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Innate Biases

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Summary

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- Biases include overconfidence bias, illusion of control bias, anchoring and adjustment bias, confirmation bias, curse of knowledge bias, and optimism bias.
- Through awareness, collaboration and inquiry, open discussion, and the deliberate challenging of consensus, entrepreneurs can mitigate these innate biases.

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Innate Biases

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Topic Relevance by Timeline

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Introduction

Behavioral economics can help entrepreneurs better appreciate their own biases. In uncertain circumstances, humans employ simple heuristics and rules of thumb to enable them to make decisions that are both timely and as optimal as possible. However, these simple heuristics also make us susceptible to cognitive biases, diminishing our ability to approach problems completely logically. By being aware of these biases, entrepreneurs can combat the cognitive distortions that lead to faulty decision-making.

Anyone Can Have a Bias

Entrepreneurs fall prey to the same biases as the rest of us: even the shrewdest CEOs have biases in judgments and decisions that likely help them to make good choices in many cases, but can also leave them susceptible to certain kinds of mistakes in other cases. These biases often hinder an individual's ability to objectively assess risks and make decisions under conditions of uncertainty. Individuals are susceptible to egocentric biases—the tendency to believe one's own perspective is representative of that of the whole population, which can be exacerbated by groupthink. In addition to egocentric biases, entrepreneurs are particularly susceptible to biases such as overconfidence

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bias, illusion of control bias, anchoring and adjustment bias, confirmation bias, curse of knowledge bias, and optimism bias (Kerymova).

Understanding the Innate Biases

The *overconfidence bias* is a person's subjective confidence in their ideas or decisions being greater than the objective accuracy of those ideas or decisions (Pallier et al.). In other words, the overconfidence bias corresponds to the degree to which people "do not know what they do not know" (Forbes). Decisions may be based on heuristics and biased narratives and at times may seem more similar to placing bets than to fully analyzed logical processes. Such high-risk decisions can cause individuals to experience *post-decision dissonance*—a discordance between thought processes and reality. As individuals seek to minimize cognitive dissonance, they tend to overvalue the reliability of their judgments, deeming their own thoughts and decisions to be more accurate than their objective accuracy, leading to a potentially risky overconfidence (Knox and Inkster). To characterize this bias, subjects are presented with a series of general knowledge questions: for instance, which river is bigger—the Amazon or the Nile, or prediction problems—who will win the elections? Individuals are then asked to assess the probability of their answer being correct. In the majority of such studies (Taylor and Brown; Svenson), individuals assess the probability of their answer being correct as very high, though the outcome of their answers was not in accordance with the probability stated, suggesting that people perceive their knowledge to be more accurate than it really is. This can affect an academic entrepreneur in terms of their ability to develop and market their innovations. For example, most academic entrepreneurs believe that they have invented the "best" product/process in the world, which may or may not be true. They may get a rude awakening when they go to a venture capitalist (VC) or other investors, who often provide a reality check.

Related to the overconfidence bias, the *illusion of control bias* is the tendency for individuals to overestimate their ability to control a certain situation or outcome (Rudski). This bias is classically demonstrated with a task involving two lights, marked "score" and "no score." Subjects may press either of the two buttons, with a variable degree of control over the lights or no control at all, depending on how the buttons were connected. Even though the experimenters ensured the subjects were aware that there may be no relation between subject actions and lights, the subjects confidently reported having control over the lights (Allan and Jenkins). Such positive illusions of control may be adaptive, as evidenced by the fact that illusions of control are generally more common in mentally healthy individuals than in depressed individuals; however, high self-efficacy may also be adaptive, with escalating commitment leading to failing courses of action (Taylor and Brown; Whyte et al.).

The *anchoring and adjustment bias* is the tendency for individuals to rely heavily on an initial piece of information or a past experience in order to predict and plan for future situations, and only gradually adjust away from that base assumption (Vass). Once an idea is anchored on particular

information, any new information, estimate, argument, or prediction is based on its relationship to that anchor. A classic example is automobile pricing. Potential buyers come into a car dealership with a cost in mind from past purchases, and therefore, any offer above that value will seem high and any amount below will seem low, regardless of how these prices rank relative to market value (Chen).

Confirmation bias is the tendency to search for or favor recall of information that confirms one's independent preexisting beliefs (Nickerson). As humans, we are programmed to reduce any cognitive discomfort that comes from discordant values and realities. Therefore, we favor information that substantiates our worldview, and we devalue contradictory information in an often subconscious effort to reduce cognitive dissonance. Entrepreneurs, known to be driven and focused, may be even more susceptible to confirmation bias, as they may be intensely focused on one goal and one idea, leading to a cognitive tunnel vision that reduces their capacity to objectively identify real competitors, to understand and incorporate the company's and customers' needs and wants, to explore different product launch campaigns and competitors' business plans, and to appropriately estimate costs and deadlines on the path to product launch (see the chapters "Conducting Insightful Market Research" and "Human-Centered Design: Understanding Customer Needs Through Discovery and Interviewing"). Due to confirmation bias, entrepreneurs are more likely to underestimate competitors, time, and costs in order to reduce the discrepancy between the entrepreneur's preconceived notions of their idealized company and the reality of the market at large. Confirmation bias is an example of an *information bias*. Other important information biases to be aware of include the *knee-jerk bias* (the tendency to make fast and intuitive decisions in situations in which slow and deliberate ones are necessary), *Occam's razor bias* (the tendency to convince oneself that the most obvious decision is the best one), *inertia bias* (the tendency for formed beliefs to endure and for one to act in ways that are familiar or comfortable), and *myopia bias* (the tendency to view the world through the narrow lens of one's own experiences) (Taylor).

The curse of knowledge bias refers to the expert's tendency to assume similar subject matter understanding in others, and for an individual with more experience or information to struggle to look at a situation from the point of view of a person perceived to have less experience or information (Birch and Bloom). Entrepreneurs, after conducting extensive market and product research, not only become experts in their own products, but will probably know more than the average individual about the relevant sector of the market in general. However, the entrepreneur may then assume a similar understanding in consumers and investors, and as a result miscalculate pricing and under- or overvalue the product by not considering the product from the perspective of less well-informed individuals. This can negatively impact not only income from warped product pricing, but also funding through potentially misguided negotiations with investors (see the chapters "Marketing in an Academic Institution" and "Negotiation Strategies"). Similarly, academic entrepreneurs, who may have spent their entire academic careers studying one topic, maybe even one molecule, may be particularly resistant to acknowledging differences in opinion or may

assume a higher average knowledge base about that topic, inhibiting their ability to accurately and objectively gauge the market interest and applicability of the new idea (see the chapter “Careers in Academia and Industry: Transitions and Challenges”).

Lastly, the *optimism bias* refers to the tendency of an individual to see the positive aspects of all outcomes, and to favor recall of these characteristics when making future decisions (Sharot). While optimism is a powerful force, and an essential quality in driven, talented individuals who are taking multiple calculated risks while dedicated to a product or cause, delusional optimism can diminish one’s ability to be truly objective in the decision-making process or in evaluating a past decision. In Kahneman’s *Thinking, Fast and Slow*, he writes that “the chances that a small business will survive for five years in the United States are about 35%. But the individuals who open such businesses do not believe that the statistics apply to them. A survey found that American entrepreneurs tend to believe they are in a promising line of business: their average estimate of the chances of success for ‘any business like yours’ was 60%—almost double the true value. The bias was more glaring when people assessed the odds of their own venture. Fully 81% of the entrepreneurs put their personal odds at 7 out of 10 or higher, and 33% said their chance of failing was zero” (Kahneman). Thus, with optimism as a trait there is a fine line between helping and hindering business success. In order to be truly successful, an entrepreneur must wholeheartedly believe in their product, while still retaining enough objectivity to take a step back and appreciate the reality of the market, the clients, and the investors with whom they are working.

Entrepreneurial Cognition

As an entrepreneur dedicates more and more time, money, and energy to their project, the project becomes less like a day job and more and more like a child (Kerymova). At this point, as any human being would be, an entrepreneur is susceptible to biases that lead to subjective decisions and emotional justifications. Importantly, as an entrepreneur becomes more experienced, these biases do not go away; rather, entrepreneurs are even more susceptible to the biases of overconfidence, illusion of control, and anchoring and adjustment.

Research in entrepreneurship has led to the idea of “entrepreneurial cognition” to describe the set of cognitive processes characteristic of entrepreneurs (Busenitz and Lau). Entrepreneurs have been shown to be more likely to categorize business situations positively (Palich and Ray Bagby), to exhibit a greater reliance on the overconfidence bias (Busenitz and Barney), and to scan for information more actively in their free time and utilize more nontraditional sources of information than do ordinary managers (Kaish and Gilad). The question of why entrepreneurs think differently from non-entrepreneurs is up for debate. Some have rationalized this unique cognition as part of a self-selection process: individuals who are more susceptible to such biases and heuristics are more drawn to entrepreneurship, while more cautious decision-makers are more comfortable contributing to larger organizations with more readily available information and slow methodical processes; this would mean entrepreneurial cognition is a function of one’s innate characteristics

(Busenitz and Barney). Alternatively, others view entrepreneurial cognition as induced by experience: entrepreneurs are forced to take cognitive shortcuts as a response to information overload, high uncertainty, and the great time pressure associated with entrepreneurial pursuits; this would mean entrepreneurial cognition is a function of contextual factors (Baron).

More recent studies have blended these two views. Forbes (2005) showed that, interestingly enough, entrepreneurs are more susceptible to certain cognitive biases than are managers who are not entrepreneurs, especially with respect to the overconfidence bias (Forbes). Individual age, firm decision comprehensiveness, and external equity funding were all demonstrated to affect the degree to which entrepreneurs are overconfident (Forbes). Furthermore, founder-managers were shown to be more overconfident than new-venture managers who did not found their firms, and younger managers were more overconfident than older ones, simultaneously suggesting that individuals carry innate cognitive profiles and also that these profiles change over time in ways that may alter the overarching presence of entrepreneurial cognition. While these findings suggest that entrepreneurs may be more susceptible to flawed decisions based on an overconfidence bias, they also suggest that entrepreneurs' cognitive biases fluctuate with not only innate but also contextual factors, implying that interventions may improve decision-making capacity.

The Effects of Biases on Entrepreneur X

So how do these cognitive biases and heuristics—integral parts of our daily cognitive and decision-making processes—affect entrepreneurs? Let's consider each bias in the context of a theoretical Entrepreneur X. To set the scene, let us imagine that Entrepreneur X is a preeminent twenty-first-century innovator and entrepreneur, who, despite many achievements, is still subject to a host of innate biases.

Entrepreneur X, due to a combination of contextual and innate factors, may be particularly susceptible to the overconfidence bias. Entrepreneur X might think their sense of direction is much better than it actually is, that their likelihood of getting funding is greater than it actually is, and that their product or idea is more applicable or original than it actually is. While all of these thoughts may be essential for an entrepreneur intent on selling a product or promoting an idea, it may lead Entrepreneur X to not do enough market research, to overestimate funding opportunities, or to overvalue the role of a product in a particular space.

Entrepreneur X may also be susceptible to the illusion of control bias. While this feeling can drive individuals to take on more responsibility, it also leads to a false sense of power and control, which can prompt overambitious decisions and a myopic view of the market and the product line as the individual overestimates their own capabilities in predicting the outcome of a decision. This illusion of control may permeate into Entrepreneur X's personal and professional life, affecting X's ability to detangle themselves from their conception of the company at large. Entrepreneur X may

be sleeping on factory floors, working 120-hour weeks, and not leaving the factory for several days at a time, and while this indubitably demonstrates incredible dedication and commitment, it also indicates an overwhelmingly strong perception of control. This feeling of necessity, exacerbated by intelligence, past success, and the perception of the company as one's child inextricably link entrepreneur X to every component of the production process.

In addition, Entrepreneur X, having managed successful businesses and new product launches, may not only be familiar with the ins and outs of product management but also is likely to predict production end-times and schedule demands based on past experience. However, this predisposes Entrepreneur X to an anchoring and adjustment bias as X anchors predictions and estimates on past products, regardless of the similarity between the circumstances governing a new product launch and past conditions. For example, if Entrepreneur X previously launched three different medical devices for different mitral valve placements, Entrepreneur X is likely to anchor their production timeline of a new patent foramen ovale closure to those of past devices, making X susceptible to underestimating the time necessary to complete the myriad components of this unique product on schedule.

Similarly, the curse of knowledge bias may lead Entrepreneur X to overvalue their own opinions and predictions compared to those of perceived lesser intellect or experience, devaluing thoughts or opinions that may have challenged their own.

Furthermore, a confirmation bias might lead entrepreneurs to overvalue information in line with their preconceived notions and devalue information that challenges their visions. For example, in order to attract investors, Entrepreneur X may devalue, limit, or precisely clarify peer-reviewed research as a means of propping up their idea/invention. However, a lack of challenging information or research can lead to a downward spiral resulting in manufacturing, funding, or launch failure of the device.

Combatting Biases

So how do we harness the understanding of our biases and pitfalls for good, while minimizing the harm they can cause? Through awareness, collaboration and inquiry, and open discussion, entrepreneurs can control these innate biases (Taylor). The mere awareness of cognitive biases can reduce their impact and distortions in thought processes. A culture of collaboration and inquiry can also help challenge entrepreneurs to confront their biases and be aware of the impact biases are having on their decisions. Free and open discussion throughout development can broaden the lens through which entrepreneurs see the world and reduce myopic conceptions of how a product will be perceived or predictions of how the product production process will run.

Avoiding groupthink and encouraging dissenting opinions are especially powerful forces in mitigating the effects of cognitive bias. For example, confirmation biases can be combated by reminders and a team culture of openness, directness, and the deliberate challenging of consensus, with mentors who are able to objectively view the situation and argue the opposite point of view as an exercise. The curse of knowledge bias can be addressed through focus groups and meetings with different investment and management entities to explore the knowledgeability of those who will either use or sponsor the product (Harel).

In combating biases we can also draw from Tetlock and Gardner's "Ten Commandments for Aspiring Entrepreneurs" in their book, *Superforecasting: The Art and Science of Prediction*. "Triaging" is emphasized as being of the utmost importance. Although this is hard to apply in reality, in the context of entrepreneurial pursuits this essentially translates to not wasting mental energy attacking problems that are either predictable enough with simple rules or not directly applicable (Tetlock and Gardner). Striking the balance between inside and outside views, as mentioned above, may also play a crucial role in combating certain information biases. For example, approaching a question directly based on data from within the company research may be balanced by an external view on a broader range of investment decisions and product outcomes across multiple companies, markets, and timelines. Similarly, it is important to strike a balance between thoroughly looking at one's mistakes and maintaining awareness of rearview-mirror hindsight biases. Whether one experiences a successful prediction or a mistake, improvements are always necessary. However, as Tetlock suggests, a rigorous review focused only on results takes too long to make improvements (Brown). Only by breaking each decision down into subproblems is it possible to determine which predictions and business goals were reasonable approximations and which ones were not. One trap individuals may fall into in analyzing mistakes is the hindsight bias: underestimating the probability of novel extreme events but overestimating the probabilities of recent extreme events. However, it is important to realize that unless a decision was completely wrong, or unless a decision was completely right, there is always room for improvement.

Lastly, it is essential to be aware not only of the innate biases we face but also of some of our other most potent motivators, such as fear of loss (Hoffeld). Behavioral economics researchers have found that people are more motivated to not lose something than to gain an amount of equal value. We can leverage this power to combat procrastination. For example, make a bet with a friend that if a deadline is not reached, that friend is owed something, which thus harnesses a fear of loss to drive oneself to the finish line (Harel).

Obtaining Expert Counsel

As detailed above, awareness, collaboration, and the deliberate challenging of consensus can be powerful tools to mitigate the effects of innate biases. Employing outside consultants, design thinkers, and usability testing companies (userinput.io, precision research companies, etc.) may provide an academic entrepreneur with objective feedback that may keep biases in check. For example, in

app development, there are two types of usability testing that are particularly useful as feedback mechanisms. First, formative usability testing applies behavioral data analysis to application usage patterns. The insights gained are then used to craft a more intuitive and useful user interface. Similarly, summative usability testing evaluates an application by recording the quantitative measurements of various usage features, such as the time it takes for users to complete a certain task. These types of feedback form objective appraisals of core product functionality, helping to counteract developers' innate biases.

Focus groups may also provide a quick and easy way to discuss projects and brainstorm solutions to potential issues with potential customers. Scheduling such checks with focus groups, which are offered by a plethora of companies at a relatively low cost, consistently throughout important points in the production process can help to ensure not only that the product is up to the standards of the entrepreneur and instill investor confidence but also to maintain a consumer-centric focus throughout development. In addition, openness to peer-reviewed research, collaboration, and frank discussions with peers will facilitate conversations and reduce the possibility of groupthink. This includes feedback from grant applications, which can provide valuable insight into technical and business weaknesses. Also, working with mentors who are experienced entrepreneurs can be of tremendous value because it provides a reality check for novice entrepreneurs, who are more likely to have greater innate biases. Similarly, participating in virtual incubators or entrepreneurship symposiums may give insight and different perspectives on ideas, but also offer the opportunity to connect with and learn from other entrepreneurs following similar or unique paths. Feedback from pitches to investment/entrepreneurial forums and business plan competitions provides that same type of reality check. The I-Corps program and other programs that encourage entrepreneurs to meet with potential customers can also be an invaluable tool in providing reality checks that may run counter to the entrepreneur's innate biases (see the chapters "Resources at Academic Entrepreneurship Centers" and "I-Corps as a Tool to Accelerate Development").

Conclusion

While biases and heuristics are essential in day-to-day life, especially in positions in which we are challenged to make quick decisions under uncertain circumstances, they can often lead to inappropriate decisions and wreak havoc on our personal and professional lives. Entrepreneurs, like all other individuals, are subject to a host of biases—including overconfidence bias, illusion of control bias, anchoring and adjustment bias, confirmation bias, curse of knowledge bias, and optimism bias—that reduce their ability to objectively and optimally make fast and successful decisions under pressure. However, through awareness, collaboration, open discussion, and the deliberate challenging of consensus, entrepreneurs can mitigate these innate biases.

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