

Strategic career planning for physician-scientists

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Abstract Building a successful professional career in the physician-scientist realm is rewarding but challenging, especially in the dynamic and competitive environment of today's modern society. This educational review aims to provide readers with five important career development lessons drawn from the business and social science literatures. Lessons 1–3 describe career strategy, with a focus on promoting one's strengths while minimizing fixing one's weaknesses (Lesson 1); effective time management in the pursuit of long-term goals (Lesson 2); and the intellectual flexibility to abandon/modify previously made decisions while embracing emerging opportunities (Lesson 3). Lesson 4 explains how to maximize the alternative benefits of English-language fluency (i.e., functions such as signaling and cognition-enhancing capabilities). Finally, Lesson 5 discusses how to enjoy happiness and stay motivated in a harsh, zero-sum game society.

Introduction

The physician-scientist (alternatively known as the clinician-scientist) is broadly defined as a physician who also performs biomedical research that ranges from basic science to translational and patient-oriented investigations [1]. Physician-scientists play a key role in the success of bridging the bench-to-bedside gap by applying scientific discoveries to clinics as well as shedding new scientific light on unmet clinical needs. The importance of fostering physician-scientists in residency education has been emphasized not only in internal medicine disciplines but also in surgery disciplines, including orthopedic surgery [2].

In the face of increased uncertainty in an ever evolving modern society, learning how to strategically develop a career plan is imperative not only for businesspersons, but also for physician-scientists, including academia-based orthopedic surgeons who hope to build a strong and rewarding expert career [3, 4]. Strategic career planning is an idea that was originally developed in the field of business science and corporate management, but which has recently entered the academic curriculum as part of faculty development educational programs [5]. As more and more career opportunities and challenges arise during the next 10 years, physician-scientists will be better prepared by knowing the basic tenets of strategic career planning. While career development plans in academia and the private sector quite typically differ to a large extent, physician-scientists can certainly benefit from a keen understanding of strategic career planning [5]. In this educational review article, I will present to the lay academic reader five important topics selected from the business and social science literatures. These topics are intended to help the reader optimize his/her mind-set for surviving in the ever-changing and highly competitive professional world.

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Lesson 1: strength-based approaches

Fixing weaknesses versus promoting strengths

While everyone has both weaknesses and strengths, one critical question every professional should ask in his/her workplace is whether to focus on fixing personal weaknesses or capitalizing on personal strengths. Conventional wisdom tells us that one should make every effort to fix his/her weaknesses and, thereby, enhance his/her skills portfolio. This weakness-centered career approach should help an individual develop into an all-round player who some managers might recruit to their team. However, as Drucker [6] has mentioned, fixing weaknesses is extremely inefficient. Even devoting substantial time and effort to remedying one's weaknesses would end up in merely "shifting incompetence to mediocrity". For the academic physician-scientist who aims to excel as an expert in biomedical research, being recognized as mediocre adds no value to his/her reputation in the scientific and/or medical communities. Professional communities in biomedicine and other scientific disciplines have a strong preference for valuing novelty, creativity, and originality, while disregarding mere duplication and confirmation of someone else's work. Thus, a successful career track must be built on promoting one's strengths rather than on fixing one's weaknesses, since the former is the most efficient path to creative work. While most people would agree on the importance of promoting one's strengths in fostering one's own creativity, they might still wonder how to deal with their weaknesses. Drucker [6] famously addressed this question, affirming that weaknesses will not disappear but will rather become irrelevant, when an expert builds a career on the basis of his/her strengths. Here, the take-home message is not to waste too much time trying to fix weaknesses; instead, spend more time in promoting strengths.

How to know one's own strengths

A potential obstacle to implementing a strengths-focused career plan would be the failure to explicitly recognize one's own strengths. Pointing out someone else's strengths is much easier than finding them in yourself. It is generally difficult to perform such a self-evaluation without internal biases interfering. A subjective view of self (e.g., self-evaluation) is often different from an objective review (e.g., evaluation by peers and supervisors). You might be the last person who can make an accurate evaluation of your strengths. To surmount this problem, one approach that is often adopted in the corporate sector is to use a comprehensive personality assessment known as Strengths-Finder. The usefulness of this test in career development for Ph.D. students in the pharmaceutical science discipline

has already been shown [7]. Alternatively, as Shimaoka [8] has proposed, people can learn of their strengths in a recommendation letter written by their mentors. Mentors are asked to identify the student's strengths as well as his/her weaknesses, if any. Experienced mentors are great at finding "marketable" qualities (i.e., strengths) in their students and trainees and, thereby, place them in an appropriate context in the letter. Although recommendation letters are not always permitted to be disclosed to students, your mentors could allow you to know at least what strengths are mentioned in the letter, if you explain that you wish to see the content of the letter to implement strengths-based career planning.

Lesson 2: time management

Time management is an integral part of one's work life

In the age of globalization, in which we are always connected to work and committed to multiple projects simultaneously, we are increasingly pressured for time. Time is certainly a most precious resource. Regardless of social status, everyone has 24 h per day, 7 days per week, and 365 days per year. You cannot change the total amount of time that you physically have; however, you can make a difference in your work-life with effective time management [9].

Time management matrix

One simple and widely used time management technique is a to-do list, in which things that you should do (to-dos) are inventoried. The to-do list usually works fine to complete things over the short term; however, as Covey [10] pointed out in his famous book, "The seven habits of highly effective people", the list does not necessarily help people achieve their long-term career goals. This is because prioritizing to-dos inventoried in such a list is difficult, thereby resulting in a misuse of time that compromises productivity. To prioritize to-dos in the best way possible, Covey proposed a time management matrix, in which to-dos are "plotted" in a two-dimensional matrix (Table 1), as opposed to a one-dimensional display exemplified by a typical to-do list. The time management matrix prioritizes to-dos according to two criteria: urgency in the *x*-axis and importance in the *y*-axis. This makes four distinct quadrants, I–IV: quadrant I contains things that are urgent and important, quadrant II contains things that are not urgent but important, quadrant III contains things that are urgent but not important, and quadrant IV contains things that are not urgent and not important.

Table 1 Time management grid

	Urgent	Not urgent
Important	<i>Quadrant I</i> <ul style="list-style-type: none"> • Crisis • Pressing problems • Deadline-driven projects 	<i>Quadrant II</i> <ul style="list-style-type: none"> • Prevention • Relationship building • Recognizing new opportunities • Planning • Self-development recreation
Not important	<i>Quadrant III</i> <ul style="list-style-type: none"> • Interruptions • Most calls, emails, meetings • Most reports • Proximate pressing matters 	<i>Quadrant IV</i> <ul style="list-style-type: none"> • Trivia • Busy work • Addiction to internet • Time wasters

Adopted and modified from [10]

Quadrant II-targeted time management

It is obvious that people must spend sufficient time dealing with things in quadrant I, without wasting time addressing things in quadrant IV. Indeed, Covey [10] has shown that teams of people in excellent companies, as well as those in mediocre companies, both spent approximately a quarter of their time in quadrant I and little time in quadrant IV. A significant difference that distinguishes excellent from mediocre companies is observed in how to use quadrant II versus quadrant III. Although many things necessary for achieving one's long-term goals are plotted in quadrant II, this quadrant often remains under used, for example, in mediocre companies. This is because mediocre companies tend to over-use quadrant III. Despite a lack of importance, urgency forces people to spend time in quadrant III at the cost of sacrificing time better spent achieving their long-term goals in quadrant II. By contrast, Deming Prize-winning excellent companies choose to allocate the majority of their time in quadrant II, thereby deliberately minimizing time lost to quadrant III. Avoiding the over-use of quadrant III, and allocating sufficient time to quadrant II, are achieved by an awareness of the problems as well as will-power. Such a strategy facilitates cycles of careful planning, assessments of actual time allocation, and timely feedback to revise the overall time allocation plan. Quadrant II-targeted time management should work not only in a corporate setting, but also at an individual level for those academic physician-scientists seeking an expert career path.

Lesson 3: leadership in decision making

What do people want to see in a charismatic leader?

What qualities are required for a physician-scientist if he/she is to truly excel as a principal investigator (PI) leading a successful biomedical research project? What can physician-scientists learn about leadership, if anything, from charismatic leaders found in business and politics? The typical public image of a charismatic leader (e.g., a CEO) in business is that of a strong masculine figure standing firm on unshakeable ground. To win the confidence of his subordinates, the leader must show a rigid and unshakeable determination that would withstand any circumstance. This is the leadership quality that people want to see in the charismatic leaders they follow. However, one critical question remains: is what people want to see in great leaders really representative of what is required for leaders to excel in the real world?

What makes leaders out-perform others in the real business world?

Strategic and intellectual persistency and rigidity makes leaders look strong in the eyes of their subordinates. Nonetheless many studies have shown the importance of flexibility in organizations that succeed [11–13]. To lead and navigate their team in an ever-changing and unpredictable economic and political landscape, a leader must be prepared to reverse his/her own previously made ineffective decision. Since the route to the ultimate success of a biomedical research project is often unpredictable, PIs who lead such projects need strategic and cognitive flexibility; i.e., preparedness to reverse strategies that they themselves previously decided. Both research and business proposals represent deliberately thought-out strategic plans. One business science study has shown that 93 % of companies that eventually succeeded had abandoned their earlier chosen strategies [14]. These companies succeeded despite having initially adopted the wrong strategy. In fact, they succeeded because they exploited opportunities that emerged during the course of implementing those errant strategies. The willingness to accept promising emergent strategies, while abandoning prior inefficient strategies, is made possible by the intellectual flexibility that leaders must adopt in their decision-making. The importance of such flexibility in business decision-making is reminiscent of the significant role that serendipity has played in scientific discovery.

Lesson 4: communication skills in English

English as a means of communication

English has become the common world language for almost all scientific disciplines, and the major science communities now consider English as the official language for presentations and discussions. There is no doubt that non-native English speakers who hope to excel in science must have good English-language communications skills. While we primarily see English as a means of communication, the language has other important functions unrelated to communication. Here, I will discuss two such functions, both of which can have a remarkable impact on one's career development.

English as a means of conveying credentials (a.k.a. signaling)

It is generally thought that if you graduate from top elite schools, you are more likely to earn a higher salary than those graduating from 2nd- and 3rd-tier schools. Why is this the case? One hypothesis is that education at the top schools makes their graduates more productive at work than their 2nd- and 3rd-tier school counterparts. However, an alternative and more plausible hypothesis is that although productivity is independent of education, graduation from top schools simply lends a reputation for greater ability at work [15]. In this scenario, the function of higher education is more to “signal” your potential workplace capabilities regardless of what subjects you majored in and what you learned at college. That's why human resource departments in many companies, including major corporations in Japan, have often made hiring decisions based on the rankings of colleges from which applicants graduate. This hiring practice, which relies on perceived reputation, has saved companies considerable expense when performing in-depth screening of all applicants to comprehensively predict applicant workplace performance.

In the face of globalization and a rapidly changing and unpredictable economic landscape, global and multinational corporations want exceptional talents who will outperform their peers in a global work environment. However, corporations have difficulties in recruiting such exceptional talent when relying solely on conventional practices (i.e., college rankings of graduates). A good command of English is not only essential as a means of communicating in the global workplace, but also as a means of signaling greater and diverse strengths at work, thereby complementing the more conventional traits sought in today's job market [16].

English as a means to facilitate better decision-making

As mentioned above, leadership requires the capacity to make better, challenging decisions, an area where cognitive

flexibility plays an important role. In the context of international collaborations, leaders whose native language is not English will nevertheless likely have to carry out negotiation and decision-making in English. Can leaders make the same decisions in a non-native tongue as they would in their native tongue? One might intuitively think that an individual's decision-making ability in a non-native tongue would be inferior compared with that in his/her native tongue. However, recent studies have actually shown the opposite. In fact, bilingualism has been shown to provide a significant beneficial impact on cognitive, as well as on executive functions [17].

According to the recent progress in behavioral economics, owing largely to the contributions of Morewedge and Kahneman [18], irrational decisions regularly occur in every sphere of human activity, from shopping to politics. We humans continually have difficulties in making rational decisions because we are subjected to cognitive biases driven by fast (instinctive and emotional) thinking as opposed to slow (deliberate and logical) thinking. A study by Keysar et al. [19] has demonstrated “the foreign language effect”; i.e., that people were less influenced by typical cognitive biases (e.g., loss aversion, framing, manipulation) when making decisions in a foreign language than when doing so in their native language. Decision making in a foreign language increases one's cognitive load, thereby initiating deliberate, slow thinking that enables one to keep a healthy distance from emotional and cognitive bias-prone fast thinking. This likely represents a major mechanism of the foreign language effect in the way cognitive biases are suppressed during the decision-making process, thereby allowing for a more rational-based decision-making.

Lesson 5: pursuit of happiness in a zero-sum game

Happiness as a driver to career success

Success in achieving one's important career goals usually leads to feelings of happiness. Conversely, does happiness at work promote one's productivity, thereby enhancing the likelihood of accomplishing successful career goals? Recent studies have supported this hypothesis [20]. For example, Haase et al. [21] have shown, by examining more than 1,000 youths in the US, that happy people are more driven to pursuing their educational and career goals.

Synthetic happiness for a zero-sum society

One would assume that most people operate under a sort of positive feedback loop in which achievement promotes happiness, and happiness motivates people to achieve more. This gain-happiness link once seemed available to

everyone, particularly in an ever-growing economy that promised gains for all, at least for a while. However, in a zero-sum game society where one person's gains inevitably lead to another's losses, the gain-happiness link proved unsustainable for everyone. As everyone is at risk of being a "loser" in the modern zero-sum society, how can we sustain happiness, in order to fuel the motivation to achieve our career goals? This question is of great relevance to many developed societies such as Japan, which has suffered the economic woes of deflation for many years.

An important clue to this question comes from the 1968 study done by Brickman et al. [22], which arguably showed that major lottery winners ("gainers") and paralyzed accident victims ("losers") expressed similar levels of subjective happiness when interviewed 1 year after the events. Many of the major "losers" exhibited an adaptation during the course of their lives, thereby "synthesizing" happiness [23]. A more recent study demonstrated that such an adaptation occurred more completely in people bearing a specific internal characteristic (i.e., the personality trait of agreeableness) than those lacking it [24].

In addition to this internal factor (i.e., agreeableness), Gilbert [23] proposed that it was the immutability of a given circumstance that represented a critical external factor promoting adaptation, thereby giving rise to synthetic happiness in "losers". It is now thought that synthetic happiness is just as an effective motivator to achieve a career goal as natural happiness is. One can learn valuable career development lessons from a better understanding of the relativity of happiness in "gainers" and "losers", as well as the internal and external mechanisms that promote adaptation, thereby allowing even "losers" to feel happiness as well.

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