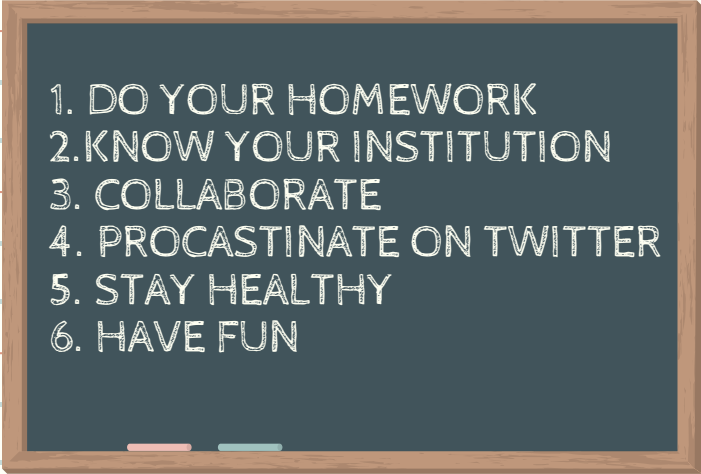# 1+5 Good Habits
for Young
Scholars

1. DO YOUR HOMEWORK
2. KNOW YOUR INSTITUTION
3. COLLABORATE
4. PROCASTINATE ON TWITTER
5. STAY HEALTHY
6. HAVE FUN

Gustavo Pinto

1+5 Good Habits for Young Scholars

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Preface

A T the end of 2019, I was invited to give a talk at a graduate school in a Brazilian public university. I was supposed to talk about how to be productive in research. Young scholars, that is, master and Ph.D. students working towards their degrees, mostly composed the audience of the talk.

I receive this invitation with great consternation but also with great joy. Consternation because the impostor inside me doubted that I could talk anything useful about research productivity. However, I was also with joy because preparing this talk would permit me to stop and reflect a bit on my research career and, eventually, understand what and how I could improve my work.

Since I was limited by the duration of the talk (50 minutes), I had to think more objectively about a few essential items that I believe were invaluable for my research progress. I eventually realized "1+5 habits" that I believe are of great importance to my research work. They are:

1. Do your homework;

2. Know your institution;

3. Collaborate;

4. Procrastinate on Twitter;

5. Stay health;

6. Have fun.

I think the talk was well-received, and after the talk, I was already considering writing down my key findings and share to the general public. This book is an extended version of that talk.

Why 1+5?

A natural question that the reader would ask is: *why you mention 1+5 habits instead of just six habits?* Well, because I believe the first one is not a habit, but an obligation. If you don't do your homework, you can hardly move forward. Therefore, the other habits do not make much sense. Simple like this.

Limitations

In research works, we always have many limitations. This book is no different.

First, one avid reader would quickly realize that the writer of this book is a young researcher himself, so his habits might be limited due to his little experience in conducting research projects. I wholeheartedly concur. Therefore, this book may be more attractive to *really* young scholars, such as undergraduate and graduate students.

Second, I cannot claim that the ideas that I discuss in this document are anything new. On the contrary, many have been discussed since the early days of research and documented in many books by many authors in many research fields. Perhaps, the main benefit of this book is to have these ideas summarized in a single place.

Third, the reader may miss many references or footnotes throughout this book. I opted not to add neither of them because (1) footnotes can quickly become unavailable, and (2) references are particular to the field of investigation. I only added a footnote when I thought it was essential.

Since this book is for young researchers (in any research field), I expect that the reader might have a supervisor or a senior colleague who could provide such pointers.

Fourth, as a software engineering professor and researcher, my views are shaped based on my interactions with this community. Although I believe that some researchers in other areas could see some value here and there, it is not clear to me how my "1+5 habits" would generalize to other research fields.

Finally, this book is based on my own experience and views. It does not reflect the opinions of my employer, etc.

About the author

Gustavo Pinto is a software engineering researcher and professor at the Federal University of Pará, Brazil. Gustavo Pinto is a young scholar himself. He got his Ph.D. from the Federal University of Pernambuco, Brazil, in 2015. Since then, he became a fairly active researcher in his research community, which could be noticed by his 60+ papers published, 1,000+ citations, and five awards. Know more online at `www.gustavopinto.org` or follow him on Twitter (`@gustavopinto`).

Contents

1

Do Your Homework

L ET'S get started from the very beginning. It would be tough to make
   meaningful contributions in research if you do not acquire the solid
foundations of your field. To learn the fundamentals, you should have,
on the top of your head, the books that are the most important ones
related to your subject under investigation. After understanding the
foundations (explained in the books), you can expand your horizons to
understand state of the art (illustrated in the research papers). However,
it is difficult for one to be regularly up to date with the state of the art if
you have trouble reading in English.

1.1   Learn English

It might be strange for a native English speaker to read in a book that one
should learn English to be productive in research. However, research is a
universal tool that could be applied toward the solution of many prob-
lems in any field of endeavor, in any discipline. The findings observed
in research studies are often reported in English. In fact, the most com-
petitive and recognizable journals that publish the finest peer-reviewed
research do so in English.

Some journals indeed publish research works in other languages, for instance, Portuguese. However, these journals have a natural reach since other readers that don't read in Portuguese might have a hard time trying to understand your work, regardless of how exciting and timely the work is. If you want to cover a broad population of stakeholders interested in reading your research work, you should learn how to write in English. Similarly, if you want to understand and contribute to the next hot topic in your field, you should also be comfortable reading in English. Otherwise, you would also be limited to the small proportion of literature that is available on your first language.

As a professor in a public university in an impoverished region in Brazil, I also understand that learning English is sometimes a privilege for many low-income students. However, thanks to the internet, there is currently an excellent number of apps, YouTube channels, Podcasts, mailing lists, instructors on Twitter, etc., that help others by providing English lessons for free. Although I cannot guarantee the quality of their content, I believe that they are better than nothing. Note that the point is not to become fluent in English in ten days. Instead, I think the point is to become comfortable reading and writing in English (with little to no outside help). Your English does not need to be perfect. Indeed, my English is far from perfect. Your goal is to be able to communicate.

1.2   Learn Research Methods

The next step is to learn the research methods. A research method should be systematic; that is, it should act according to a fixed plan. Once one establishes the research method, there should be no deviation in the plan throughout the research work. Otherwise, the whole work could be threatened. Research method employs process and/or techniques that allow researchers:

- To collect and organize data;

- To do some analysis over the data collected.

- To, eventually, uncover new findings or create a better understanding about a topic

Although there are *many* research methods, we can roughly group them into three axes: qualitative research methods, quantitative research methods, and mixed research methods.

Qualitative research assists researchers to gain a better understanding of complex concepts, social interactions, or cultural phenomena. This type of research is useful in answering questions about *how* or *why* things have happened. The primary outcomes of qualitative research are interpretations of events and actions. Some qualitative research methods include: interviews, observations, focus groups, etc.

Quantitative research, on the other hand, assists researchers to uncover patterns or relationships in data. The data collected could then be measured and categorized. Statistical analysis are often employed in such numerical data. This type of research could help in answering questions about *how many*, *how often*, *to what extent*, etc. Some quantitative research methods include: experiments, questionnaires, etc.

Mixed research methods happen when researchers employ both qualitative and quantitative research. By combining different research methods, it is possible to explore a subject in both *breadth* (using quantitative methods) and *depth* (using qualitative methods).

It is not, however, the intention of this chapter to give the reader a holistic understanding of each research method, but, instead, to describe their goals and highlight their importance. The reader should dig deeper into the research method that is more suitable for the problem under analysis. Take your time and read the books with care and attention; it will pay off in the long run. The key takeaway here is the following: the essential research methods are already established; they are very unlikely to change. Once the reader becomes familiar with one of them, it becomes part of your research arsenal. Keep using it till mastering it. No reviewer will complain that you are using a research method from the 80s or 70s. In fact, it is a good idea to rely on a well-established research method. Go to the library and learn the basics.

1.3 Learn the State of the Art

While research methods are the foundation of research, the state of the art is the highest level of a scientific field achieved at a particular time. While research methods are solid as a rock, the state of the art is liquid like water. Since science progresses at a steady pace, the state of the art of today is not the same state of the art of last year, last month, or even yesterday. To keep regularly acquainted with the state of the art, researchers have (1) to learn how to find it and, obviously, (2) to use their English skills to digest them. As briefly mentioned in Section 1.1, do not expect that the state of the art will be available in your first language. Yes, it can be if (1) you are lucky or (2) if you wait months or years.

Now that we know what is the state of the art, the question is: how to find it? I cannot suggest the reader go to the library to get acquainted with the start of the art. If it is in a book, it is because its knowledge was solid enough. In principle, the state of the art shed light some light in the dark. It takes years of regular contributions to fully understand and clarify a research topic to (eventually) be summarized in a book. So, no, don't go to the library to learn the state of the art.

I mean, don't go to the *physical* library. In this case, go to the *digital* library. I believe most fields have their digital library, but I would be naive if I try to refer to them here (there are just too many digital libraries). Instead, I would suggest a first look at Google Scholar. If you don't know it yet, take some time to play with it using the keywords you know the most. See if you know some of the results (for instance, the title of the paper, the name of the authors, the name of the conference/journal). If you don't, play a bit more. Use different keywords, take notes, improve, and keep searching.

After becoming comfortable with Google Scholar, look for the specific digital libraries on your field. There should be many. There should also be an empty field waiting for your search term. Do the search in both Google Scholar and on your specific digital library. Sort by date. Compare the results. Look for the patterns. Who are the most common authors? Look at the author's webpage. Read their latest publications. What are

the most common journals? Look at the journal's webpage. What are the newest publications in that journal? Read them all. Create your own research method for understanding the state of the art. Improve as you iterate.

2

Know Your Institution

I F you are a student (either as an undergrad student or a graduate student), it may be unclear for your what your school could offer. The best way to spend your time in school is by knowing what services your school could offer and taking advantage of it. Although I enjoyed my time as a student, I think I would have enjoyed more if I knew a bit more about the school, the professors, the staff, etc.

2.1   What is the funding situation?

First things first. Regardless of what you do, your life would be much easier if you know about the funding situation in your school, in your department, or in your research group. How do you know about it? Simple. Just ask about it. Some students might be worried to talk about money with their advisors. But there is nothing wrong with asking about money. In many cases, the scholarship is the only income a student might have. It is OK to ask questions such as: *how many years this scholarship would last?* If the student has to move to another city, you can ask: *would this be enough to have a decent living in your town?*

In computer science, it is widespread to publish research papers in conferences as in journals. When a manuscript is accepted, one needs

to attend the conference to present the paper. Attending the conference means: buying a ticket (airplane, bus, renting a car), paying the registration fee (which in my research area, software engineering, is around 700 USD), staying in a hotel during the conference, and also money to cover any other expenses during the interim. Therefore, it requires a reasonably good amount of money to attend one singe conference to present one paper. If you work on a field that has this characteristic (I think biologists have the same culture, but I could be wrong), you could ask your advisor if they could support you if you have a paper accepted in a conference. In case s/he cannot assist you, ask if your professor would be in charge of presenting the paper and bear the costs of everything else. If the answer is not crystal clear, consider not submitting a manuscript to conferences.

Besides scholarships and funding for attending conferences, ask if there is any other funding opportunity. Sometimes researchers pay for students to participate in research works (for instance, by participating in an experiment or on an interview). Ask your advisor and colleagues if they know something about it. If you don't have a research scholarship, ask if they have a teaching assistant scholarship, or a programmer scholarship, etc. Just ask. There is nothing wrong with it.

2.2 Who else could help you in your research?

In the last section, I mention the work "advisor" three times, one for each paragraph. Your advisor plays a crucial role in your journey. However, your advisor is not your spouse. You can seek other professors if you are in a dead-end and need some help. Sometimes your advisor doesn't have the particular skills necessary for one specific task that you are facing a hard time trying to solve. Keep in mind who are the professors in your department that have skills that could benefit you. If you think someone could provide some guidance, again, ask for help. How? Knock her door, introduce yourself, and explain how you think her skills could help you. Sending a cold email might also work, but professors are always busy, and it's not uncommon to miss some emails here and there. If you share

the same building, I particularly don't see any problems if you appear at her office (in particular, if the door is already open). After all, they are professors; they are supposed to help students.

Sometimes you need assistance from researchers in other institutions. Sometimes you need to read a paper that you currently don't have access to. Sometimes you want to use a dataset that other researchers already created. Sometimes you want to use a tool other researchers designed to automatize some labor-intensive tasks. Science is about sharing. If you think someone has any public asset that could help your research, again, cold email them. That's fine. And, generally speaking, researchers will be happy to share.

Other than professors and researchers, how else could help you? It depends on the problem. If you need to install a shared printer, who you need to talk to? If you need to be reimbursed, who you need to talk to? If you need a key to get in the building, who you need to talk to? Figure out who are the staff of your department/school, introduce yourself to them, and call them by their names.

2.3   Do something other than research

Many universities provide several other activities that scholars could engage with. Keep one eye open when walking through campus.

If you like sports, visit the gymnasium to see what programs do they offer. Many universities also have gyms, and some of them offer special prices for students (sometimes students are even free of charge). There is no gymnasium or gym on campus? Do you like soccer? Basketball? Find some other colleagues that also enjoy and play together. Don't like any team sport? Put on shoes and walk/run through campus. It does not matter the activity, but it is essential to find a physical activity that you could commit regularly. I will discuss more this in Chapter 5.

If you happen to like other research fields, consider attending a course in another department. The point here is not to graduate with a "minor in something", but instead foster the culture of learning. Sometimes you want to learn something new, without any pressure. Don't

consider learning activities that are not related to your research topic as a waste of time. On the contrary, you may find new research topics when you are exposed to ideas that are entirely different from yours. There are many exciting ideas in other research fields that were not explored in different settings.

If you like politics, consider participating in political groups in your institution. These groups are particularly common in Brazilian public universities, but I'm not sure if they are also common abroad (they seem to be related to fraternities in the US, but with a focus on politics).

Anyway, find something other than research that you could regularly commit to (ideally, twice or thrice a week).

3

Collaborate

No individual can produce the quality of a good team that collaborates well. By collaborating, you not only divide and parallelize the work but, more importantly, it could expand our limited way of thinking. By bringing new collaborators to your research project, these collaborators could, in turn, bring different perspectives, that could lead to various questions and solutions. Moreover, some early career researcher fellowships often come with conditions about being based across multiple universities. It is your job to create and foster a network of collaborators.

3.1 Create a trustable network

Before finding trustable colleagues, you should be seen as a trustable colleague. In scientific work, this means that every data collected, processed, and analyzed have to be open for all. We all know that when we are running to catch a deadline, code and data often become a mess. However, it's better to have a mess that someone could use and clean in the future, than the lack of code and data (even if messy). Share everything you produced during research work. It may be hard to find trustable colleagues if your data only exist on your computer or if no one

has access to the coding scripts you wrote. Make everything transparent and upfront.

Moreover, more important than having dozens of collaborators is having a few collaborators that you can trust. Trust, in this case, means someone that will help you to achieve your goals. Given the universe of researchers on your field, how do you know someone that could indeed help you to achieve your goal? You don't. However, you may be luckier if you think about researchers that work on the same "critical path" as yours. The critical path is "the path of work that is critical for their career advancement or fulfillment at the given moment in time"[1]. Find someone that works as hard as you and shares the same critical path. Work hard in more than one or more research projects. After that, consider expanding your network. There is no reason to rush.

3.2   Proactively looking for new collaborators

Young researchers could devote some time to look for new collaborators systematically. I believe there are three approaches one can do this. The first approach is to *ask for help*. As we discussed in Section 2.2, if you think other research has any public asset that could help you in your research, ask for it. By asking for help, you also show interest in their research. Take that opportunity to introduce your research, and, if it makes sense, invite the researcher to join your project. Even better if you have specific activities and timelines in mind because this way, the invited researcher could better evaluate if she could commit to your project.

The second approach is to *offer help*. Offering help is a bit harder than asking for help because you can only offer assistance if you know someone that needs help. It's perfectly fine to ask strangers to join your work, although it seems a bit awkward to offer your work to strangers. However, one approach might complement the other. For instance, by inviting one researcher (ideally on the same critical path as yours) to participate in your researcher project, in the future, you could also have

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[1] http://www.pgbovine.net/critical-path.htm

some freedom to offer your help to the researcher. You scratch his back, and he will scratch yours.

The final approach is to *go to conferences*. Even though you may have your conference friends, when attending a conference, find some time to meet new colleagues. For instance, have lunch with different colleagues at least once. If someone gave a talk on your subject, ask a question. If you have interacted with someone online, meet in person. If you know the city in which the conference is happening, offer to give a quick tour. If someone is looking for a place to sit, offer a seat. You get the idea. But don't do this as an attempt to look for new collaborators aggressively. Instead, do this for the pleasure of meeting new people. The rest will follow.

3.3   Indirectly looking for new collaborators

This indirect approach is less systematic that the direct approach. The idea here is to keep one eye open for new collaborations while doing other things. For instance, if you happen to have read a paper that was very interesting to you, why you don't send an email to the authors congratulating them and mentioning what you liked the most? Similarly, if you are traveling (attending a conference, for instance), why you don't stop at a nearby university and offer to give a talk? (obviously, it's essential to get in touch weeks before with an eventual host). Still, if you have questions, instead of keeping the questions for you, why you don't ask the questions on social networks? The chances are that other researchers might have the same question or even know the answer. The take-away here is to search for new collaborators as part of your life.

3.4   Be Googleable

In the same way that you are looking for new collaborators, other researchers are also looking for new collaborators. You can only be someone's new collaborator if someone finds you. And if Google doesn't find you, your new collaborators are even less likely to find you.

Therefore, invest some time to create a professional webpage. There are dozens of cheap hosting services, many of with nice templates that one could easily edit in the browser. With a bit of hacking, one could run a personal website online for free. Regardless if you are paying for a hosting service or not, you should have an online (and up to date) website running. A simple website would contain your personal information (e.g., your name, where do you work/study, your research interests, and your email address). Some researchers are worried about putting their email address in plain text available since spammers might like it. But if you have any smart email client (e.g., GMail or Outlook), spam would not be an issue for you. Besides, you might also help other researchers to copy and paste your email address easily. If you are still very concerned about this, consider using a simple HTML trick such as the following: `gpinto<span style="display:none">ignorethis</span>@ufpa.br`

This `<span>` HTML tag does not appear for users when browsing your webpage while, at the same time, it hinders crawlers from finding an email address.

If you already have an up and running website, go one step further. Consider (1) creating a Google Scholar profile, (2) putting all your publications available to the general public (through arXiv, for instance), and (3) creating a Twitter account (more about this in Chapter 4).

4

Procrastinate on Twitter

No ones works at full speed 100% of the time. Sometimes we are tired and want to spend some time navigating in a social network. There is nothing wrong with it! However, when procrastinating online, do so on Twitter. Twitter is a micro-blogging social network. Twitter users could send a short message of at most 280 characters (known as a tweet). Twitter is more interactive than a traditional blog. Anyone can comment on a tweet, which often leads to conversations (known as a thread). The main Twitter feature is the "feed", which is the most recent tweets made by your following users. Similarly, your tweets also appear in your followers' feed. The more users you follow, the more dynamic your feed is. The more followers you have, the higher is your reach.

Twitter can be a valuable tool to expose your work as a researcher while also connecting you with many other word-wide researchers. Different than social networks, such as Facebook or Instagram, in which you are supposed to follow your friends (or someone you already know), on Twitter, you don't have this notion of friendship. Instead, we could follow anyone based on your interests. This creates a new set of connections and opportunities.

4.1 Build a professional profile

Since Twitter could help to disseminate work, you may have to treat Twitter as work as well. In the same way that you spent some time to get dressed to go to work, you should invest some time in building a professional profile on Twitter. What does it mean?

First, put your name and upload a nice-looking photo. I have seen many Twitter profiles that the user did not provide a real name. Twitter also has a default avatar for those that did not upload photos. If you have neither a name nor a picture, you are not a user; you are a bot.

Second, write down your brief bio, if possible, covering your current research interests. If #hashtags make sense, feel free to use them. If your website is already up and running, link it to your profile. Don't forget to upload the header photo (the picture highlighted behind your profile's photo), but don't upload a random image. Upload something that users can relate to you. It could be a bigger photo of you giving a talk, a picture of your lab, a view of your city, etc.

Third, pin a tweet. A pinned tweet is a tweet that will appear at the beginning of your profile so that everyone who opens your profile can see this tweet first. You could see your pinned tweet as an extension of your profile. Let's say you made a tweet that was important for you (e.g., get a paper accepted, get a new job, get a new grant, etc.), and you want it on your profile's front page. Just pin it.

People will only listen to you if you show credibility. Some people have a lot of credibility outside Twitter. When they join Twitter, their credibility follows them (meaning dozens/hundreds/thousands of new followers overnight). But if you are still building your credibility (online and offline), your profile is your online credibility.

4.2 Promote your work

"Twitter is not a place to be shy. You are the best advocate for your work, and self-promotion is a proven way to drive research dissemination."

Let's say you have a research paper accepted, and you are eager to share the news with the world. This is a timely opportunity to promote what you have achieved to your followers. But remember that a tweet has at most 280 characters; therefore, it may be challenging to describe your whole paper (motivation, method, results, etc.) in a single tweet. Instead, focus on the central message of your study. *What is your tweetable finding?*

Give a reason for your followers to read your paper. Just saying that you had a paper accepted may not motivate your followers to read your work. Try your best to summarize your manuscript. After summarizing the principal findings, it is also a good idea to provide a link so that your followers could read the full report. If one tweet is not enough, it is also fine to create a thread with two, three, four tweets. But don't go overlong. Twitter is not a blog, and Twitter users know and expect it.

Moreover, Twitter allows one to add media such as photos or videos on tweets. If you have (or want to acquire) such skills, consider promoting your work by, for instance, by making a 30-second video about it or by creating an infographic. These mediums seem to be more appealing and could attract more impressions (number of users that saw the tweet on Twitter) and engagement (number of users that interacted with the tweet, for instance, by liking it). However, Twitter users spend just a few seconds on every tweet, so avoid creating long threads, long videos, or long charts — unless you are a terrific storyteller.

Remember that science is about sharing, and by sharing your research achievements on Twitter, you could also increase the citation rate of your paper in the future. Share early and share often. Aim for at least one tweet per day.

4.3   Find your community

In my research field, software engineering, many active researchers interact regularly on Twitter. I follow many of them, even if they don't tweet daily. I do so because I believe any tweet from a researcher is an opportunity to learn something new. Sometimes I learn about their latest work (the state of the art), when they are promoting their work on

Twitter. Sometimes I learn about professional opportunities, when researchers are sharing openings at all levels. Sometimes I learn about when is the next paper deadline, when researchers are promoting conferences/journals in which they are volunteering to. You can also learn what researchers do when they are not working — yes, this happens.

Try to find your peers online. If they aren't, invite them to join. Also, look for the known researchers in your research field. Follow them systematically. Twitter also has a nice feature called lists. Anyone could create a list of Twitter users about a given topic. For instance, a colleague of mine created a list of software engineering researchers[2], and added to this list any researcher with a Twitter profile. This list is handy for newcomers who are looking for researchers to follow but don't know any. If there is not a list about your research community, consider creating one.

4.4   Interact with your community

Perhaps the beauty of Twitter is that you could engage in any conversation. It does not matter if Madonna is talking to Paul McCartney; you can always join the conversation and share your thoughts. The same is true for your research community. For instance, when other researchers are discussing a paper, feel free to join the conversation (even if you don't know the discussants). Before joining, make sure you have read the paper and build your arguments. Keep engaging in others' discussions. Eventually, other researchers will notice you, and they will join in your conversations.

If your timeline is too quiet, it's perhaps your turn to start a conversation with someone else. It is also fine to talk alone. Your followers are listening, even if they don't interact immediately with you.

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[2] `https://twitter.com/adolfont/lists/se-research/members`

5

STAY HEALTH

ACADEMIA can be a very difficult place. There is fierce competition for an ever decreasing public research budget. There will always be someone somewhere with better equipment, with better support, with more experience, etc. There will always be several kinds of deadlines, and many of them will happen in the same week, sometimes on the same day. There will be dozens of small tasks waiting for you at any moment. To deal with all of this, you should be in good health.

5.1 Physically

I already mentioned in Chapter 2, it is crucial to learn about the physical activities one can do on campus. I cannot stress this enough.

It is well-known that exercise helps you think more positively and clearly. An energized mind can work better with creative work (which is scientific work is all about). Although any form of physical exercise is valuable, I would argue that practicing sports is much better than, for instance, going to the gym to workout. First, because practicing sports is fun (lifting weights is very far from fun). Second, because you can often practice in groups (which fosters friendships and creates team-building

characteristics). Third, because many sports you don't have to pay to practice (at least, you might be more likely to find a public park in which you could play soccer than finding a public gym). Practicing sports regularly also requires practicing discipline, and building discipline is essential to one's character. As crucial as a discipline, practicing sports also reduce the levels of stress hormones while also stimulating the production of endorphins (which is the relaxed feeling after a workout). Got a rejection? Put on your shoes and go for a run.

The next point to stay healthy is having a good night of sleep. Many of us are not getting enough sleep because we're working too much. At the same time, we're not working efficiently because we're not getting enough sleep. Does that sound familiar? Not getting enough sleep can impair one's cognitive abilities, and this will appear in your work (sooner or later). Everyone has their amount of hours required to energize fully. Figure out how many hours do you need, but research suggests that it might not be less than seven hours. If you still think sleep is overrated, ask any professional athlete if she takes sleep seriously (don't know any? find on Twitter). "*But I have a paper deadline by tomorrow morning, I have to finish this by then*", one could say. That's fine to sleep fewer hours once in a while, but you don't want to make it a rule.

Finally, "you are what you eat". While there is some truth in this statement, what we might not have considered is how this applies to some aspects of everyday life. The foods we eat affect us more than we realize. I am far from being an expert on this topic, but it is reasonably easy to understand how our diet has a direct impact on productivity levels. For instance, if you have a paper deadline Monday morning, you don't want to overeat fatty foods in the evening before; otherwise, you may feel tired when you don't want to be feeling tired. The same way that it is not good to overeat fatty foods before a deadline, it is not good to stay a long time without eating. When we are running low on glucose, we have a tough time staying focused. This is why it is hard to concentrate on an empty stomach. Fostering healthy habits is paramount to build a long-term research career.

5.2   Mentally

Academia is the place where one learns about how to deal with rejections.

Every established researcher has accumulated many rejections. From Albert Einstein to Stephen Hawking, from Nobel prize winners to colleagues in the other department. All of them have faced many rejections throughout their career. Many of them might not even know how many times did they received a letter of rejection. Despite their ubiquitousness, rejections are hidden due to the way the academic game works: the outcomes of the academic game are only partially public. We know about those that had the research paper accepted, those that received the grants, the prizes, the awards, etc. But we know very little about those that did not have their work accepted. Sometimes we don't even know how fierce was the competition. It may be tempting to think that only those that did a poor job were rejected. However, some conferences/journals are so competitive that even don't have room for many top-notch works. Sometimes the only difference between a rejected and an accepted paper is that we don't talk about the rejected paper.

If you stay around for some time, you are very likely to collect many rejection letters, for instance, a college admission rejected, a paper rejected, a grant rejected, a job rejected, a promotion rejected, etc. If you persist, however, you will collect more and more rejections, till the point you endured enough to convert a rejection into an acceptance. But the process is tough. Rejection hurts. A lot of time and effort on your latest paper, only to have it turned down. But rejections are part of the process. You don't have to like rejections, but it's wise to learn how to deal with it. Train your brain to learn that rejections are part of the process, and embrace it. Most of the time, we also receive feedback on how we could improve. Take that feedback seriously and fix, if possible, all raised concerns. And try again.

Funding is particularly tricky for young scholars, in part because several of them did not receive training in writing grant proposals. But right after we graduate, we are supposed to write many of them. Winning funding is easier said than done, and, similarly to research papers, great

applications still get rejected. If you are a student, consider showing interest in helping your supervisor with their grant applications. If you don't feel comfortable writing a technical grant proposal yet, you could start by suggesting ideas. It is an excellent decision to start exercising the writing grant skills soon.

Rejections will be easier to digest if you work in a supportive environment. In research, a supportive environment protects young scholars from factors that can threaten their health, while allowing them to expand their capabilities and self-reliance. At the bare minimum, this means a place that you could talk about your concerns and have someone to listen to you. Ideally, however, in a supportive environment, young scholars should feel connected to their colleagues, their advisor, and their big research plan. As a consequence, young scholars could understand 1) what their research group is all about and 2) how they could indeed contribute towards their more significant goal. By understanding the big picture, young scholars could also become more confident to explore their research paths, contributing to their research independence. A supportive environment should also encourage young scholars to share their ideas without the fear of being sharply criticized or even discriminated. If your working environment does not have any of these characteristics, consider building them. You can start by creating a culture of getting together, either by having a weekly lunch together or by inviting your colleagues to play a game (and stay physically healthy). If you figure out your work in a toxic environment, it's better to find another place to work.

Finally, the culture of rejection, the lack of a supportive environment, along with other factors, could contribute to one's mental illness. Just to give the reader some perspective, in the US alone[3]:

- 19.1% of adults experienced mental illness;

- 7% had chronic depression;

- 5% had attentional disorders (ADHD/ADD);

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[3]https://nami.org/mhstats

- 4% had post-traumatic stress disorder (PTSD);

- 3% had bipolar disorder.

If it is awful for the general population, it could be even worse for graduate students. According to a 2015 report by the University of California Berkeley[4], "47% of graduate students suffer from depression, following a previous 2005% study that showed that 10% contemplated suicide". If we calculate 47% (rate of depression in graduate students) divided by 7% (percentage of depression in the general population), we learn that graduate students are more than six times more likely to be depressed.

If you need, find professional help (know your institution could help).

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[4]`https://qz.com/547641/theres-an-awful-cost-to-getting-a-phd-that-no-one-talks-about/`

6

HAVE FUN

I firmly believe that you can only foster all these habits if you enjoy
doing so. You perhaps

6.1   Make Friends

When looking for collaborators, look for researchers that share other
interests other than research. If you like barbeque, consider also col-
laborating with people that love barbeque. If you like soccer, consider
joining a research group in which some of your fellow mattes also like
playing soccer. If you like cooking, consider finding colleagues that like
eating your food (that sounds easy but could also be challenging :-). You
got the idea. The point here is to build a relationship that does not rely
solely on research. I know we all love research. However, research is not
everything.

6.2   If you are not enjoying, change

If you don't like your research topic, or your research group, or your
research advisor, or your school, etc., consider changing it. However,

before doing so, think about why you are not enjoying it. Enumerate your reasons, for instance, boring topic, lack of commitment, too many rejections, unfriendly colleagues, long commute, etc. Then next, write down some possible solutions to these problems. Why this exercise? Because sometimes, we are too focused on getting out of a bad situation that we don't consider what would be the consequences and end up making a poorly informed decision.

After adequately weighing the pros and cons, and if the cons are indeed causing more pain, change. Yes, I understand that some changes can be really complex, for instance, changing between schools might also impact moving to a different city, or sometimes moving to a different country. Similarly, changing supervisors can also create a lot of stress. Moreover, I also understand that occasionally young scholars do not control some choices. If you are working in a research project that might not be that interesting to you at the moment, it's perhaps better (and more professional from you) to work hard to have it done (than thinking it does not exist). However, if you realize you are in a toxic place, staying there would be more complicated than leaving.

6.3 You are not your CV

For sure, it's nice to have a long and impressive curriculum. Unfortunately, such an impressive curriculum is hardly feasible for young scholars; it is more often the case of senior researchers, that already have a tenured position and a fully-funded research group. After all, such impressive curriculums are the summary of a long term collaborative effort of many different researchers (at very different levels). As a young scholar, you may not have (yet) contributed long enough and may not have a broad collaboration network. And this is fine! Most young scholars have just a few research contributions, in which they are proud of (since they dedicated several hours/days/months/years to make them happen).

The problem happens when some young scholars tirelessly chase such lengthy curriculums. Sometimes scholars don't see any concerns here because they like what they are doing. If that is your case, take care.

Since you have the freedom to work on the subject that interests you the most, in the place that you like the most, in the hours that you believe you are the most productive, it's sometimes hard to stop working. It could be even harder if you leave alone and don't have a family to take care of. It's not uncommon to hear stories about academics that work dozens of hours straight towards a deadline, fueled by energy drinks. Although this mindset might be feasible to develop in the short term, it may be impractical to follow in the long term. Even if this mindset makes you happy, consider shifting towards a more healthy one. Instead of trying to meet every next deadline, consider contributing to just a few. Instead of trying to have a near-infinite number of papers accepted per year, focus on having a few high-quality ones. If you have the discipline to work hard every day, also consider having the same discipline to explore other non-research activities. Don't underestimate the importance of non-research activities on your mental and physical health. Indeed, these non-research activities could also help your research progress (again, doing sports like running is an excellent way to exercise while thinking about hard problems).

Ultimately, the goal of a young scholar, as I see, is not to have a lengthy curriculum. Instead, the purpose of a young scholar is to learn how to do good research work.

7

Concluding

ACADEMIA could be a wonderful place. By seeking the truth, researchers are exposed to several research challenges, and their discoveries could shape the way we think, work, and live. However, academia can also be a tough place to work. Graduate students are six times more likely to be depressed than the general population. The academic job market is extremely competitive. If you happen to think that academia is for you, it is better to foster some good habits.