, Thinking and Judging) are suited to a career in statistics (http://www.discoveryourpersonality.com/newsletter20.htm ) and computer programming (http://www.geocities.com/lifexplore/mbcareer.htm). A manager that takes the time to understand personality types may be better able to motivate the people that they supervise. For example, an INTJ may be driven to work hard and solve interesting programming problems. However, when deadlines need to be met there is not always time to tweak code and program as elegantly as the programmer would like. In this case the manager may need to work with the programmer and allow them to have some input on how to meet deadlines while still encouraging them to meet deadlines.

#### PUTTING IT ALL TOGETHER

SAS programmers who are highly skilled and highly motivated are empowered. An empowered programmer should have sufficient authority from their manager to use the information and resources available to them to be successful. Managers should avoid micromanaging programmers that are empowered (high skill level and high motivation).

In contrast, programmers who are neither highly skilled nor highly motivated may need coaching from the manager in order to be able to deal with the information and resources given to them. In this case, the manager will need to carefully evaluate what level of authority to give such a programmer. The goal of the manager should be to help this type of programmer become more empowered.

Finally, the manager needs to understand his style of managing. Again this may include understand his MBTI personality type. While an INTJ profile may make a good statistician or computer programmer, this personality type may have problems as a manager because they tend not to reveal the reasons behind their decisions. Frequently, INTJ are promoted to management because of their insight and determination, regardless of their communication skills (Benfari 1991). So, if a manager is an INTJ then he/she should work on communicating clearly the reasons underlying his/her decisions.

## CONCLUSION

The diagnostic industry is a fast-paced environment in which some clinical trials are conducted in less than a month. Consequently, the SAS programmer often has little time to produce analysis files, tables, listings and graphs. In this case, the manager can empower the SAS programmer by ensuring that the programmer has the opportunity to use and develop his/her skills, has adequate resources and information, has appropriate authority and is properly motivated. If the manager does these things then he/she will give the SAS programmer the best chance to succeed.

## REFERENCES

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## RECOMMENDED READING

Flannes S. “Effective People Skills for the Project Manager: A Requirement for Project Success and Career Advancement.” *Proceedings of the Twenty-Ninth SAS® User Group International.* May 2004. <http://www2.sas.com/proceedings/sugi29/131-29.pdf> (January 17, 2009)

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