CHAPTER 1

People Who Do Science: Who They Are and Who They Can Be

In terms of behavior patterns, affect and even some intellectual matters, we know more about alcoholics, Christians, and criminals than we do about the psychology of the scientist.

MAHONEY (1979)

We are all familiar with the stereotypes of scientists portrayed in movies, television, and paperback thrillers as aloof, arrogant, intense, and distracted. Each of us is, of course, much more complex and nuanced than such simplistic characterizations, but like most stereotypes, these all have a kernel of truth in them. Scientists as a group do have personality characteristics that distinguish them from, say, social workers as a group. Although you may not share every one of these characteristics or the others discussed below, you likely share some of them. Much of this book focuses on helping you to discover which of these characteristics you share and anticipating how they may affect your behavior as well as your effectiveness as a scientist.

Many of the exercises that we present at the end of this and subsequent chapters focus on helping you to improve your interpersonal awareness and self-awareness. We focus on these two characteristics in particular because we know from personal experience that these represent areas in which many scientists are weak. We have also supplemented our personal experiences with a review of the psychological literature pertaining to the personality characteristics of scientists. Our objective in presenting this information is to help you notice and identify in yourself some of the traits that have been noted in others. As you read the following sections, take note of those characteristics that sound or feel familiar, or that others may have noted that you display. At the end of the chapter, we provide a brief questionnaire to help you to identify some of these characteristics of which you may not already be aware.

TECHNICAL PROFESSIONALS ARE DIFFERENT

The Tea Bag Company exercise

Applying the stereotypes mentioned above to all scientists seems, and certainly is, both crude and extreme. But before we dismiss such categorization out of hand, perhaps we should ask just how much truth there is to these and other popular notions of scientists as a group. The following story recounts how Carl first became convinced of the presence of many of these characteristics in himself.

A number of years ago, when Carl first became interested in improving his management skills, he took a course at the Harvard University Extension School. The course was entitled, "Understanding Your Management Style," and it was taught by Robert Benfari, who had written a book of the same title (Benfari 1991; now updated as Benfari 2013). The course was intended to give students some insight, from a psychological perspective, into how they approached the various tasks associated with management. Carl enrolled in this particular course for the excellent reason that no other course in management was being offered in a time slot that was convenient for him.

During the first couple of classes, Dr. Benfari spoke at some length about "personality types" and the utility of assigning people into one of 16 categories using the Myers–Briggs Type Indicator (MBTI) inventory, a widely used and much studied psychological instrument (Briggs Myers and Myers 1995). In fact, the students had taken this inventory during the first class but had not seen the results yet. Being a scientist and a skeptic, Carl spent a lot of time arguing that such categorization was artificial, simplistic, and without validity.

The third meeting of the course consisted of an in-class exercise. Dr. Benfari read students' names from a list that he had prepared, and in so doing divided them into five groups. He told the class that within the groups they were to come up with a plan to address and solve an organizational problem that he would pose. He had also assigned one student from each group to observe how the group went about its task, without participating. He referred to the exercise as the "Tea Bag Company" exercise.

Each group was to put itself in the role of senior managers of Tea Bag Company, Inc. As managers, they had just learned from their sales and marketing department that sales were down catastrophically over the last two quarters. The task was to determine a solution to this problem. The group would have 45 minutes to work on the problem and then each group would report to the class on what they had decided to do.

Within Carl's group, several members immediately suggested that they convene near the white board so that they could use it to organize their strategy. They did so, effectively preventing any other group from accessing the board. Within a few minutes, Carl's group was intensely involved. Members were interrupting each other, talking in loud voices, and grabbing the marker from one another to write on the board. They all agreed that they needed to take an analytical approach to the problem. They mapped out a marketing survey to determine whether consumers' tastes had changed. They allocated resources for analytical testing of the tea bags to see if quality had slipped. They crafted a backup plan to move into coffee, if that seemed prudent. They were really very efficient and logical and completed the task easily within the allotted time.

After the 45 minutes, Dr. Benfari reconvened the class, instructing them to report on their plans, one group at a time. Carl's group was asked to report first. One of them outlined the series of logical steps they took and how they focused on objective measures of success and economic outcomes. The observer accurately described their deliberations as being lively and competitive, and noted that they all jockeyed for board time, interrupted one another, and spoke more than they listened. This was not surprising to the group; it was how they behaved all the time.

Dr. Benfari then asked the second group to report. The spokesperson for that group said that the group's primary concern was the welfare of the employees of the Tea Bag Company.

The group believed that because the problem was so acute, a plan should be in place to ensure that if the company were to go under, the employees would be provided for; they would have adequate outplacement services, and health benefits would continue for as long as possible. They also scheduled an emergency stockholders meeting to allay the concerns of the company's investors. They did start to deal with how to address and fix the sales problem, but had not progressed very far when their time ran out.

Carl recalls listening to this presentation and thinking that these people must have landed in corporate America from the Moon. He was baffled by their approach. He was further baffled when the observer assigned to that group reported that the discussion had been quiet and respectful. The observer said that group members waited for one another to finish speaking before speaking themselves, and that one member of the group had gone out and brought back sodas for the whole group during their discussion.

After the other groups reported, it became clear that a very wide spectrum of approaches had been taken. But none was so remarkably different from Carl's group as that of the second group that had reported.

When all of the reports had been delivered, Professor Benfari told the class that he had composed the groups using their personality types as determined from the MBTI inventory

that they had taken during the first class. He said that Carl's group was dominated by "NTJ" personalities, which in Myers–Briggs jargon stands for intuitive, thinking, and judging. We do not need to go into the arcana of the Myers–Briggs categories (for a more detailed discussion of MBTI types and how they relate to a chosen profession, see Tieger and Barron-Tieger 1992); suffice it to say that NTJ people have a tendency to be highly intuitive (N), analytical and logical (thinking: T), and can be very judgmental (J). NTJs are good at facts and relationships among facts and tend to be "visionaries." "NTJs are 'commandant' types who insist on ruling by their particular vision" (Benfari 1991).

The second group in the class was composed largely of members determined to be "NFPs." NFP stands for intuitive (N), feeling (F), and perceiving (P). NFP people are highly relational and react to the world in a feeling mode, rather than in a thinking or analytical one. As Benfari says, "When presented with a task such as developing a more marketable product, they consider their real task to be developing their own potential and that of their colleagues" (Benfari 1991). In other words, they are in many ways the exact opposite of the NTJs.

Carl recalls being completely dumbstruck by this revelation. None of the students had known the basis on which they were placed into their respective groups. They all went about working on their task in ways that came naturally to them and behaved precisely as the MBTI would have predicted!

People really are different, and they are different in ways that can be described and measured. As much as we hate generalities and categorization, we know that many of our scientist colleagues are NTJs or STJs. The "S" ("sensing") suggests that some of us have a more data-driven way of coming to conclusions, compared with the Ns, who are more intuitive. And we also know that we work in ways that are different from the way NFPs and many others work. Carl became a believer in the MBTI, not as a diagnostic or classification tool, which is how it typically is used, but as a tool for insight into himself. Do not be fooled into thinking that just because the MBTI can identify people who share behavioral characteristics that it should be relied on to choose a profession or direct others into a profession. As has been amply noted, most recently by Annie Murphy Paul in her book *The Cult of Personality: How Personality Tests Are Leading Us to Miseducate Our Children, Mismanage Our Companies, and Misunderstand Ourselves* (Paul 2004), the predictive value of these tests is overrated and the tests themselves overused.

Moreover, don't be fooled into thinking that by rote application of the Myers–Briggs classification system you will be able to "psych out" your dysfunctional colleagues or employees. Carl once spent an entire day in a workshop designed to teach a method by which people you interact with could be quickly categorized into MBTI types. The objective was laudable—to help people communicate better in the workplace—in this case a mid-sized biotechnology company. The idea makes sense in principle. If someone is a "thinker" rather than a "feeler" (i.e., a T instead of an F in MBTI parlance), you might be better off trying to convince them of something by appealing to data rather than to human consequences. In the Tea Bag exercise discussed above, Carl's group was clearly much more focused on the bottom line, collecting and analyzing data that would help the group make decisions and keep the company running. If you were making a proposition to that group, you might want to show up with graphs, spreadsheets, and financials. The other group, the NFPs, were more focused on the human consequences of their actions and decisions. In trying to sway this group you might do well to appeal to the consequences of their decisions on the company's employees and its customers.

From this perspective, the MBTI scheme might be useful if it attunes you to the possibility that scientists as a group may be superb at focusing on tasks, but may be less attuned to the interpersonal. To go about managing scientists without taking into account who they are as people, and how their personalities might differ from other types of people, is like trying to train a pack of tigers using a training manual meant for parakeets.

However, there are problems with the use of schemes like the MBTI on a day to day basis. First, actually remembering how to categorize people, doing it in real time, and translating those categorizations into action turns out to be a lot of work. And in our experience, those of us who do not do it full time, or for a living, do a lousy job of it. Second and more important, we are all multidimensional. The NFPs will be swayed by data and financials and the NTJs by feelings and emotion. Both axes are important, and both need to be addressed. Finally, human behavior is complex and is powerfully influenced by culture, background, environment and more. So the next time you get the urge to use any of the popular psychological scales or dimensions to predict how someone will respond or behave read *Behave. The Biology of Humans at our Best and Worst* by Robert Sapolsky (2017) and *Five Constraints on Predicting Behavior* by Jerome Kagan (2017). By highlighting the myriad factors that influence human behavior, these two books should be sufficient to warn you away from any scheme that purports to make understanding or managing other people "simple."

The best that could be said of the day-long workshop Carl attended was that it stressed the importance of lifting his mind out of the science and data and routinely paying attention to the people he was working with. In essence, that's what the rest of this book is about.

What research shows about the personalities of scientists

The Tea Bag story might make you ask whether scientists and technical professionals share certain personality characteristics. In the following section we review a few of the studies that have attempted to answer this question and to identify shared characteristics. Despite the fact that the quote at the beginning of this chapter suggests that there is a paucity of such data, the data that exist are revealing.

The opening quote was cited in a comprehensive review of the psychology of science and scientists by Feist and Gorman (1998). This review contains references to more than 150 scholarly publications relating in one way or another to the psychological characteristics of scientific and technical professionals. The following is a list adapted from that article, and compiled from the literature of experimental psychology, that compares the personalities of scientists to those of nonscientists. Compared with nonscientists, scientists are

- more conscientious and orderly
- more dominant, driven, or achievement oriented
- more independent and less sociable
- more emotionally stable or impulse controlled

A bit more intriguing is the summary in the same article of the differences in personality between "eminent" and "less eminent" and "creative" and "less creative" scientists (let us not obsess here over how eminence and creativity were quantified). According to the article,

compared with less eminent and less creative scientists, eminent and creative scientists are more

- dominant, arrogant, self-confident, or hostile
- autonomous, independent, or introverted
- driven, ambitious, or achievement oriented
- open and flexible in thought and behavior

Beginning to get the picture? Of course, there is always the issue of cause and effect. Does a career in science promote arrogant, antisocial behavior, or does science attract those who already have a tendency to show these characteristics? Feist and Gorman take the safe middle road and suggest a bidirectional interaction between personality and science.

In another publication, Greene (1976) reported that, "The psychological problems most frequently encountered with…scientists stem from (a) communications difficulties, (b) confusion about the role of the expert, (c) emotional and interpersonal needs, and (d) failure experiences."

In a study of 99 academic researchers (all full professors), Feist (1994) concluded that "[eminent scientists]…were rated by observers as more exploitative, more fastidious, more deceitful, less giving, and less sensitive to the demands of others… . In sum, complex thinkers about research are influential in their discipline and are well cited, but are considered by observers to be neither warm nor sociable."

Finally, in a study of 100 technical project team leaders (in unspecified technical areas), Gemmill and Wilemon (1997) listed the top ways in which scientific and technical project team leaders misread events within project teams. These leaders

- were unaware of interpersonal conflict among members of the team
- were unaware of hidden agendas on the part of team members
- did not understand the motivation and needs of team members
- were unaware of expectations of team members
- did not listen carefully to team discussion
- misread lack of argument as agreement
- interpreted conflict as unhealthy when it was actually constructive
- misread team members' ability to work together as a team

So, at the considerable risk of overgeneralization, the data suggest that as a group, science and technical professionals are poorly attuned to the dynamics of their interactions with others and to the needs and feelings of those around them.

WHY YOU SHOULD PAY ATTENTION TO YOUR PERSONALITY

If the only consequences of exhibiting some or all of the traits mentioned above were that you might be viewed as being aloof and uncaring, you might be excused for having little or no motivation to take note of them in yourself. However, the consequences of such traits and

the behaviors they engender can be far more profound, even to the point of being dire. Let us examine some hypothetical consequences in the science workplace of a few of the personality traits identified in the studies cited above. These brief vignettes outlining the consequences of behaviors, which were found to be common among scientists, are based on actual cases.

String together enough outcomes like those listed below and before you know it, the people in your group, company, or organization are confused and alienated, projects are foundering more often than they should, and decisions are being made for other than scientific reasons.

Trait	Consequence
Dominant, driven, or achievement-oriented	You forge ahead on projects with your own ideas, listening politely but usually failing to take into account the suggestions or objections of colleagues or employees. Most of the time this works well because you know more than they do. But the one time that you do not, you continue to follow your own agenda and end up spending millions of dollars on a failed project that you should have abandoned two years ago.
Arrogant or hostile	Of course you are arrogant: You are the smartest, most accomplished scientist in the company. But when it comes time to seek the support of others for a controversial new technology that you want to acquire, you find yourself isolated and without support. The technology is actually just what your company needs, but because you have created enemies with your arrogance, you cannot get anyone else to agree with you. The company suffers and so do you.
Introverted	Paying attention to other people is a distraction. It takes you away from your work. Moreover, it is hard, and you figure that people are complicated and unpredictable. You fail to notice that, over time, people are excluding you from their informal discussions because you would rather be in your office analyzing data. The result is that you do not hear about the new project until the formal announcement is made, by which time all the team leaders have been selected. You wonder why you were left out.
Less sensitive to the needs or demands of others	You figure that just like you, everyone has their own agenda, and it is pretty hard to know what that agenda is. You have always felt that people complain all the time—it is only natural. One day Carol, your senior and most productive postdoc, announces that she is leaving in three weeks for a job in industry where the salary is higher and the advancement prospects are better. You recall that over the past several months, she has been asking you about a salary increase and whether you would support her for a faculty position, but you kept putting her off. Now you are faced with the prospect of a major setback in your most important research project.
Unaware of interpersonal conflict among members of the team	You hired Alice and gave her the same project as Hans because you thought that competition would drive them both to work harder. The result was that Hans hoards reagents and signs up for equipment time that he does not need to prevent Alice from getting the better of him. Others in the lab mention the brewing conflict, but you shrug it off with the comment that the competition will make each of them stronger. Three months later, Alice goes to Human Resources and files a sexual harassment complaint against Hans. The resulting turmoil sets both of them, and the lab, back a year.

(*Continued*)

Trait	Consequence
Unaware of hidden agendas on the part of team members	You are trying to decide on the appropriate version of a recombinant protein with which to go into production. Eric, the director of protein expression has been arguing vehemently for version 2C, whereas others in the group believe that several other variants are more appropriate. You believe that everyone is arguing the case for each variant on its merits. Months later, you learn that the reason the director was arguing for 2C had nothing to do with its scientific merits: He had prematurely anticipated the use of 2C and had his group produce several grams of it. Had you known this, you might have reassured him that you would have been happy to sacrifice the produced 2C in favor of making the best choice.
Unaware of expectations of team members	As head of a task force on in-licensing a technology for fabricating a new type of solar cell, you ask Sandra, one of your scientists, to review what is known about the physics behind the technique. She spends a week on the project with the expectation that she will present her conclusions to the executive committee that makes the final acquisition decision. When she delivers her findings to you, you indicate that they will simply be attached as an appendix to the final report. She accuses you of misleading her, and you counter that she spent way too much time on the report. She loses trust in you, and you are annoyed by what you see as her unreasonable expectations.
Do not listen carefully to team discussion	During a group meeting, Ed, one of your postdocs, comes up with an idea for a new project. Others in the group are enthusiastic, but you are preoccupied because you are answering e-mails on your phone. A month later, you suggest this same project to a new postdoc. When Ed finds out about this, he assumes that you stole his idea intentionally and complains to the department chair. Several days of everyone's valuable time are wasted sorting out the misunderstanding.
Interpret conflict as unhealthy when it can be used productively	You are managing a project team of engineers and biologists developing a new brain imaging technology. The engineers keep insisting that the biologists have not collected enough data on glucose metabolism in the brain to ensure that the instrument will have adequate dynamic range. The biologists insist that the engineers are being overly compulsive and are demanding data impossible to obtain. The groups have reached an impasse. You believe that the project will self-destruct unless you can defuse the situation. You finally insist that the groups cease arguing and that the engineers move ahead with the design despite the disagreement. When tested in the clinic, the prototype instrument is not sensitive enough to changes in glucose metabolism to be useful.
Misread team members' ability to work together	Your group will move into a new lab in six months and you are finalizing its layout. Lab benches and office space need to be assigned. You are about to leave for a meeting in Italy and tell your group that they can work out the assignments themselves and you will review their recommendations when you return. Several members of the group feel disenfranchised by the process, which is dominated by a few highly aggressive group members. They accept space assignments that do not meet their needs because they refuse to argue with the others. They never mention this to you, but their morale deteriorates and they minimize their interactions with the others in the lab. You never notice.

What is so insidious about the behaviors in the above examples is that in each case, the protagonist was behaving in a "reasonable" manner. No overt hostility was evident and, with one exception, there were no actions that might be cause for allegations of misconduct or mistreatment. Moreover, in many of the examples the actions of the protagonist were the result of considerable thought and deliberation. If all of this is true, what went wrong? Quite simply, the thought and deliberation were all focused on scientific and technical matters and not at all on interpersonal consequences.

Whereas the above examples were heavily weighted toward team leaders as protagonists, bench scientists and technicians are no less prone to encountering such problems. Indeed, even the most mundane interactions during a typical day in the lab can have unintended consequences for scientists who fail to anticipate the effects of their behavior on others. A typical day for a working scientist might include the following interactions.

- Meet with a technician to discuss plans for the day. Because the technician also works for a colleague, it is necessary to negotiate the technician's schedule with the colleague. The colleague is uncooperative.
- Talk to a different colleague and request some of their confocal microscope time, because the microscope schedule is fully booked for the next two weeks. The colleague refuses. Stomp back to the bench and wonder how to finish experiment on schedule.
- Start weighing out reagents for an experiment. Discover that a previous user spilled an unidentified chemical on the electronic balance. Instantly identify the culprit and resolve to confront them.
- Schedule time to meet with the lab director to discuss attending the annual meeting of the American Society for Cell Biology, although the director had already said that travel funds were exhausted. You are angry because two of your peers are going.
- Start an experiment, try to put irritation with colleagues out of mind, and concentrate on work. Become distracted by loud rock music coming from the next lab bench. The longer you hear it, the angrier you become.

These are fairly typical, perhaps even understated, examples of interactions with which scientists deal on a daily basis. Although they take place within the context of professional activities, how you deal with them will depend on your personality. Some avoid conflict, whereas others exacerbate it; some become aggressive and others withdrawn or reticent; some act in ways that establish productive alliances with colleagues, whereas others work in isolation; and some have satisfying relationships with supervisors and others spend their careers feeling manipulated and unappreciated.

Each of these contrasting behaviors has very different interpersonal and professional consequences. The success of your work and the progression of your career are strongly influenced by your behavior and whether you interact with others in a productive or an antagonistic manner. For example, take the examples of typical laboratory interactions that were listed above.

- If you become accusatory and confrontational when trying to negotiate with your technician about time on the confocal microscope, not only do you risk not getting the time you need, you may create animosities that make these negotiations more difficult in the future.

- If you angrily accuse a colleague of spilling chemicals, you may increase the likelihood that they will deny it even if they were responsible. Alternatively, you may be blaming the wrong person.
- If you go to your lab director contending that you are being unfairly treated and become accusatory or act insulted, you may actually reduce your chances of changing their mind.
- If you continue to bottle up your annoyance at the loud music, you may end up losing your temper with someone else over an unrelated and trivial matter.

Of course, everyone has bad days, snaps at a colleague, or says something thoughtlessly that they later regret. But it just may be that scientists do this more often than others.

At one of his workshops for scientists, Carl asked participants to answer several questions about ways in which their interactions with others in the lab affected their work. Here are some of their responses to three of the questions.

- More than three-quarters reported spending between 10% and 25% of their time at work on "people problems."
- More than two-thirds reported having between one and five "uncomfortable interactions" with people at work each week.
- Nearly two-thirds reported that interpersonal conflict had hampered progress on a scientific project between one and five times during their career.

If these figures are even close to being representative of the science community as a whole, we are wasting a lot of manpower, resources, and time because of interpersonal problems. Many of the scientists in Carl's workshops routinely ignore these problems or try to resolve them in ways that create more animosity than was present to begin with. It is not uncommon for us to avoid problems in the workplace because we lack the skills to resolve them diplomatically. But scientists as a group, and science organizations as a whole, may be more prone to such avoidance than others. Why is this so?

During years of biomedical research, Carl spent countless hours regularly reading the scholarly scientific literature in his field. He also read journals dedicated to promulgating the latest time-saving and clever techniques. He even read advertisements for products that promised to accelerate his research with the latest technological innovations. He spent several weeks each year at scientific meetings to learn of the latest ideas, discoveries, and techniques that might help him in his work. At these meetings, he even went so far as to speak with the dreaded salesperson about new instrumentation, reagents, and gadgets for his lab. He did all this religiously for almost 15 years before he thought to seek out any information about managing his laboratory and its research personnel more effectively.

If scientists are willing to invest time and effort in learning a new technical skill, why not do the same for management and interpersonal skills? And why, when they do decide to do so, do they wait until the need is acute? Recently Carl was engaged by a research organization to help resolve what it referred to as a crisis among some of its senior members. Many of them were not on speaking terms with others, and the leader of the organization was at his wits' end about how to solve the problem. When Carl asked how long this "crisis" had been going on, he was stunned by the answer: 10 years!

Not everyone waits 10 years, of course. Many people attend Carl's workshops to proactively gain the skills that we teach, and many more attend in response to a particular problem that they are having at that time. When Carl asks participants for questions at various points in his workshops, he is always struck by how specific they are. "What if you had a person in your lab who always lied about whether they had made the mess in the fume hood?" Or "Let's say you worked for a group vice president who was always trying to micromanage everything you did?" It is clear that these are not hypothetical examples; they represent issues regularly dealt with at work.

THE GOOD NEWS: SCIENTISTS ARE PSYCHOLOGICALLY FLEXIBLE AND QUICK LEARNERS

Fortunately, data from the scholarly studies that we cited above are not all bad news for scientists. The studies also found that scientists were emotionally stable, impulse controlled, and open and flexible in thought and behavior. What this suggests is that despite less-than-optimal interpersonal skills, technical professionals have a high capacity, motivation, and willingness to learn and improve. What they need is data showing the utility of improvement, as well as the opportunity to learn.

Technical professionals may spend as many as 10 years in college and professional school and never experience a single hour of training to help them manage themselves and others. The training in working with and managing others that they do receive comes from observing the behavior of their mentors, many of whom are themselves untrained and often poor managers (see Chapter 10 for more on this topic). If you are a scientist working for a company, chances are that you have been sent to one or more management training seminars over the course of your career. On the other hand, if you work in academia, it is likely that no one has even suggested that you attend a management training seminar.

Whether run by your company or an outside agency, these seminars typically focus on the nuts and bolts of managing: budgeting, time management, goal setting, and project management. These are all important skills and worth learning. However, your success at applying these skills will not be determined by how well you learn them or even how long you use them. Your success will be determined by how well you understand, relate to, and respond to the people you manage and with whom you work.

Standard management training may provide concrete guidance for dealing with overt behaviors, but it does not help you to see beneath the surface to the underlying motivations or needs that drive those behaviors. Thus, you may have learned how to fill out the annual performance review form for your employees, but if you present your feedback in an aloof or devaluing manner, you may do more harm than good. You may have learned how to create and implement a project plan, but if you fail to notice and deal with conflict among members of the project team, your plan may founder. You may have learned how to organize and run group meetings, but if you fail to notice and address the fact that several key participants routinely remain silent during these meetings, you may be running the project at half steam.

If you are oblivious to conflict, insensitive to the needs and aspirations of others, and unaware of the impact of your own behavior on others, you are managing under a handicap. If

you are interpreting silence as agreement, repeated absences as laziness, or failure to follow instructions as forgetfulness, you may be missing important underlying dynamics that can hamper or derail an important project.

The good news is that it does not have to be this way. Improving your interactions with others does not require a personality transplant, and learning how to notice and manage your reactions and behaviors in difficult situations does not require years of psychotherapy. The following chapters present steps that you can take to improve your situation, and they outline ways in which scientific organizations can take the lead in promoting and legitimizing the importance of interpersonal expertise as much as they promote technical expertise.

SUMMARY

Research shows that professionals in science and technology are more likely than others to have personality characteristics that lead them to avoid or miss important interpersonal cues. They may also act in ways that show a lack of appreciation of the effects of their own behavior on others. These traits can have unanticipated negative consequences on their careers and scientific progress. Becoming aware of your own personality characteristics is the first step towards becoming a more effective scientist and science manager.

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EXERCISES AND EXPERIMENTS

1 Self-assessment: Who you are

This, and the following exercise, are designed to help you become more aware of how you interact with others and how your behavior influences others' responses to you. It is a self- assessment in that you are answering the questions about yourself. The goal is not to label yourself as having one character type or another. Rather it is to provide a practical framework within which you can notice or observe your own behavior in the workplace. By the very process of thinking about and answering the questions, you will have taken an important first step in recognizing how your feelings, reactions, and responses can impact your effectiveness in the scientific workplace. The traits or characteristics listed on page 14 were taken from several of the studies described in the section beginning on page 5 of this chapter.

The traits in the self-assessment exercise on the following page ("Identify your traits") are separated into groups that have the following characteristics:

Group 1. May limit your effectiveness in managing or collaborating with others. May result in your being seen as untrusting and uncollaborative.

Group 2. Inherently neutral, but if manifested in an extreme manner, can result in consequences similar to those of group 1.

Group 3. Characteristic of task orientation and achievement; generally thought of as positive attributes. If traits are overly dominant, you may be seen as "cold-blooded" or self-centered.

Group 4. Will contribute to the maintenance of collaborative and productive group interactions.

Read through your responses to the exercises. Does the overall picture describe you? Do you see trends that surprise or dismay you or limit your effectiveness as a leader or team member? If so, make note of them and pay special attention to sections of the following chapters that address those issues.

If you found that you had more than one or two entries checked "do not know" in the "I think I am" group, this is a hint that your self-awareness may need some work. If you do not know how to characterize your attitudes, feelings, or reactions, you are not paying close-enough attention to your own behavior. The next chapter provides exercises to help improve your self-awareness. Take this inventory again in a few months, after you have worked on self-awareness.

If you checked a lot of "do not know" in the "others think I am" category, you may need to improve your skills at paying attention to how others react to you. The section beginning on page 238 of Chapter 9 may help you in this area. Retake this inventory after you have read that section and note whether your answers have changed.

Exercise: Identify your traits						
Group/traits	**I think I am**			**Others think I am**		
	Yes	**No**	**Do not know**	**Yes**	**No**	**Do not know**
Group 1						
Overly dominant						
Arrogant						
Hostile						
Introverted						
Uncommunicative						
Ungiving						
Insensitive						
Group 2						
Autonomous						
Driven						
Fastidious						
Group 3						
Conscientious						
Orderly						
Emotionally stable						
Impulse-controlled						
Able to listen carefully to discussion						
Self-assured						
Achievement oriented						
Group 4						
Open and flexible						
Aware of conflict						
Aware of hidden agendas						
Able to understand others' motivations and needs						
Able to listen carefully to discussion						
Able to channel conflict to achieve desired results						
Good at identifying people who are compatible with one another						

2 Self-assessment: Dealing with others

The goal of this exercise is to help you to identify situations involving others that you find difficult. Like above, the objective is not to provide a diagnosis or assessment of your problems, but rather to help you notice and remember what you find difficult or uncomfortable when dealing with others. You may find it useful to return to these same questions periodically, every six months or so, to assess whether your views change as you develop the skills presented in the following chapters.

1. Describe, in as much detail as you want, one specific difficult interpersonal interaction that took place in the context of your work as a science professional. Describe the impact this interaction had on your work.
2. List three other difficult situations and specify the nature of your relationship with the person(s) involved (example: unpleasant conversation with another postdoc about authorship on a paper). In this case, write no more than one sentence for each.
3. How many times per week do you engage in what feels like an uncomfortable interpersonal interaction with someone in your scientific workplace?
   ___never___1–2___3–5___6–10___more than 10___too many to count
4. Rank the following categories of people in order of frequency of difficult or conflictual interactions over the past year (4 = most frequent; 1 = least frequent).
   ___colleague or peer ___direct superior
   ___employee ___administrator or clerical worker
5. Approximately how many times in your career has progress of a scientific project been negatively affected by an interpersonal conflict that was not handled well?
   ___never ___once or twice___3–5 times ___more than 5 times ___do not know
6. About what percent of your time do you spend thinking about or dealing with interpersonal or "human" issues in your professional day?
   ___none ___less than 10% ___10%–25% ___26%–50% ___51%–75% ___more than 75%
7. Check the boxes on page 16 that best describe the degree to which you agree or disagree with the statements (scale: 5 = strongly agree; 1 = strongly disagree).

Like the previous inventory, take note of the frequency with which you answered "do not know." If you answered this way to questions about observations of yourself, pay attention to the exercises for self-awareness at the end of Chapter 2. If you answered this way to questions about how others see you, pay attention to the exercises for observing others at the end of Chapter 9.

3 Identifying themes

How easy was it for you to answer the above questions? List any questions that seemed particularly difficult, because you had a hard time understanding or answering them. Questions that you found difficult or troublesome may refer to interpersonal themes or personal characteristics that you find uncomfortable to think or talk about. Making note of these themes

may enable you to anticipate work situations in which you are uncomfortable and in which you may not perform optimally. As we show in the following chapter, such anticipation is often the key to intercepting ineffective behaviors.

Are you able to identify themes in your answers that give you better awareness of our own behavior and reactions? By answering these questions, have you identified some behavioral themes that are common to the various situations? Some examples of themes that you might identify include

- "I have a lot of difficulty dealing with my peers."
- "There is a disconnect between the way I see myself and the way others see me."
- "I was unaware of how much my behavior affects others."

By answering these questions and finding common themes, you are becoming more aware of your interpersonal style, which is the first step toward managing yourself and others in a more informed manner.

	Strongly agree 5	4	3	2	Strongly disagree 1	Do not know
I am very collaborative						
Others think that I am very collaborative						
I think that I am confrontational and argumentative						
Others think that I am confrontational and argumentative						
I am sensitive to others' needs and feelings						
Others think that I am sensitive to their feelings						
I am receptive to suggestions from others						
Others see me as being open to suggestions						
I avoid interacting with colleagues that I do not like						
I manage to interact with colleagues as needed, regardless of whether I like them						
I tend to withdraw in tense or conflictual situations						
I tend to become aggressive in conflictual situations						