

A Statistical Programmer's Growth Journey: It is More than Learning New Code

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ABSTRACT

Statistical programmers often find themselves on the receiving end of directions provided by other functional groups. In such an environment, what could growth look like? An immediate answer would be to expand one's programming toolbox. However, growth encompasses more than just technical skills. It also includes a way of thinking and behaving.

This introspective paper explores the author's experiences as a statistical programmer. Various scenarios will be explored, identifying initial thinking and subsequent reflection.

INTRODUCTION

What does it mean to grow? The Oxford dictionary defines growth as "to develop and improve particular qualities or skills". For statistical programmers, growth is often seen as learning new SAS procedures or even a new programming language such as R or Python. However, I argue that growth encompasses much more than technical skills.

Growth, in all of its forms, happens through learning. This can be regarded as the "how" of growth. Learning is facilitated through internal and external factors.

Internal factors include traits that a person may have, such as intellectual curiosity or the desire to seek out knowledge and experience. It is also the way one thinks and behaves. By staying humble (recognizing that you can always learn something new) and remaining coachable (receptive to constructive criticism), you can set yourself on the path of learning.

External factors, on the other hand, are opportunities that either we *seek*, or they may be challenges that we *encounter*. In both instances, they can be viewed as a way to gain knowledge and experience.

Beyond the *what* and *how* of growth, an equally important question is *when* does one grow? The following quote answers this well.

"Whatever makes you uncomfortable is your biggest opportunity for growth"
– Bryant McGill

This feeling of discomfort is natural and should be celebrated, as it means that you are in a situation where things are outside the norm and unpredictable. Our brains react to this by creating brand new neural pathways and releasing dopamine.

The remainder of the paper is focused on how I have sought opportunities for growth during my career and how I have transformed my perspective to recognize that an uncomfortable situation can be a chance to grow instead. In both cases, though, the proper attitude has been instrumental in fostering this growth.

SEEKING OUT OPPORTUNITIES

Growth is not necessarily linear and can progress in different directions. The most obvious direction for a SAS programmer is developing one's technical skills. This can be sought on your own. There are other ways to seek out opportunities, though.

1. Talk with your direct manager within the organization and express your areas of interest. Should there be a new task or project that comes down the pipeline, he/she will be aware that you could be a good candidate for that job.
2. Attend department meetings and listen to the announcements and presentations. These may signal a direction the department wants to take. It is possible that someone is working on something that is interesting to you where you can reach out to volunteer with or even lead a new initiative.
3. Be mindful of ideas that come to you while working on projects. This can evolve into a proposal by keeping a journal to record additional details that come to you. You may find yourself giving a presentation at the next leadership meeting to get their endorsement to realize the idea.

AN EXAMPLE: PREPARING MATERIALS FOR ELECTRONIC SUBMISSION

During my first submission to a health authority as a statistical programmer, the therapeutic area head informed our group that we would be the first in the company to prepare the define.xml using a new process for our upcoming submission. Moreover, I was tasked with preparing these files.

I was uncomfortable as I had never heard of define.xml before and quickly realized that this was not dataset or table programming. I asked a lot of questions of those around me. While they did not have all of the answers, they did help direct my research.

Part of the new process involved the use of a tool to create the define.xml file which was also under development. It took many conversations with the developer (and iterations of the tool) until I learned how to generate consistent results. The first define.xml that I prepared took almost a month.

Along the way, I documented my experience so that I could have a reference later. This proved to be an invaluable resource that I used to answer questions from other programmers working on other studies. Not long after, I was asked to train the rest of the programmers in the group on how to create a define.xml. Shortly before the submission, the team was preparing multiple define.xml files each week. This, in turn, opened the door to participating in the development of standards, processes, and trainings.

During my research on how to populate the define.xml, I made a habit of referencing the source material (e.g., the CDISC materials or FDA websites). As I researched the role of the define.xml, I learned about electronic submission and the electronic common technical document (eCTD). While I was regarded as a subject matter expert (SME) by those around me, I still felt that there was much to be learned.

THE POWER OF NETWORKING

Networking is another way to grow. The first image that comes to mind is a personal relationship such as two colleagues who worked together or a mentor/mentee relationship. However, one's network can be expanded by representing yourself or your group inside or outside the organization.

I had become attached to the define.xml within the therapeutic area because of my experiences pioneering the new way to create it. After our successful regulatory submission, I gave a presentation to the broader organization on my experience. Imagining myself (a mere junior programmer) presenting in front of the entire department of experts (in my view) made me very uncomfortable. Afterwards, programmers who I had never met before reached out to me, asking define-related questions.

As define.xml v2.0 gained prominence, a new initiative and working group was launched within the organization to develop standards and processes for generating it that would fit with the current infrastructure. SMEs were brought in to inform on the technical details of the define.xml v2.0. I was not

aware of the existence of the initiative until I was asked to join the working group as an internal SME. Giving the presentation to the broader organization was key to unlocking this additional opportunity as I left an impression among many, including the head of programming.

LOOKING BACK

The most important lesson that I learned was to give myself permission to fail. This may sound counter intuitive. Why talk about failing? Shouldn't we talk about success? I realized that if I did not believe it was okay to fail, I would not be able to put myself into an uncomfortable situation, and thus not have the chance to grow.

A related idea is that failing to accomplish what you sought does not mean a failure to grow. The author Norman Vincent Peale once said, "Shoot for the moon. Even if you miss, you'll land among the stars." Growth happens during the mission as new knowledge and experience is gained.

Based on the direction you are headed, growth will happen on its own. If you are doing something that you want to do or have an interest in, then the passion behind that will help you persevere through any discomfort, challenges, and setbacks along the way.

You will reach a point where you do not know the answer or encounter people who challenge your ideas. This will feel uncomfortable. In those instances, you will need to spend time researching answers or reformulating your ideas. This new knowledge and experience is growth.

RESPONDING, NOT REACTING TO CHALLENGES

Sometimes you may find yourself put into an uncomfortable situation. Our brain's first thought is a reaction. This behavior is more instinctual than intellectual. With a shift in perspective, it is possible to respond to even the most challenging circumstances and find an opportunity for growth. Below are some situations that I have encountered during my career, my initial thoughts at the time, and my transformed outlook after pausing to reflect on the situation.

Situation	Scope of analysis expands from what was initially planned
Reactionary Thoughts	Why is the team asking for so many more outputs beyond what was planned, which they reviewed and approved? They don't know what they want, and this only highlights their inexperience.
Reflective Response	<p><u>Transformed Thinking:</u></p> <ul style="list-style-type: none"> • The team must have seen something interesting or concerning in the planned outputs that warrants further exploration as it could impact our submission. • The key information they need is spread across multiple outputs, so it will be hard for us to show what we want to make our point to a reviewer. <p><u>Subsequent Action:</u></p> <p>I can propose a couple of options to the study team that can be done relatively quickly. Emphasize the need to work together to solve this problem. Leverage my network to gain support for the proposals.</p>

Table 1. Scenario where scope expands from what was initially planned

Situation	Your work is criticized
Reactionary Thoughts	What do you know? I am the expert here! Maybe you are just envious and criticized my work to make yourself feel better.
Reflective Response	<p><u>Transformed Thinking:</u></p> <ul style="list-style-type: none"> • Appreciate that someone took time to review the work and to provide feedback. They gave it a thought, their time and energy still has value. It would have been easier to not say anything at all. • Perhaps the main point can be clarified. <p><u>Subsequent Action:</u> Assess the criticism to see it from the reviewer's perspective. Action accordingly to improve work. If appropriate, follow-up with the reviewer to get their feedback on future iterations.</p>

Table 2. Scenario where your work is criticized

Situation	Your idea or proposal is rejected
Reactionary Thoughts	Did they even understand what I was saying? They are set in their ways and are resistant to any change and that is not my problem.
Reflective Response	<p><u>Transformed Thinking:</u></p> <ul style="list-style-type: none"> • There must be a need that is not being met. • Perhaps the idea or proposal was based too heavily on my own experiences. <p><u>Subsequent Action:</u> Talk with those who dismissed the idea or proposal to understand their perspective and take it as feedback on how to improve the idea or proposal to serve a broader customer base. In doing so, the relationship with the other person can also be strengthened.</p>

Table 3. Scenario where an idea or proposal is rejected

Situation	Picking up the slack for a teammate
Reactionary Thoughts	This person is incompetent! Why do I have to do all this extra work? This was not part of my job description. I should be paid double since I am doing two jobs.
Reflective Response	<p><u>Transformed Thinking:</u></p> <ul style="list-style-type: none"> • I am gaining more experience and knowledge. These are things that no one can take away from me. • I will come out of this stronger and more confident. <p><u>Subsequent Action:</u> Continue to do what I can while keeping communication open with my manager to advocate for the support that I need.</p>

Table 4. Scenario where you pick up the slack for a teammate

Situation	Asked to do a statistical output that you have never done before
Reactionary Thoughts	No one has ever done this. Why is it suddenly important to have it now? Can they use something else? This is going to be hard, and I do not want to do it.
Reflective Response	<p><u>Transformed Thinking:</u></p> <ul style="list-style-type: none"> • This will be an opportunity to challenge myself and develop something new that other people could use. • Time to learn something new! <p><u>Subsequent Action:</u></p> <p>Prepare the requested output. If this is new to the organization, offer to present the work to the broader group. Consider writing a paper and presenting it at a conference.</p>

Table 5. Scenario where you need to create a new statistical output

Notice that the knee jerk reaction tends to be based on a narrow, self-centered perspective. It is easy to stay with this initial reaction as it typically does not require one to take an introspective look. Humility is key to allow you to see a need to take the inward look. The reflective response takes a broader view, recognizing that others are part of the equation. It represents the first step in a positive direction towards growth, as it makes an uncomfortable situation more palatable.

The scenarios above are not opportunities that I actively sought out. Rather, they were passively encountered. While I may not have control over the situation, I can always control my response. A response that considers others can help maintain (and strengthen) working relationships while also providing an opportunity to learn something new. As shown above, this knowledge is not just technical skills but also knowledge about the people that you work with.

CONCLUSION

Often professional growth is conflated with learning new technical skills. While this is one example of growth, this paper illustrates that growth involves far more than this. By putting yourself out there and seizing opportunities that come along the way, you can expand your knowledge and experience. It is through this learning that one can grow professionally and personally.

Most growth opportunities do not start with a life-changing phone call or email. Rather, they are everyday situations that, with the right thinking, can become a chance to gain knowledge and experience. These new experiences can lead to broadened horizons, new connections, and further opportunities.

Humility, in the form of recognizing that there is always more to learn, has been key to my continued growth. This has made it easier to ask others for help and remain coachable. An important lesson was becoming comfortable with discomfort. This is largely due to giving myself permission to fail. It replaced the fear of failing with the thought that the time and energy will not be wasted. Even if I do not succeed in my objective, the decision to face this challenge has left me wiser than when I started.

I recognize that the ideas presented in this paper may seem daunting to many. This is a natural reaction as they represent uncomfortable situations. Reflecting on the earlier years of my career, I can identify numerous instances where I feel embarrassed of what I had said or done. Today, I would approach those situations much differently. I use this as one way to measure growth.

This is far from the end of the journey for me. In fact, I gained knowledge about growth during the preparation of this paper and look forward to continuing to do so in the days ahead.

REFERENCES

Stark, Jordan and Milway, Katie Smith. "You Don't Need a Promotion to Grow at Work". *Harvard Business Review*. Accessed August 1, 2022. <https://hbr.org/2015/06/you-dont-need-a-promotion-to-grow-at-work>

Patel, Sujan. "Why Feeling Uncomfortable Is The Key To Success". *Forbes*. Accessed August 9, 2022. <https://www.forbes.com/sites/sujanpatel/2016/03/09/why-feeling-uncomfortable-is-the-key-to-success/>

RECOMMENDED READING

- Ngo, Mai, Grovesteen, Mary, and Eason, Vaughn. "Improving the Relationship between Statisticians and Programmers in Clinical Trial Studies". *PharmaSUG 2019 Proceedings*. <https://www.lexjansen.com/pharmasug/2019/LD/PharmaSUG-2019-LD-207.pdf>
- Garner, Janette. "Leading without Authority: Leadership at All Levels". *PharmaSUG 2020 Proceedings*. <https://www.lexjansen.com/pharmasug/2020/LS/PharmaSUG-2020-LS-359.pdf>
- Harris, Kriss. "Leadership and Programming". *PharmaSUG 2021 Proceedings*. <https://www.lexjansen.com/pharmasug/2021/LS/PharmaSUG-2021-LS-193.pdf>
- Matthews, Carol. "Empower Your Programmers: Get the Most from Your Programming Team". *PharmaSUG 2022 Proceedings*. <https://www.lexjansen.com/pharmasug/2022/LS/PharmaSUG-2022-LS-137.pdf>

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