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Introduction

> There is something disturbingly paradoxical about a science that has for its subject the agent that creates the science.
>
> —ROGER SMITH, *THE NORTON HISTORY OF THE HUMAN SCIENCES*, 1997

THE DISCIPLINE of experimental cognitive psychology contains a powerful set of concepts and practices that play an active role both in research laboratories and in the daily lives of many people.[1] The discipline of experimental psychology propels our concepts of the mind and the person in particular directions. This book follows a series of ethnographic clues that show where the discipline came from and how it is implicated in digital media like Facebook and Twitter and corporate internet platforms like Amazon or Google.

At its beginning, my ethnographic research in psychology labs felt a bit misguided. I struggled to maintain my sense of purpose because my anthropology colleagues and friends were frequently mystified by my choice of subject. They found the topic of experimental psychology frankly boring, and when it evoked memories of introductory courses in psychology in college, they also found it old-fashioned and passé. Their reaction was not novel: more than one hundred years ago, William James spotted the beginning of experimental psychology in Germany and thought its large-scale, statistical methods would tax anyone's patience to the utmost. Scornfully, he imagined these psychological experiments would create tedium that could only be borne by Germans, since they were incapable of being bored.[2]

I was never bored, however, but rather gripped by a conviction that experimental psychology might be a powerful and sometimes unseen force in daily

life, one that is hidden beneath the latest digital technologies. My interest was validated when psychological experiments were, remarkably enough, the subject of a play at the Lincoln Center Festival in New York City. In 2017, I went to see the play *Opening Skinner's Box*, which was based on the book of that name by Lauren Slater. In the book and the play, Slater investigated each of ten "extraordinary" psychological experiments, as *Playbill* described them; it went on to refer to these experiments as "one way of telling the story of the twentieth century and the struggle to understand who we are and what we are really like as a species."[3] Slater interviewed some of the psychologists who conducted the experiments and people who were subjects in them, and she incorporated some of the interviews into the play script so they could be portrayed on stage.[4] The play asks the audience to contemplate the Zimbardo Stanford prison experiment (during which undergraduate subjects who were randomly assigned to the prison guard role became domineering and cruel to undergraduates who were randomly assigned the role of prisoner). Next, we learned about the Milgram shock experiment (many people followed orders from an insistent experimenter to inflict apparently dangerous electric shocks on someone else, even when doing so conflicted with their personal conscience). Finally, we came to the Festinger cognitive dissonance experiments. For these, subjects who agreed to express an opinion they actually did not hold would experience uncomfortable cognitive dissonance between their true opinion and the false one. They were given a monetary reward for tolerating this discomfort. But those subjects who thought the monetary reward for expressing a false opinion was insufficient compensation for their cognitive discomfort reduced their discomfort in another way: they adopted the formerly false opinion and came to believe it more strongly than their previous opinion. The conclusions were depressing enough: the human species is prey to delusion and false beliefs, and easily adopts cruel and even sadistic behaviors. In the play, however, the depiction of the original experiments themselves was more complex. Slater's interviews allowed us to hear subjects talking about what it was like to enact cruel or sadistic behavior or to find they had shown themselves to be illogical fools.

My Research Questions

Slater's play validated my research questions: What is it like to be a subject in a psychology experiment? What do experimenters assume about subjects? What is required of a good subject? What makes psychologists' descriptions

of the human psyche appealing to many Americans? I wondered whether answers to all these questions might place limits on the conclusion that the experiments reveal universal truths about humankind. The paradox that lies at the heart of experimental psychology is this: How can human experimenters produce objective results using data produced by other humans? If objective results must be stripped of any subjectivity, how can objective results be obtained when both experimenters and subjects are human beings, ordinarily awash in their own subjective perceptions and beliefs? What kind of constraints, rules, regulations, or training would be necessary for experimenters and their subjects to ensure that objective data could be produced by experiments with human subjects? Historians have shown in great detail that during the post–Second World War period, the cultural reception of research in psychology differed from today. Jill Morawski shows vividly how the penumbra of experimentation in the German concentration camps cast a troubling pall over post-war psychology experiments involving human subjects. There was anxiety that the authority of the scientist in the laboratory might share the grim features of a totalitarian state. There was also anxiety over whether the subjects in lab experiments were, as researchers hoped, "stable and interchangeable" participants in an enterprise in which they would earnestly play an honest role. There was worry that unruly subjects might trip up the experimenters by deliberately or unintentionally failing to follow instructions. Now, seventy years later, these anxieties have receded, with the help of technical refinements that allowed researchers to see subjects as "mostly rational and autonomous beings whose thoughts could be measured through appropriate experimental controls."[5]

But even in the absence of post–World War II anxieties, the experimenter-subject system is best considered part and parcel of a much wider social context. Graham Richards describes vividly how the psychological experiment is not only an isolated experimenter-subject system in the laboratory that emits results. Rather, the system is embedded in "circuitry" that connects the self-knowledge of the experimenter, the self-knowledge of the subject, and the social context in which psychological knowledge is produced and through which it circulates.[6] This is an opening for an anthropologist of science, if ever there was one! The psychological laboratory appears to be an isolated place, ensconced in a university research building, inhabited only by trained researchers or researchers-in-training, joined by subjects who are asked to perform specific tasks under carefully controlled conditions. But what if the apparent isolation of the lab is a mirage?

In *Cognition in Practice*, anthropologist Jean Lave showed that labs studying cognition, in particular the cognition involved in mathematical calculations, presumed they were located outside of society. From their isolated setting they sought to be the arbiters of how rational mathematical calculations were done. Lave investigated how people worked math problems outside of the lab and the school, while shopping in grocery stores or managing their money, and she found that they worked effectively with practical cognitive competencies that were not quite the same as the rational calculations studied in labs and taught in school. She argued that the isolation of the lab from everyday life impoverished both the lab's and the school's conception of how cognition works in ordinary social settings.[7] In my research, I did not often follow the subjects in experiments into their everyday lives, but I took seriously the possibility that the boundary between the experimental psychology lab and the wider society is porous and permeable, and I asked whether that permeability might even be necessary for the experimenter-subject system to operate.

Working with neuroscientists who use neuroimaging to understand how the human brain works, anthropologist Simon Cohn has shown the extent to which scientists need to develop personal, even intimate, relationships with their subjects in order to secure their cooperation. Only by enlisting subjects in a social relationship, even if briefly, do the researchers feel they can depend on the subjects to follow directions to the best of their ability. Strapped down uncomfortably in a dark, noisy scanner, subjects must nonetheless pay attention and follow directions in order to produce data the researchers can use. Before the subjects ever enter the scanner, researchers provide them with reassurance and sympathy and share personal experiences, creating a subjective alliance between researcher and subject. Although these tactics might influence the specific subjective experiences revealed in the scanner, they are carefully expunged from the experimental write-ups so that only the signals from subjects' brains in response to stimuli in the scanner come to light. This is thought to preserve the goal of objective results uncontaminated by subjectivity.[8]

Cohn and a number of other scholars who have focused on neuroscientific studies in cognitive science suggest that subjective experiences of participants are valuable in their own right and that they could be harvested with the right techniques and triangulated with data from brain scans and lab reports. They also describe the elaborate methods cognitive scientists use to cross-check what subjects report, methods that give them confidence that they can rely on non-scientist participants to produce trustworthy data.[9]

In the coming chapters, I will explore these questions in the laboratories of a different set of scientists; namely, experimental cognitive psychologists. Although I will build on insights gained from observers of research in neuroscience and cognitive science, there are several reasons I thought experimental cognitive psychology needed a closer look. First, it is part of a discipline, psychology, that traces its origin to the late nineteenth century, when it was closely allied with early anthropology. This invites the question of how psychology became a distinct discipline from anthropology. Second, unlike anthropology, this discipline generally aims to determine what "normal" and "universal" human psychology looks like.[10] Although one of the labs in my research draws on subjects who have had brain injuries, and whose cognitive responses are therefore different from the norm, the point of experiments even there is to shed light on what constitutes normal cognitive processes, taking advantage of a kind of "natural experiment." One of the reasons that the underpinnings of this science have spread so far from the laboratory, into many domains of daily life, is that lab science is devoted to describing what are considered to be normal cognitive processes, not abnormal ones. Third, these labs are not predominately interested in medical problems. So, although I am indebted to studies of the use of brain imaging technologies for medical purposes, such as Barry Saunders' *CT Suite*, this book opens an inquiry into what goes on when the goal is to describe the cognition that most humans share when they are functioning normally.[11]

Delving into the basic methods of a venerable old science allows me to explore the deep grammar of the experimental method as it is applied to human psychology. Readers will see how this knowledge has permeated many spheres of ordinary life, and how, with the rise of social and digital media, large numbers of people are participating in psychology experiments—whether they realize it or not—in the course of daily life. Nicholas Rose once commented that psychology is a "generous" discipline, offering its methods for ready use by governments, corporations, medicine, the military, and others.[12] What readers will learn from this book is how the key elements of the experimental method in psychology have been set free from both the discipline and the laboratory and are now walking about gathering data from many people in their ordinary lives. More often than not the data thus gathered enable the formation of new kinds of commodities, for better or worse: apps we can buy to monitor our health, algorithms corporations can buy to predict our purchases. The experiment-subject system is no longer limited to the laboratory; it goes about its business collecting data in broad daylight, reports its findings

in the news media, and informs the design of instruments to collect more data. This is an instance of new wine in old bottles. To understand the potential and the limitations of the new wine, we need to understand the constraints provided by the old bottles.

There is a compelling need to understand the quotidian basics of psychological research: "data," "experiment," the "normal," "statistical significance," the "subject." Only in this way can you and I learn the full implications of what we are being asked to do when we complete a fun questionnaire on Facebook or Google, or report our level of satisfaction with the job performance of a waiter, a delivery person, a doctor, a hairdresser, or a teacher. Only in this way can we understand how the "data" that are collected in this way do not disappear but return in other forms to profoundly affect our daily lives. It is these fundamental concepts and practices that need to be illuminated, since the data, the norms, and the statistical operations in these contexts do not depend on the latest brain scanning technologies but nonetheless have a potent effect on our lives. My goal is to show how they work in the laboratory setting, with all their strengths and limitations, so we can better assess what we *can* learn from them and what we *cannot*. Experimental cognitive psychology is a kind of engine for producing psychological knowledge. The workings of that engine ride abroad among us.

Consider one small example of how the techniques used in psychology research laboratories have escaped the lab and are now out in the public, beckoning people to participate. Suppose you read an article online about how we think about aging.[13] In the article you discover that there is something called "implicit bias" that psychologists study. If you were to Google the term, you would find an inviting website offering findings from studies of implicit bias: not surprisingly, there is an implicit bias against older people compared to younger people. In an effort to decrease the stigma of aging, a group of older adults were told that their performance on a memory test was above average for their age group. This intervention, called a "prime" or induction, actually led the older adults to perform better, according to data gathered from subsequent memory tests. All the elements of a standard experimental setup in psychology are present here: the *recruitment* of volunteers to participate as *subjects*, a *sample* of participants sharing a characteristic (being older), a "*prime*" devised to produce a certain effect, measurement of reaction time as the criteria of cognitive activity, and collection of *data* in numeric form. As consumers of this news story, we are encouraged to accept that the findings of this experiment are enlightening with respect to human cognition and social

attitudes. We are *not* encouraged to question whether the method is a good way to reach conclusions about human behavior, or whether we should rely on data of this kind as an accurate description of what people think. Even more alarmingly, we are invited to join the enterprise of producing this kind of data. Any number of links from the article lead to the "implicit bias" site, where you can add your own data to the project.[14] This is a circle in which the terms of knowledge are set by standard techniques in psychology, and then the base of knowledge is increased by participants who accept those terms without questioning them. This book aims to interrupt that circle, not by claiming the techniques are wrong, but by identifying them and putting them in a broader context.

The Deep Penetration of Experimental Psychology into Daily Life

Immersion in the field of psychology has made me curious, and a little envious, about the extent to which the results of research in experimental psychology occupy a prominent place in the media compared to my own field of cultural anthropology. A Google Trends report of worldwide searches during the past year (November 2019 to November 2020) found there were more than eight times as many searches on psychology as there were on anthropology. Major scientific journals and news media frequently publish articles based on experimental psychology, claiming, for example, that storytelling is a "human universal" that played an important role in human evolution.[15] This latter idea was put forth by Daniel Kahneman and Amos Tversky, who described the "heuristics" of human decision making with simple but elegant experiments and won a Nobel prize.[16] Major media journalists like *The New York Times*' David Brooks quote psychological research, claiming that "our minds evolved for tribal warfare and us/them thinking."[17] Almost any cultural anthropologist would cringe at these claims because they are uncomfortably close to a simplistic version of Darwinian evolution. I always thought "storytelling" and "tribal warfare" were specialties of cultural anthropology! Of course, the obvious reasons for psychology's popularity are that it is a large field with a long history, and that it holds a firmly established role in high school and college education, not least because of its conformity with standard experimental scientific practices. In the United States it also has the federal funding to support this prominent role. Practically speaking, psychology was more useful to

US government interests during the world wars and the Cold War than anthropology could have ever dreamed of being. In the same vein, surely some of the continuing popularity of psychology in the media might be its ability to give practical advice on a host of everyday problems and dilemmas: how to give a good gift or how to build a healthy relationship.[18]

Of course, popularity in media does not tell the whole story. One critic, Amanda Anderson, a scholar of literature, notes that while current experimental cognitive psychological research is "gleefully embraced in the media," the field carries with it an impoverished view of human moral capacities, of how people reflect on which ideals and values are worth caring about and aiming for, which actions are meaningful and why, and which actions cause regret and sorrow. Cognitive psychology "falls short precisely when it comes to the more existential or meaning-laden realms of life."[19] Anderson argues that because the experiment in psychology is confined to a "punctual" kind of time, it cannot "adequately capture basic elements of human experience that condition the textures and forms of our moral lives and our commitments to moral reflection."[20] Such meaning-laden processes require "slow time," which is precisely what "most experiment formats simply cannot capture."[21] In this book we will meet the "punctual" time of the experiment, which in my fieldwork was called "brief reaction time," and we will come to understand its essential place in the experimental regimen. But we will also come to recognize that *laboratory* life in psychology does indeed involve slow time, time that allows social obligations and moral values to come to the fore.

Before I began this research, there was already a large secondary literature about psychology, both American and European. That literature ranges over the many subfields of psychology: clinical, applied, social, developmental, forensic, industrial, and so on. I want to stress that my fieldwork focused only on one subfield: American experimental cognitive psychology. I did dip my toe into experimental social psychology by volunteering as a subject in studies of emotion, but this was an introductory phase, before I was able to establish long-term field sites in experimental cognitive psychology labs. These labs focus on the study of cognitive activities like learning, remembering, or paying attention, using experimental methods with human subjects. Thus, my primary claims in this book are about experimental cognitive psychology in the United States, rather than any other subfields of the discipline or any other countries where psychological research is done.[22] This caveat is important because of the distinctiveness of psychology's subfields. Their distinctiveness was brought home to me when I asked about the "replication crisis." Over

recent years there has been a storm of claims and counterclaims about whether experiments in social psychology in particular are statistically robust enough to be scientifically valid. A key concern in this debate is whether experimental findings can be confirmed when experiments are repeated. This matters because replicability is an essential criterion for the validity of a scientific finding.[23] I was aware of this controversy during my fieldwork, but none of my interlocutors were concerned by it, and they assured me that experimental psychology, unlike social psychology, had been shown to have acceptable replication rates.[24]

Invidious Practices

This book is constructed as a conversation between me, as a cultural anthropologist using the method of participant-observation, and my psychologist interlocutors, using their method of the experiment. Both of our disciplines have inherited a legacy of racism, classism, and sexism, not least because the founders of both fields were white, Euro-American men from the educated classes. More broadly, they were also imbued with the value of rationality inherited from the Enlightenment and with the notions of superiority that form the basis of colonialism. In previous centuries, some practitioners in both disciplines adopted overtly racist and sexist paradigms that were common in their time.[25] In the more recent past, both of our fields have been responsible for egregious harm, conducting research or sharing the results of research in ways that contravened accepted professional ethical standards.

Both fields have benefited from the introduction of the Institutional Review Board, which is required to vet research proposals in any institution that receives federal funds. The IRB, as it is known, is a committee of faculty, administrators, and community members that applies federal standards of ethics meant to preserve the well-being of research participants and subjects. Researchers (including anthropologists) must gain the approval of their research projects from the IRB before beginning research. The oversight of the IRB, which began in 1974, has had the effect of reducing the kind of harm that some earlier experiments may have caused to participants.[26]

Today, both disciplines are part of the academic world, which is still dominated by white Euro-American men, however much progress has been made to diversify the academy and these disciplines in particular.[27] Invidious distinctions are not necessarily the choice of anyone in these fields, but nonetheless they are in the air we breathe and cannot be ignored. Graham Richards

put it well: "Psychology as a discipline is a product of the 'psychologies' of those within it. The psychological knowledge it produces directly articulates and expresses the psychological character of the psychologists producing it—their ways of thinking, their priorities, attitudes, values, and so on."[28] The same could be said of anthropology and anthropologists.

To counteract the dominance of white, Euro-American men in these disciplines, scholars can do several things. They can attend to ongoing work in both disciplines that focuses on the mechanisms behind discrimination based on race, gender, or sexuality.[29] They can look to responses from post-colonial writers, who see things in distinctly different ways; they can also look toward a day when the makeup of academic disciplines will be more diverse in terms of race, gender, and class.[30] Many of us would welcome that new world. Even if such changes were to be immediate and thorough, newcomers would find these disciplines built on methods and technologies they did not invent. What would happen then is unknown, but we can say for sure that if the world were otherwise and the practitioners of psychology or anthropology had been mostly women, or mostly Black Americans, for example, they would have asked different questions and developed methods that are different from the ones we have now.

In the past, practitioners in both fields have also run afoul of their own discipline's current ethical guidelines. Both anthropology and psychology played a part in nineteenth- and early twentieth-century eugenics.[31] Both have played unsavory roles in global wars and conflicts. For anthropology's part, during the Cold War, ethnographic research was deeply implicated in projects undertaken by the CIA and the Pentagon, and after 9/11 some anthropologists participated in the US military's Human Terrain project. The military intended to place ethnographers in areas where they would understand the local language and customs and could further the efforts of anti-terrorist military action.[32] For psychology's part, some experiments conducted before the guidelines of the IRB, such as those depicted in Slater's play, may have caused more harm than benefit to their subjects. More recently, the American Psychological Association reiterated its position restricting psychologists from participating in detainee interrogations, such as those that led to the torture of prisoners in Guantanamo Bay.[33]

Both disciplines include watchful scholars who identify sites of unethical research. In anthropology, critical studies are pervasive, covering the discipline's involvement in Cold War military engagements and its involvement in structural racism, colonialism, and gender discrimination.[34] Within

psychology, "critical psychology" is virtually its own subfield, and sometimes forms a separate program in psychology departments.[35] Critical psychology examines the political aspects of the field's assumptions with the goal of illuminating and challenging its effects on groups who are relatively marginalized by virtue of their race, gender, disability, or access to material resources.

Road Map

In the following chapters, we will hear from the key psychologists in the labs I studied, and from their graduate students. Personal sketches of these key interlocutors appear in the section entitled Dramatis Personae. To anticipate a terminological issue, in recent years, out of concern for giving people who participate in psychology experiments more respect, the term research "participant" has been used instead of "subject." Indeed, some journals now require the term "participant." Since tradition lies with the term "subject," and both terms are acceptable according to the *Publication Manual of the American Psychological Association*, I will use them interchangeably.

All of my fieldwork was conversational, taking place during face-to-face meetings between me and the psychologists or subjects, or in the course of an experiment they had designed. I was motivated by anthropologist Stefan Helmreich's question: "How different are contemporary cultural anthropologists' notions of culture and those of practicing scientists? And what happens when these notions encounter one another?"[36] My interlocutors were usually way ahead of me in describing the significance of their goals and methods. I have chosen to lay out the path of their instruction and my learning (or failing to learn) with only occasional guidance from me as all-seeing narrator. My interlocutors are by far the most reliable narrators of what graduate student Ulla called "life in psychology." To honor the large role they had in my research, I have formatted quotes from interviews and conversations as dialogues with quotation marks, when they are part of a conversation where multiple speakers are being quoted.

In a preliminary chapter 1, I describe how I began this project and some of the hurdles I faced. In a historical chapter 2, I turn back in time to the late nineteenth and early twentieth century, to explore how, during the dawning years of the discipline of experimental psychology, anthropologists also used psychology's methods and technologies, relying on archival material and the work of historians. Readers who are experimental psychologists are hereby

forgiven for skipping this historical chapter and moving directly to the ethnographic material in chapters 3–9.

In the ethnographic chapters, I will draw from my long-term observations of experimental psychologists at work in their labs, by paying attention to the exact words they said and specific actions they took, which allowed them to carry out experiments. Since these labs were all composed of both a senior faculty member and his or her graduate and undergraduate students, everyone was endeavoring to teach at every moment. Senior faculty were instructing students; advanced students were instructing beginning students. I inserted myself in these labs as an unusual kind of student, a senior in faculty status but a novice in knowledge of experimental cognitive psychology. In the coming narrative, I occupy the role of a student who is being instructed by mentors. Since the answers to my research questions were often given explicitly by my mentors, I have stayed close to their words and actions. This way of narrating the story has an important advantage: since my interlocutors allowed me to observe their work only on the condition that I would not "make them look bad," putting myself in the position of a bumbling and insecure novice (which I was), allowed *me* rather than *them* to "look bad." As a result, the manuscript itself became a written record of what the psychologists taught me and what I learned. To my surprise, all of my main interlocutors read the manuscript in draft form and returned it to me with many pages of editorial changes to consider, paragraphs to insert, new resources to consult, and mistakes to correct. Since one of the main answers to my research questions involves the striking finding that although the field of experimental cognitive psychology focuses on the *individual*, and presumably autonomous, subject and produces results that shed light on *individual* psychology, the process of this research is intensely social. I experienced the generous responses my interlocutors gave to my manuscript as further proof of the socially engaged and collaborative nature of the field.

Finally, I consider social and digital media in chapters 10 and 11. In Chapter 10, I discuss other sciences that are also dependent on psychology—ergonomics and user friendly design—as background to the connections between experimental psychology and social/digital media I present in chapter 11. The results from these scientific fields infiltrate our daily lives in large and small ways, affecting many objects from the keys on computer keyboards to the arrangements of seats on jumbo aircraft. I introduce the "playbook" of practices from experimental psychology that underlies such designs.

In chapter 11, I show how the methods of experimental psychology have recently been redeployed in social and digital media. Amplified and enhanced in power by vast troves of data and the powerful new statistical tools of machine learning, a model of human psychology abounds, one in which numerical data is paired with trained algorithms that can be asked to manipulate and predict. This new wine in old bottles needs all the scrutiny we can provide!

Psychological research was used to design Facebook and Twitter: the way it is deployed there to manipulate users has spread to other internet platforms including Amazon and Google. Ironically, the big data fueling the algorithms that predict and influence behavior has been provided by—users! How did it become so normal, even pleasurable, for millions of people across the globe to fill out questionnaires about their personal likes and dislikes, hopes and wishes? What makes people tolerate or even enjoy answering questions that anonymous others have created, fueling an internet with data that can be readily exploited and used to surveil us and to predict our behavior? In other words, as Tom Boellsdorff asks: Why do "so many find surveillance acceptable and even pleasurable"?[37] Importantly, the minds and bodies of the public have been trained and disciplined in accord with one specific disciplinary tool kit: the pervasive templates based on the experimental model created by experimental psychology.

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