

PETER BRADLEY

# DEFINING THE MIND

The Struggle for Legitimacy in Psychiatry and Psychology in the  
1970s



# I Game Book



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# *1 Introducing The Game*

This game highlights the intellectual conflicts that changed American psychiatry and psychology in the early 1970s.

It might seem a little odd, in a Reacting game, to be exploring relatively recent events. While there will be no executions, ostracisms or civil wars in this game, the intellectual stakes are no less high. What you know of Psychiatry and Psychology today—the social significance of the American Psychiatric Association's *Diagnostic and Statistical Manual* (DSM), the use of psychopharmaceuticals for 'everyday' life (such as Ritalin, Adderall and anti-depressants), and the theoretically pluralistic basis of Psychology departments (behaviorism, cognitivism)—originate in this time period, in this conflict.

During the course of this game, your class will be an academic association called the 'APA.' You will be responsible for determining what conditions shall be labeled 'mental illness', and what evidence shall be required for distinguishing different diagnoses. Actual game play consists of organizing annual conferences, where the nation's psychiatrists and psychologists meet to share their research and conduct association business. A single conference takes 1 week of 'real time.' Each weekend of real time then, represents an entire year in game play time. According to your specific role, you may be presenting papers, participating in a symposium, serving on a committee, or even running for one.

Players will join committees with different responsibilities, such as scheduling each conference and determining who will present papers on what subjects, who gets resources to conduct experiments, and who gets to rewrite the DSM. The schedule for the first annual conference is already set: you can review it on p. Schedule of Game Sessions subsubsection 3.7 on p. 114 . Pay careful attention to the schedule of submission and review detailed by the conference committee. If your role sheet requires that you present your research at the conference, you must get your proposal to the conference committee on time. There is a detailed description of the form required for proposals provided in Schedule of Game Sessions subsubsection 3.6 on p. 109.

### 1.1 Playing a Psychologist or Psychiatrist in the 1970s.

In 1974, the vast majority of psychiatrists would have been trained in the psychoanalytic tradition of Freud and Jung. In psychology, the vast majority would have been trained as behaviorists.

Each camp believed that they alone had a monopoly of the scientific study of the mind, and the other traded in pseudoscience. During the 1970s, crystallizing around the demedicalization of homosexuality, this all began to change.

In this game, we ask you to put aside what you know about modern psychology and psychiatry, and put yourself in the shoes of a died-in-the-wool psychoanalyst or hard-nosed behaviorist. We'll get to what that means later in the game book, but if you just can't wait, check out the introduction to psychoanalysis and behaviorism in section 4.2.

#### *Context: the role of Psychology and Psychiatry in American Political Life*

In 1964, a magazine called *Fact* asked 12,000 psychiatrists if they would be willing to diagnose conservative presidential candidate Barry Goldwater.<sup>1</sup> Of the more than 2000 that responded 1,189 responded that he appeared to have a 'personality disorder'—that slippery category between psychosis and neurosis. The headline proclaimed (under the magazine's title 'fact:') that "1,189 Psychiatrists Say Goldwater Is Psychologically Unfit To Be President!"

You may recall that the US Supreme court decided in 1973 that abortion was covered by the constitutional dictate to a right to privacy, thereby blocking all laws that had kept abortion illegal.

Before that decision, which we all know as 'Roe v. Wade', the American Psychiatric Association declared in 1967:

The emotional consequences of unwanted pregnancy on parents and their offspring may lead to long-standing life distress and disability, and the children of unwanted pregnancies are at high risk for abuse, neglect, mental illness, and deprivation of the quality of life. Pregnancy that results from undue coercion, rape, or incest creates even greater potential distress or disability in the child and the parents. The adolescent most vulnerable to early pregnancy is the product of adverse sociocultural conditions involving poverty, discrimination, and family disorganization, and statistics indicate that the resulting pregnancy is laden with medical complications which threaten the well-being of mother and fetus. The delivery that ensues from teenage pregnancy is prone to prematurity and major threats to the health of mother and child, and the resulting newborns have a higher percentage of birth defects, developmental difficulties, and a poorer life and health expectancy than the average for our society. Such children are often not released for adoption and thus get caught in the web of foster care and welfare



Figure 1.1: Screenshot of 'Daisy ad', Lyndon B Johnson's 1964 Presidential campaign [Public domain] From Wikimedia (<https://upload.wikimedia.org/wikipedia/commons/b/bd/Commercial-LBJ1964ElectionAdDaisyGirl.jpg>). The ad watches the little girl count down from 10 to 8, at which point the voice changes to a launch countdown ending in a nuclear explosion.

<sup>1</sup> You may recall that the 1964 election witnessed Johnson's famous 'Daisy' ad, which suggested that the election of Barry Goldwater would lead to nuclear annihilation. For a brief history see Pinsker, H. (2007). "Goldwater Rule' History", *Psychiatric News*, 42 (15), p. 33 (<http://pn.psychiatryonline.org/content/42/15/33.full>)

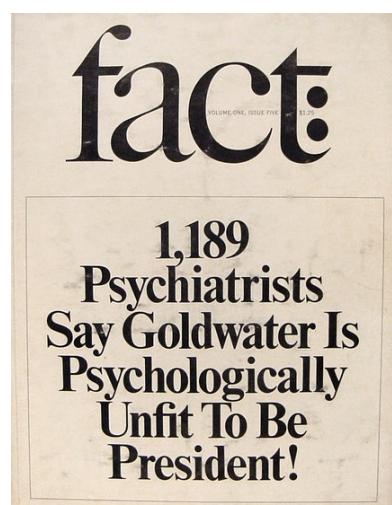


Figure 1.2: Cover of Fact magazine, 1964. From Wikimedia commons.

systems, possibly entering lifetimes of dependency and costly social interventions. The tendency of this pattern to pass from generation to generation is very marked and thus serves to perpetuate a cycle of social and educational failure, mental and physical illness, and serious delinquency.

Because of these considerations, and in the interest of public welfare, the American Psychiatric Association

- 1) opposes all constitutional amendments, legislation, and regulations curtailing family planning and abortion services to any segment of the population;
- 2) reaffirms its position that abortion is a medical procedure in which physicians should respect the patient's right to freedom of choice - psychiatrists may be called on as consultants to the patient or physician in those cases in which the patient or physician requests such consultation to expand mutual appreciation of motivation and consequences; and
- 3) affirms that the freedom to act to interrupt pregnancy must be considered a mental health imperative with major social and mental health implications.<sup>2</sup> ("Position Statement on Abortion" 1967)

And the American Psychological Association followed in 1969 with their public proclamation, citing lack of evidence to the contrary that:

**WHEREAS** in many state legislature, bills have recently been introduced for the purpose of repealing or drastically modifying the existing criminal codes with respect to the termination of unwanted pregnancies;

and **WHEREAS**, termination of unwanted pregnancies is clearly a mental health and child welfare issue, and a legitimate concern of APA;

**BE IT RESOLVED** that termination of pregnancy be considered a civil right of the pregnant woman, to be handled as other medical and surgical procedures in consultation with her physician, and to be considered legal if performed by a licensed physician in a licensed medical facility.<sup>3</sup>

**NEEDLESS TO SAY**, not only were these political events hugely controversial in the United States, the professional involvement of psychiatrists and psychologists was *itself* hugely controversial.<sup>4</sup>

The 'Goldwater affair', as it became to be known, embarrassed Psychiatry as a whole, painting the entire discipline as either politically motivated and unreliable.<sup>5</sup> And the declarations regarding abortion were widely seen as unmotivated by scientific evidence.

To this day, academic organizations have a reputation of bias toward liberal political parties. The contemporary conservative movement, prior to Donald Trump, traces its origin to Goldwater's failed presidential bid. It is therefore unsurprising that conservative groups harbor suspicion of academics and academic associations.

<sup>2</sup> Available at <http://www.psych.org/Departments/EDU/Library/APAOOfficialDocumentsandRelated/PositionStatements/197703.aspx>

<sup>3</sup> Available at <http://www.apa.org/about/policy/archive.aspx>

<sup>4</sup> Unlike many other professional organizations of the late 19th century, the APA immediately granted membership to women: specifically the eminent experimental psychophysicist Christine Ladd-Franklin and Margaret Washburn in 1894, two years after its founding. Mary Whiton Calkins was the first woman elected the first president in 1905. At the same time, the famous psychologist Edward Titchener created a separate organization called the "Experimentalists" in 1904, from which he explicitly barred women. Christine Ladd-Franklin engaged in high profile war of words with Titchener until his death in 1925. Unfortunately, many people misremember this conflict as happening in the APA, which is incorrect. Also unfortunately, Titchener's student E.G. Boring wrote the most famous history of experimental psychology, in which he attacks Christine Ladd-Franklin as 'invading' laboratories and 'the women graduate students manicure her fingers' in the laboratory. (see "Women Scientists in America" 1982, p. 390)

<sup>5</sup> 'Unreliable' should be read here in the technical sense—the same individual would not be classified the same way by a different analysts.

## 1.2 *Prologue*

Your cab pulls up in front of the Shoreham hotel in Rock Creek Park, a particularly tranquil part of the chaos that is Washington D.C. You nervously check the entrance to the hotel. It's clear. This year, there are no throngs of protesters bent on face-to-face confrontation.

They must be down at the National Mall participating in the massive protest that followed the shootings of 4 students at Kent State University in Ohio. The radio reported an estimated crowd of at least 50,000. And that's before the 10,000 National Guardsmen were called into try to open the flow of traffic.



The story was not the same last year, in San Francisco.

When you arrived at the hotel last year, the entrance was completely blocked by an angry crowd of gay rights activists. Individuals in the crowd were personally confronting—non-violently but aggressively—any member of the APA who appeared. The activists called this 'Zapping.' You found it terrifying.

Last year's conference was almost shut down by the protesters. There are rumors that the FBI was in attendance last year, and it is almost certain that they are here now. The Washington Post covered the event thusly:

The Washington Post May 14th 1970 – The gay liberation and their women allies out-shrieked the head shrinkers today and took over an American Psychiatric Association session on sex. Before the morning was over the 500 psychiatrists who gathered to hear scientific studies on sexual problems demonstrated that they were just as prone to anti-social

Figure 1.3: Anti-war demonstrators raise their hands toward the White House as they protest the shootings at Kent State University and the U.S. incursion into Cambodia, on May 9, 1970. (AP Photo) Read more: <https://www.smithsonianmag.com/history/suffrage-civil-rights-war-and-puppets-when-and-why-americans-have-marched-washington-180961809/#cbCeZAVQYt2J8LRd.99>  
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behaviour as anyone else. ‘This lack of discipline is disgusting’, said Dr Leo Alexander, a psychiatrist at the meeting. Then he diagnosed the problem of one of the lesbian protesters: ‘She’s a paranoid fool,’ the doctor said, ‘and a stupid bitch.’<sup>6</sup>

The conference was a circus. Young men dressed in flamboyant gowns stormed through the hallways. Sessions were disrupted by guerrilla theater. In one, an activist named Frank Kameny grabbed the microphone and shouted “Psychiatry is the enemy incarnate. Psychiatry has waged a relentless war of extermination against us. You may take this as a declaration of war against you.”

It all culminated in a session featuring Irving Bieber, author of the 1962 study on homosexuality published in his book *Homosexuality*.

According to eye witnesses, a protester interrupted Bieber almost before he started with the claim that “I’ve read your book Dr. Bieber, and if that book talked about black people the way it talks about homosexuals, you’d be drawn and quartered, and you’d deserve it!”<sup>7</sup>

Bieber tried to respond by claiming “I never said homosexuals were sick—what I said was that they had displaced sexual adjustment.”

“That’s the same thing, *motherfucker!*” yelled another.

A handful of gay activists interrupted a talk by noted Psychiatrist from Columbia University Charles Socarides at a meeting of the New York branch of the APA just a few months ago.

THERE HAVE LONG BEEN RUMORS of a shadow organization of homosexual psychiatrists called the ‘Gay-PA.’ It appears these rumors are no longer in doubt. The highlight of this year’s program promises to be a symposium titled “Psychiatry: Friend or Foe to Homosexuals: A Dialogue.” The panel includes Dr. Evelyn Hooker, one of the participants in last year’s protests and the mysterious ‘Dr. H. Anonymous,’ who claims to be both a licensed psychiatrist and homosexual.

Everyone knows that a mentally ill person cannot practice psychiatry. And homosexuality is classified as a mental illness. This Dr. H. Anonymous, if he or she is telling the truth, is risking his or her medical license. But yet there must be more. We all know, ever since Kinsey’s famous study, that about 10% of the population identifies as primarily homosexual, while a significantly larger percentage have engaged in homosexual activity. And ever since Hooker’s paper in 1956, we know that most of this population are psychologically normal. Given the numbers attending this meeting, Dr. H. Anonymous surely can’t be alone.

On the other hand, Socarides and Bieber have called Hooker and Kinsey’s data into question. If they are correct, and only a small percentage of the population is homosexual, on what basis could one call it a ‘normal’ behavior? After all, ‘normal’ is a statistical concept and

<sup>6</sup> This is excerpted from a real article in the Washington Post.

<sup>7</sup> Clendinen and Nagourney 2013, p. 200-201

should represent the distribution of behaviors across the population. Or, maybe, we should talking about the ‘ideal’ behavior. As Doctors, we aim at a concept of ‘healthy’ that does reflects and ideal, rather than a statistical distribution, right?

Are homosexuals, as Bieber contends, individuals whose “heterosexual function is crippled, like the legs of a polio victim”?

BACK IN OCTOBER OF 1969, *Time* magazine had a cover story on the movement amongst homosexuals—who they called ‘inverts’<sup>8</sup>—for greater social recognition. In the second paragraph, it referred to “‘gay’ bars” (with the quotations), but later in the same article used the word “‘gay’ without quotes.<sup>9</sup> It even used the term ‘gay marriage.’ The article, however, made the following claim:

Most experts agree that a child will not become a homosexual unless he undergoes many emotionally disturbing experiences during the course of several years. A boy who likes dolls or engages in occasional homosexual experiments is not necessarily “queer”: such activities are often a normal part of growing up. On the other hand, a child who becomes preoccupied with such interests or is constantly ill at ease with the opposite sex obviously needs some form of psychiatric counseling. While only about one-third of confirmed adult inverts can be helped to change, therapists agree that a much larger number of “prehomosexual” children can be treated successfully

Who are these ‘experts’? Is Psychiatry headed to another embarrassment like the Goldwater affair?<sup>10</sup>

These thoughts raise a larger specter in your mind: are psychiatry and psychology *scientific*?

Starting a decade ago, Thomas Szasz, Professor of Psychiatry at State University of New York Health Science Center in Syracuse, New York has been arguing, quite publicly, that ‘mental illness’ is a myth! His ideas challenge the foundations of your field. He is listed on the Conference program, and you’re quite excited to get a chance to discuss his polemic claims in some detail.

At the same time, George Miller, who is serving as the President of the APA this year, is something of a revolutionary himself. Miller has been arguing for the existence of something called ‘Cognitive Psychology’, which directly challenges the 50-year tradition of limiting psychological research to the observation, prediction and control of behavior. For half a century, psychologists have been convinced that they cannot scientifically investigate unobservable entities like ‘beliefs’, ‘desires’, ‘personalities’ and ‘minds’, but rather must study only the behavior of an organism in its environment. Now even that is being challenged!

Are psychology and psychiatry scientific? Is there such a thing as a

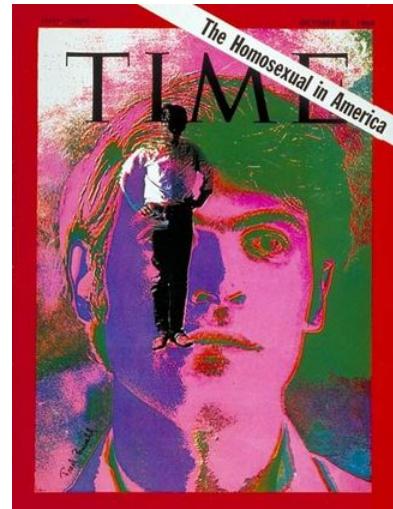


Figure 1.4: Cover of Time Magazine, Oct 31st, 1969

<sup>8</sup> You can read the entire article here: <http://www.time.com/time/printout/0,8816,839116,00.html>

<sup>9</sup> The use of the term ‘gay’ as a synonym for male homosexuality is usually attributed to this publication. Frank Kameny started using the slogan ‘gay is good’ before this time, but this was the first main-stream press usage.

<sup>10</sup> In 1964, the magazine *Fact* ran a headline proclaiming that a majority of psychiatrists believed presidential candidate Barry Goldwater mentally unstable. See Context: the role of Psychology and Psychiatry in American Political Life subsection 1.1 on p. 12 for more.

'mental illness'? Can (or should) science be used to make the world a better place?

### 1.3 Counterfactuals

In reality there are two distinct associations named 'APA.' The American Psychiatric Association, which is composed of Medical Doctors who practice Psychiatry, maintains the DSM. The American Psychological Association, which is composed of academics (PhDs) who study the mind in a variety of ways, does not.

In this game, I have conflated the two, which is significant transgression according to both sides of the divide.<sup>11</sup>

If you are interested in studying these events in closer detail, each one of our characters correspond to a real person or persons. Your game master should have further information and references for these figures in the instructor's manual. Those with MDs are members of the American Psychiatric Association, while characters with PhDs are members of the American Psychological Association.

For the most part, the historical events with which a character interacts occurred under the umbrella of their respective organization.

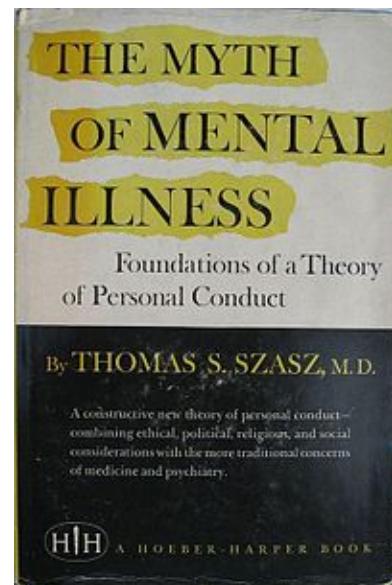


Figure 1.5: Cover of the 1961 Hoeber-Harper edition of the Myth of Mental Illness, believed to be the first edition, from Wikimedia: [https://en.wikipedia.org/wiki/File:The\\_Myth\\_of\\_Mental\\_Illness\\_\(1961\\_Hoeber-Harper\\_edition\).jpg](https://en.wikipedia.org/wiki/File:The_Myth_of_Mental_Illness_(1961_Hoeber-Harper_edition).jpg)

<sup>11</sup> The American Psychology Association produces a list of educational objectives that are necessary for a Undergraduate Major in Psychology. The first goal "Knowledge Base in Psychology" includes "Identify other fields other than psychology that address behavioral concerns." Of the eight standard *Introduction to Psychology* textbooks I reviewed<sup>1</sup>, three ( Myers and DeWall 2015, Hockenbury, Nolan, and Hockenbury 2014 and Zimbardo, Johnson, and McCann 2012) mention 'Psychiatry' in this context, ranging from a single sentence ( Myers and DeWall 2015) to a paragraph ( Zimbardo, Johnson, and McCann 2012)—albeit to distinguish Psychiatry from Psychology. Three texts ( Gazzaniga 2018, Cervone and Caldwell 2015 and Cacioppo and Freberg 2018) mention 'Psychiatry' in later sections where they compare careers in Psychology, and two ( Lilienfeld et al. 2014, Rathus 2012) fail to mention it at all, at least according to the Index. See the Instructor's Manual for the full list.



## 2 Historical Background

The study of the mind can be traced back to the very foundations of Western civilization in Ancient Greece. For the purposes of this game, we are going to confine ourselves to the era of ‘scientific’ study of the mind, both in a medical and research context. All historical events prior to 1974 are listed here in a time line, for ease of reference.

### 2.1 Timeline of events relevant to game play

Major ‘eras’ are separated for ease of reference.

Year	Event
1792	Philippe Pinel appointed physician at the Bicêtre hospital in Paris Foundation in Empiricism: Philipe Pinel subsubsection 2.4 on p. 55
1794	Pinel appointed chief physician of the Hôpital de la Salpêtrière
1801	Pinel publishes <i>A Treatise on Insanity</i> , with his 4-fold classification of mental illness (translated in English in 1806) Pinel, Philippe. “A Treatise on Insanity”, 1806 section A on p. 205
1805	Esquirol published <i>Mental Maladies</i> , with a 5-fold classification of mental illness Mental Alienation - Esquirol subsubsection 2.4 on p. 59
1812	George Boole published <i>The Laws of Thought</i> Concurrent developments: Logic and Computing subsection 2.2 on p. 45
1825	Popular wave of ‘homocidal monomania’, inspiring (among others) Dostovesky’s <i>Crime and Punishment</i>
<hr/>	
<b>Empiricism in psychology</b>	
1847	The Anti-vitalists: Helmholtz, Ludwig, Bois-Reymond and Brücke vow to develop an account of human and animal behavior that was entirely in physical-chemical terms. Birth of Psychology: German Physiological Psychology in the 1880s-1890s subsection 2.2 on p. 29
1850	Fechner first posits that the intensity of a psychological experience had a mathematical relation to the intensity of the physical stimulus (Now known as ‘Fechner’s Law’) Sensation and Perception: Fechner subsubsection 2.2 on p. 30

- 1878 William James contracts to write *The Principles of Psychology* American Psychology: William James and the function of consciousness subsubsection 2.2 on p. 34
- 1879 Wilhelm Wundt's lab at the University of Leipzig opens Introspection: Wundt subsubsection 2.2 on p. 33
- 1880 Josef Breuer takes 'Anna O' as a patient in Vienna Hysteria and Hypnosis: Freud & Breuer on Anna O subsubsection 2.4 on p. 68
- 1881 George Beard publishes *American Nervousness*, introducing the idea of a 'nervous breakdown' American Nervousness — George Beard subsubsection 2.4 on p. 63
- 1881 Breuer attempts hypnosis on Anna O.
- 1882 Charcot founds the first clinic on "Incurable" mental illness (what we now call "neurological conditions") at the Salpêtrière in Paris. Early Neurology — Charcot subsubsection 2.4 on p. 65
- 1883 Christine Ladd-Franklin completes and publishes her dissertation titled "On the Algebra of Logic" under C.S. Peirce. Johns Hopkins refuses to grant her the doctorate because of her gender.
- 1885 Hermann Ebbinghaus' memory experiments call into question the reliability of introspection-based research in psychology, and establishes the paradigm for experimental psychology. Experimentalism: Ebbinghaus and the unreliability of introspection subsubsection 2.2 on p. 36
- 1885-1887 Charlotte Perkins-Gilman treated for Post-Partum Depression by George Beard's student Silas Wier Mitchell.
- 1890 A young Sigmund Freud, blocked from a hospital appointment in Germany by anti-semitism, moves to Paris to work under Charcot.
- 1891 The 'neuron doctrine' first advanced by Wilhelm Waldeyer in Germany.
- 1891 Christine Ladd-Franklin leaves Johns Hopkins, where she was denied a PhD because of her gender, to study in Germany with Müller and Helmholtz.
- 1891-1900 Ivan Pavlov conducts research on dog salivation in response to physical stimulus. We now call his method 'classical conditioning'.
- 1892 Krafft-Ebing publishes *Psychopathia Sexualis* see Brief History of the Study of Homosexuality in America section 2.3 on p. 48, and Appendix Psychopathia sexualis section B on p. 208
- 1892 G. Stanley Hall appointed 1st President of the American Psychological Association
- 1892 Charlotte Perkins Gilman publishes "The Yellow Wallpaper", based on her experiences with psychological treatment
- 1894 Christine Ladd-Franklin, along with Margaret Washburn, are the first Women to be elected to the American Psychological Association.
- 1895 Freud and Breuer publish their report of Anna O titled "The Psychic Mechanism of Hysterical Phenomena" Hysteria and Hypnosis: Freud & Breuer on Anna O subsubsection 2.4 on p. 68

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**Birth of Psychology as a discipline**


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1896	William James' <i>The Principles of Psychology</i> published. American Psychology: William James and the function of consciousness subsubsection 2.2 on p. 34
1905	Mary Whiton Calkins elected first woman President of the American Psychological Association
1909	G. Stanley Hall invites Freud and Jung to give a series of lectures at Clark University. In the audience are William James, Franz Boas (anthropology), E.B. Tichner (psychology) and Emma Goldman (the anarchist). After the lectures, Freud and Jung accept an invitation from James Jackson Putnam, a prominent neurologist in New York, to vacation at his home in the Adirondacks. During this vacation, Freud and Jung have a disagreement, which causes rift between them that never closed. The Clark Lectures subsubsection 2.4 on p. 73
1911	Ramon y Cajal demonstrates neurons in the hippocampus, confirming the 'neuron doctrine'
1911	Putnam founds the American Psychiatric Association.
1912	Alan Turing born
1913	Ebbinghaus' work translated into English
1913	John B. Watson publishes "Psychology as the Behaviorist Views it", launching Behaviorism. First Revolution: Behaviorism subsection 2.2 on p. 38
1917	At the inaugural meeting of the American Psychiatric Association, the DSM-I is adopted. There are 21 mental disorders classified.
1933	<i>A Standard Classified Nomenclature of Disease</i> published by the NY Academic of Medicine, along with the Public Health Serve, the Army and Navy Medical Department and the American Hospital Association.
1936	Turing posits the idea of a machine that can compute any mathematical function
1939	B.F Skinner publishes <i>The Behavior of Organisms: An Experimental Analysis</i> , introducing the concept of 'reinforcement' and 'operant conditioning' Operant Conditioning & Radical Behaviorism: Skinner subsubsection 2.2 on p. 42
1939-1945	WWII: significant migration of German researchers to the US; most of the top researchers in the field recruited to the war effort. Large numbers of young intellectuals trained in basic psychiatry for the military. Individuals discharged from the US Military for homosexuality begin organic communities in the major ports of the West Coast: San Diego, Long Beach (L.A.) and San Francisco.
1943	bulletin "Medical 203", which defined mental illness for the US military was written by Brigadier General William C. Menninger

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**Scientific study of sexuality, and birth of computing**


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1948	Kinsey publishes <i>Sexual Behavior in the Human Male</i> The Kinsey Report subsection 2.3 on p. 51
1949	<i>The International Statistical Classification of Diseases</i> . Was published. It had 27 major categories of mental illness and 60 sub-categories APA <i>Diagnostic and Statistical Manual Mental Disorders</i> , 1952 section G on p. 452
1950	Alan Turing publishes "Computing Machinery and Intelligence", articulating the cognitive-computing metaphor, leading to thesis that the mind can be modeled on a machine, and how we might test for the intelligence of such a machine.
1950	The Mattachine Society, in Philadelphia, and the Daughters of Bilitis, in San Francisco, are founded. Early 'Homophile' movements subsection 2.3 on p. 51
1952	Alan Turing arrested as a homosexual. Is sentenced to chemical castration through hormone therapy.
1952	The American Psychiatric Association published the DSM-II, which has 28 major categories of mental illness, and 44 sub categories. Socarides, S. "Homosexuality and Medicine", 1968 section I on p. 619
June 7th,	Alan Turing commits suicide. Brief History of the Study of Homosexuality in America section 2.3 on p. 48
1954	Evelyn Hooker begins her research on the Mental health of male homosexuals in Los Angeles. Connecting these threads: Evelyn Hooker subsection 2.3 on p. 52
September 10-12 1956	MIT hosts the second Symposium on Information Theory. In attendance are John von Neumann (the father of computer science), Norbert Weiner (founder of cybernetics), Claude Shannon (creator of Information theory), Warren McCulloch and Walter Pitts (Creators of a mathematical model of a neuron), Margaret Mead (Anthropology), Herbert Simon and Alan Newell (Computer Science), Noam Chomsky (linguistics) and George Miller (psychology). The cognitive revolution has begun. The Second Revolution: Cognitive Science subsection 2.2 on p. 46
1955	The Wallace Lab began marketing <i>Miltown</i> , the first anti-psychotic medicine.
1957	Skinner publishes <i>Verbal Behavior</i> , Chomsky publishes stunning critique. Chomsky, N. "Review of <i>Verbal Behaviour</i> by B.F. Skinner" 1959 section E on p. 411
1959	<i>Trofranil</i> , the first antidepressant, appears on the market.
1960	<i>Librium</i> , the first anti-anxiety, appears on the market.
1963	<i>Valium</i> is introduced.

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#### First street activism in the gay and lesbian community

1963	Barbara Gittings becomes editor of the newsletter of the Daughters of Bilitis.
1968	Members of the Mattachine society disrupt public lecture by Charles Socarides

1969	Oliver Sacks administers L-DOPA to patients comatose since the 1920s, and is amazed to find them awaken. His memoir 'Awakenings' is published in 1972, and widely read and discussed in the medical community.
June 28, 1969-July 3rd, 1969	Stonewall: The street activists subsection 2.3 on p. 53
1970	Gay rights protesters picket, and overwhelm, the annual meeting of the APA in San Francisco.
<b>Game Begins</b>	
September 10th, 2009	the United Kingdom issues a formal apology to Alan Turing for his treatment after massive petition drive.
Dec 24th, 2013	Turing granted Royal Pardon by Queen Elizabeth II.
June 15, 2019	Turing announced as the next portrait on the £50 note.

Table 2.1: Timeline of critical events

This events that lead up to the clash over the validity of scientific studies of the human mind span countries and continents. Ideas flow quickly—even in the 18th and 19th century—so understanding how the peculiar American definitions of mental health and illness came about require a bit of explanation.

## 2.2 *Brief history of the concept of 'Psychology'*

Psychology is probably the youngest of commonly accepted academic disciplines—the first PhD in Psychology was earned by G. Stanley Hall in 1878. But we'll get to that. First, we have to go back to the notion of science itself.

### *Pre-history of Psychology: Empiricism about the Mind*

The scientific investigation into the human mind and/or human behavior begins almost simultaneously with science itself. Our inquiry into its history must then begin with the followers of Francis Bacon, who created the 'scientific method' and trace the idea that the mind can be studied scientifically through the rise of the empiricists into the present day.<sup>1</sup>

Bacon, who we now credit with establishing 'The Scientific Method,' argued that the human mind tended to distort reality in regular, systematic ways, which he called 'idols.'<sup>2</sup> In order to understand reality, we must then give up on the idea that a single person can discover the truth on his or her own.<sup>3</sup>

<sup>1</sup> All citations for Bacon are to Bacon 2000b.

<sup>2</sup> The four idols distinguished by Bacon are the idols of the tribe, the cave, the marketplace and the theater. The idols of the tribe are those which we all share, as a function of our biology. They "have their origin either in the regularity of the substance of the human spirit; or in its prejudices; or in its limitations; or in its restless movement; or in the influence of the emotions; or in the limited powers of the senses; or in the mode of impression" (LII) The idols of the cave are those of an individual. They have their origin in "the individual nature of each man's mind and body; and also in his education, way of life and chance events." (LIII) The idols of the marketplace are those of miscommunication and misunderstanding. As Bacon says "For men believe that their reason controls words. But it is also true that words retort and turn their force back upon the understanding; and this has rendered philosophy and the science sophistic and unproductive." (LIX) The idols of the theater are those of intellectual 'showmanship.' They are "not innate or stealthily slipped into the understanding; they are openly introduced and accepted on the basis of fairytale theories and mistaken rules of proof." (LXI) All quotes from Bacon & Jardin (2000). Roman numerals indicate Aphorism number.

<sup>3</sup> For those of you who have read Rene Descartes *Meditations on First Philosophy* will no doubt recognize that Descartes predicated his entire philosophical system on the idea that working alone by pure reflection, he could discover immutable truths about the universe.

In order to learn about the world, we need to work together, collaboratively creating a “natural and experimental history” (Bk 2, Ch X, p 109) of the phenomenon of interest. As working collaboratively can lead to confusion and misunderstanding, we organize that natural and experimental history into a series of tables: including instances of the phenomenon’s presence, closely related instances in which the phenomenon is absent, instances in which the phenomenon occurs in degrees or in comparison, and instances of exclusion of the phenomenon. Once these tables are built, we review them and create what Bacon called a ‘first harvest’ of the phenomenon: a generalized axiom unifying the all the recorded observations. Once that first axiom is established, we return to the tables, highlighting privileged instances which are further classified as solitary, transitory, revealing, etc.<sup>4</sup> These, in turn, can be used to further refine the first harvest into further, more careful axioms.

With the benefit of his connections to the Royal court,<sup>5</sup> Bacon profoundly influenced Elizabethan England. His empirical method sparked inquiry in almost all areas of human knowledge, and formed the basis for what we now call the ‘scientific revolution’ or the ‘enlightenment.’ And his influence on the creation of psychology and psychiatry is actually far more direct than most would assume.

LATE IN HIS LIFE, Bacon became friends with the Philosopher Thomas Hobbes. In fact, Hobbes founded a Baconian reading group in Oxford, which is the forbearer of the Royal Society—the world’s oldest scientific body.

Thomas Hobbes, who is most widely known for his initiation of social-contract theory in defense of absolute monarchy, opens his master work *Leviathan* with this bold claim:

Nature (the art whereby God hath made and governs the world) is by the *art* of man, as in many other things, so in this also imitated, that it can make an artificial animal. For seeing life is but a motion of limbs, the beginning whereof is in some principal part within, why may we not say that all *automata* (engines that move themselves by springs and wheels as doth a watch) have an artificial life? For what is the *heart*, but a *spring*; and the *nerves*, but so many *strings*; and the *joints*, but so many *wheels*, giving motion to the whole body such was was intended by the artificer? Hobbes 1994, Ch 1, ‘\\$=latex 1, italics in original

Just as his famous social-political philosophy posited universal laws of human conduct, Hobbes believed that the human mind followed to universal laws which were deducible through reason. Always a Baconian, Hobbes begins by separating—or ‘creating tables’—of creatures who have minds (humans) and those who do not (all non-human animals), and then querying the difference between those two.

<sup>4</sup> Bacon lists 27 different types of these ‘privileged instances’ in Book 2 of his *Novum Organon*.

<sup>5</sup> At the risk of opening a conspiracy theory rabbit hole: Bacon’s father was Queen Elizabeth’s ‘keeper of the great seal’ and a close advisor. There are those who believe Elizabeth and Bacon’s Father had married, but kept it secret to avoid the scorn of the Spanish Royals, who were Catholic (Bacon was a Protestant). They continue that Francis Bacon was actually Elizabeth’s son, which would explain his proclivities and education. In reality, Bacon fell out with Queen Elizabeth when he was a young man, and only came back to court with the ascension of Charles I.

But we don’t stop there—there is an entirely different school of thought that believes Francis Bacon was the ‘true’ author of Shakespeare’s literary work. Apparently there is some shady Real Estate deal between Shakespeare and Bacon which suggests some kind of financial connection.

Whether or not either of these are true, they do point to the fact that Bacon had a remarkable intellect for his time. In fact, if I had to answer the ‘who is the historical figure most likely to have been a stranded time-traveller?’ party game, my money would be on Francis Bacon.

According to Hobbes, humans surpass animals in this faculty:

that when he conceived anything whatsoever, he was apt to inquire the consequences of it, and what effects he could do with it." In addition, humans can "can by words reduce the consequences he finds to general rules, called theorems, or aphorisms; that is, he can reason, or reckon, not only in number, but in all other things whereof one may be added unto or subtracted from another. Hobbes 1994, Ch V, 'S'=latex6.

Thus we have the beginning of psychology: human minds work by the process of deducing consequences and abstracting from particular experiences to general rules through basic logical functions.

Let's take a moment to contrast this with an alternative approach. René Descartes, who many consider to be the founder of modern western Philosophy, argued that the mind was wholly distinct from the body, and therefore subject to an entirely different set of laws. This view we call 'mind-body dualism.'

His most famous argument for mind-body dualism asks us to doubt all that cannot be known with certainty, and then concludes that one cannot doubt that one is doubting; hence thinking; hence one cannot doubt that one is a thinking thing. This famous argument (called the "cogito") is contained the First Meditation. But Descartes offers a much more interesting and influential argument in a number of other writings: the argument from language and language-use.

This argument appears twice in *The Discourse on Methods*, first in part 3:

...if there were such machines having the organs and the shape of a monkey or of some other animal that lacked reason, we would have no way of recognizing that they were not entirely of the same nature as these animals; whereas, if there were any such machines that bore a resemblance to our bodies and imitated our actions as far as this is practically feasible, we would always have two very certain means of recognizing that they were not at all, for that reason, true men. The first is that they could never use words or other signs, or put them together as we do in order to declare our thoughts to others. For one can well conceive of a machine being so made that it utters words, and even that it utters words appropriate to the bodily actions that will cause some change in its organs... But it could not arrange its words differently so as to respond to the sense of all that will be said in its presence, as even the dullest men can do. ( Descartes and Sutcliffe 1968, Ch 3, 1637)

And then again in part 5:

[in looking at the body] I found there precisely all those things that can be in us without our thinking about them, and hence, without our soul's contributing to them, that is to say, that part distinct from the body of which it has been said previously that its nature is only to think. And these are all the same features in which one can say that animals lacking

reason resemble us. But I could not on that account find there any of those functions, which, being dependent on thought, are the only ones that belong to us as men, although I did find them all later on, once I had supposed God created a rational soul and joined it to this body in particular manner that I described. ( Descartes and Sutcliffe 1968, Ch 5, 1637)

The same point appears in his *Letter to Henry More*:

Nevertheless it has never been observed that any brute beast arrived at such perfection that it could use true speech, that is, that it indicated by words or signs something that can be ascribed to thought alone, and not to a natural impulse. For speech is the only certain sign of thought concealed in the body, and all men, even the stupidest and most insane, make use of it, but not any brute. Therefore, this can be taken to be the true differentia between man and brutes ( Descartes and Ariew 2000, p. 297)

In these passages, Descartes ascribes to humans alone the ability to use language and conceive of abstract ideas. He then finds that these abilities cannot be the products of material, finite reality precisely because they are potentially infinite. As experience is limited to finite reality, ideas of things that are *not* finite must be ‘ascribed to thought alone.’ Thus, these ideas must be innate to the mind and *not* based on experience. It follows that these distinctly human abilities are the products of a non-material infinite reality. In short, the argument is this:

1. Humans alone use language and conceive of abstract entities (i.e. ‘infinity’).
2. No finite material mechanism could ever use language or conceive of an abstract entity.
3. Therefore, humans cannot be a finite material mechanism.

Table 2.2: Descartes' challenge

Hobbes' asserted earlier that human beings could be imitated through material mechanisms, and that our minds are ruled by the law of inquiring of the consequences of an action. This is tantamount to denying #2: that the finite brain can create abstract ideas by inquiring of the consequences of finite, concrete ideas. But insofar Hobbes has only made an assertion—a hypothesis—we need an empirical demonstration. To establish Hobbes' contention and meet Descartes' challenge scientifically, Hobbes must show a physical machine could, through experience, develop both the ability to speak rationally and

conceive of abstract entities that are not clearly the product of experience (such as the concept of 'infinity').

IT IS EASY TO SEE how a process of 'addition and subtraction' could produce a concept of infinity. But it is hard to see how simple arithmetic could produce a machine that could "arrange its words differently so as to respond to the sense of all that will be said in its presence, as even the dullest men can do."

John Locke, known to most Americans as the intellectual forebearer of our Constitution, was also an empiricist and chiefly interested in human understanding. In fact, his most well-known work in Philosophy, his *Essay on Human Understanding*, opens with a fifty-eight page argument against the idea of innate ideas. For Locke, the mind starts as a blank slate, a 'tabla rasa.'

Locke picks up the empirical project of responding to Descartes' challenge where Hobbes left off, adding 'reflection' (what we now call 'introspection') to 'sensation' as a unique source of ideas. For Locke, like for Hobbes, the mind is populated with ideas that originate in experience. We come to understand our minds, and how our minds occasionally lead us astray, by understanding the mental mechanisms that produce ideas from sensation.

Abstract ideas like 'infinity' are the products of this process of abstraction:

Finite then, and infinite, being by the mind looked on as modifications of expansion and duration, the next thing to be considered, is, -How the mind comes by them. As for the idea of the finite, there is no great difficulty...Every one that has an idea of any stated lengths of space, as a foot, finds that he can repeat that idea; and joining it to the former, make the idea of two feet; and by the addition of a third, three feet; and so on, without every coming to an end of his additions, whether of the same idea of a foot, or, if he pleases, of doubling it, or any idea he has of any length, as a mile, or diameter of the earth, or of the orbis magnus...This, I think, is the way whereby the mind gets the idea of infinite space. -[Book 2, Ch17] Locke 1959

But like Hobbes, Locke fails to explain how language structure could be produced by a finite mechanism.

AT THE SAME TIME Locke was writing in England, Antoine Arnaud, a fervent supporter of Descartes' theory of mind, was developing a school of thought in France which we now call the 'Port-Royalist' movement. ( Carr 1996) The Port-Royalists held that the structure of grammar was universal for humans and could be reduced to the laws of logic. Unlike the empiricists Hobbes and Locke, however, the Port-Royalists, including the great logician and mathematician Blaise Pascal, were dualists and theists. ( Clark 1903)

For the Port-Royalists, thought was different in kind than spoken language, although we tend to think in language through force of habit. A perfect language, and perfect grammar, would be possible if each word signified unequivocally a single simple idea, and the grammar of speech matched perfectly the 'grammar of thought.' Pure thought, both in its content and its structure, becomes imperfect when 'translated' into an imperfect spoken language. The pure language was, for Pascal at least, Mathematics.

The empiricists Hobbes and Locke have adequately responded to Descartes' assertion that ideas about abstract objects could not have their origin in the physical, finite, world. But neither of them have managed to respond meaningfully to the assertion that the ability to put ideas together *in language* cannot be the product of the physical, finite world. The Port-Royalists refined Descartes' challenge: it is not enough to produce a machine that made word-sounds; the empiricist had to produce a machine that could generate the theorems of Mathematics.

David Hume, the Scottish Empiricist, is really the first to answer Descartes' challenge. He married Locke's argument against innate ideas to the idea of a universal structure of the mind.

First, he extending the argument against innateness beyond the concept of the infinite:

The idea of God, as meaning an infinitely intelligent, wise, and good Being, arises from reflecting on the operations of our own mind, and augmenting, without limit, those qualities of goodness and wisdom.  
Hume 1975, §2, p. 14

And second, he advanced the thesis that principles of connection between ideas in the mind were regular and thus were open to empirical investigation. He posited three: RESEMBLANCE, CONTIGUITY in time or place and CAUSE and EFFECT. Hume 1975, Part 1, '\$\equiv\$' IV

These three, Hume claims, explains the universality of human language structures:

It is evident that there is a principle of connexion between the different thoughts or ideas of the mind, and that, in the appearance to the memory or imagination, they introduce each other with a certain degree of method or regularity.... Among different languages, even where we cannot suspect the least connexion or communication, it is found, that the words, expressive of ideas, the most compounded, do yet nearly correspond to each other: a certain proof that the simple ideas, comprehended in the compound ones, were bound together by some universal principle, which had an equal influence on all mankind.

With Hume, we can find the origin of the empirical study of the

mind, although ‘psychology’ was not distinguished from ‘natural philosophy’ for at least another century.

It is important to point out here that for these thinkers, the objects of study are *ideas*. The central claims are that there are regular, law-like relationships between ideas themselves, whether they be causal or grammatical. That central claim unites them with early psychology<sup>6</sup>. But as we will see, is the challenged in the Behaviorist revolution in the US in the early 1930’s and 1940’s.

\*\* References for further study \*\*

- Primary Sources\*

Thomas Hobbes. 1994. *Leviathan*. Ed. by Edwin Curley. with selected variants from the Latin edition of 1668. Indianapolis / Cambridge: Hackett

John Locke. 1959. *An essay concerning human understanding*. Ed. by Alexander Campbell Fraser. Vol. 1. New York: Dover

### *Birth of Psychology: German Physiological Psychology in the 1880s-1890s.*

During the 19th century, many scientists believed that living things were distinguished from dead things because the living things had some kind of ‘vital force’ within them that the dead things lacked. The ‘vital force’ was non-physical, and could not be explained in purely physical terms. Shreds of this ‘vitalism’ hangs about in our literature—Mary Shelley’s *Frankenstein* hails from an era where electricity was suspected of being the vital force, for example.

In about 1847, four friends, three of them students of Johannes Müller (1801–1858), gathered together in Berlin to swear an oath dedicating themselves to undermining Vitalism permanently. They committed themselves to the view that:

No other forces than the common physical-chemical ones are active within the organism. In those cases which cannot at the time be explained by these forces one has either to find the specific way or form of their action by means of the physical –mathematical method or assume new forces equal in dignity to the chemical-physical forces inherent in matter, reducible to the force of attraction and repulsion. (Quoted in Bernfeld 1949)

These Anti-Vitalists went on to found physiological psychology. They were Hermann von Helmholtz (1821–1894), Carl Ludwig (1816–1895), Emil du Bois-Reymond (1818–1896) and Ernst Wilhelm von Brücke (1819–1892). They were joined shortly thereafter by Hermann Lotze (1817–1891) and his student Gustav Fechner (1801–1887) and came to dominate the training of the next generation of psychologist and psychiatrists: Helmholtz hired Christine Ladd-Franklin as

<sup>6</sup> There are many instances of this claim in the history of psychology: see, e.g. Wundt, 1876 (p. 175)

his assistant, who went on to be one of the first woman members of the APA, and the first woman to hold a professorship at the University of Chicago. Sigmund Freud studied under Brücke; Ivan Pavlov under Ludwig and Wilhelm Wundt under du Bois-Reymond. Wundt went on to work in Helmholtz's lab after Ladd-Franklin returned to America.<sup>7</sup>

While all of these thinkers had a profound influence on the founding and development of psychology as a discipline, we'll focus attention for the moment on Helmholtz<sup>8</sup>.

**HELMHOLTZ WAS ONE OF THE GREAT SCIENTIFIC MINDS OF HIS ERA.** Not only is he now recognized as a godfather of experimental psychology, he is widely respected in the history of Optics, and is, in many ways, the father of ophthalmology, having invented the ophthalmoscope.

His professor, Müller, held that nerves had 'specific sense energies' naturally: our sensory system had certain *a priori* assumptions<sup>9</sup> about time and space literally built into them, making sensory experience like binocular vision possible. Students familiar with the history of philosophy may recognize this as a position influenced by Kantian psychology.

Helmholtz, however, posited that our mental system as a whole adjusted itself through a process of 'unconscious inference' to represent the external world. The contents of our experiences—the redness of a red apple, for example—are merely 'signs' or 'indicators' of the objects in the world that our experiences represent. Our sensory systems automatically and unconsciously *recover* the world through the complex information to which it has access.

Unconscious inferences that produce stable representations (I.e. experience of a red apple) are *not* accessible to us through mere reflection, but neither are they 'built in' or 'innate.' They are, in short, trained through experience with the regularities of the world itself. The process of sensation is learned, not biologically determined. While contemporary psychophysics has advanced greatly since 1850, the basic model of how perception works in psychology today is Helmholtz's.

### *The challenge for the anti-vitalists: explain the connections between ideas*

#### **Sensation and Perception: Fechner**

On the morning of 22nd of October, 1850, the story goes, a young physiologist named Gustav Theodor Fechner lay in bed, puzzled by the relationship between the intensity of a psychological experience (i.e. hearing a sound, measured by introspection) and the intensity of

<sup>7</sup> I can illustrate some of the differences in theoretical approach here with the example of color perception: Helmholtz posited that there were three basic primary colors: red, green and purple. Ladd-Franklin argued that purple perceptually appeared to be (i.e. 'looked like') a mixture of red and blue, whereas yellow appeared to be primary. Thus, she theorized, there are in fact four psychologically primary colors: red, green, blue and yellow. Helmholtz responded (quoted in Hering) that one could not draw conclusions about facts of physiology from direct psychological experience (i.e. introspection), therefore Ladd-Franklin's observation had no bearing on the science of psychology. While Ladd-Franklin's point seems obvious and definitive against Helmholtz's theory, it was widely rejected, on the basis of the unreliability of introspective reports and observations, in favor of the physiological reductionism of Helmholtz. In fact, it wasn't until a plausible mathematical model based on Ladd-Franklin's observation was proposed by Jameson and Hurvich in 1957 that the psychological community rejected Helmholtz's theory in favor of Ladd-Franklin's.

<sup>8</sup> Experienced Reactors may recognize Helmholtz' name from the Darwin Game.

<sup>9</sup> *a priori* is a philosophical term meaning 'prior to experience.' It is frequently used to describe philosophical positions like Descartes' that believe knowledge can be gained by reflection alone. In this case, it means that the nerves have assumptions about the world 'built in' before experience. If you wanted to use a computer analogy, Müller believes that knowledge about time and space is encoded in our hardware, where the empiricists like Hobbes, Locke and Hume believe it is in software that is built through experience.

the physical stimulus (i.e. the amplitude of the air vibrations). On that morning, it occurred to him that the relative increase in the physical stimulus might correspond to the relative increase in the psychological experience. It took him a decade to prepare the idea for publication, which he presented as 'Weber's law':

$$dp = k(dS/S)$$

where  $dp$  is the change in the psychological experience,  $k$  is a constant to be determined experimentally,  $dS$  is the change in the stimulus and  $S$  is the stimulus. He added to this the idea that the physical stimulus must break a certain threshold to be perceivable at all to derive what is now known as 'Fechner's law':

$$p = k \ln(S/S_0)$$

Where  $S_0$  is the threshold under which the stimulus is not perceived.

Fechner's law is the first mathematical law (some might say 'model') in psychology. It posits a specific relationship between a psychological entity (sensation) and a physical entity (the stimulus). Unlike his predecessors who had contented themselves with discovering the relationships between ideas in a rather imprecise way, Fechner had bridged the divide between the psychological and the physical by giving that bridge the precision of Mathematics.

Fechner's book, *Elements of Psychophysics*, published in 1860,<sup>10</sup> had a profound effect in both Germany and England. Physiologists now had a model of precision for which they could strive. And psychologists had a model of understanding the relationships between the physical and the psychological. Most importantly, however, the book inspired Hermann Ebbinghaus to begin studying memory. But that story will have to be left to another time.

### Behavior: Pavlov

Ivan Pavlov was, like the others in this section, a physiologist first. His interest in psychology was, for the most part, tangential to his work in physiology. Between 1891 and 1900, Pavlov conducted a series of experiments on salivation in dogs. His primary interest at this time was to explain why dogs salivated when presented with food at a distance. The common-sense psychological explanation, of course, is that the dog wants the food. Or even that the dog *imagines* or *anticipates* having the food. More technically, early psychologists would have said the dog *associates* food and saliva. But these are not physiological explanations, and they would not satisfy Pavlov.

<sup>10</sup> The classic English edition was published in 1966, translated by Adler and edited by his students Boring and Howes: FECHNER et al. 1966



Figure 2.1: Pavlov's Laboratory, image from Wikimedia commons: <https://pt.wikipedia.org/wiki/Ficheiro:Ivan-Pavlov06.jpg>.

Using a recently invented apparatus, Pavlov was able to measure the amount of saliva dogs produced in response to a food stimulus. After a number of experiments, Pavlov noticed that the dogs were salivating without any food present. It occurred to him that in these cases, the dogs' salivation response might be responding to the lab techs, rather than food itself. To test this hypothesis, he presented food to a dog and simultaneously rang a bell. After repeated exposures to this combination of stimuli, Pavlov removed the food, leaving just the bell. He found that the dogs still salivated.

Thus, Pavlov discovered what came to be called 'classical conditioning': to train a behavior, one presents a new stimulus (the conditioned stimulus) concurrently with the stimulus that 'naturally' produces the desired behavior (the unconditioned stimulus). After repeated training, the desired behavior (conditional response) will occur with the new (conditioned) stimulus, without the presence of the original, 'natural,' unconditioned stimulus.

Pavlov's primary application of his findings were to the nervous system as a whole as well as "heart, digestive tract and other organs in the higher animals" (lecture 23), he didn't shy away from suggesting that it could be used to explain the seemingly involuntary habitual actions of those deemed 'psychotic' or 'neurotic.' Conditional responses were, however, breakable, or in behaviorists terms 'extinguishable,' if one conditioned a new stimulus in place of the existing stimulus-response association.

Pavlov emphasized that his experiments were purely objective and not open to observer influence, such as the experiments of the Wundt and his 'introspectivists.' In fact, he closes his 1927 lectures with the bold claim that:

all the experiments, those of other workers as well as our own, which have set as their object a purely physiological interpretation of the activity of the higher nervous system, I regard as being in the nature only of a preliminary inquiry, which has however, I fully believe, entirely justified its inception. We have indisputably the right to claim that our investigation of this extraordinarily complex field has followed the right direction, and that, although not a near, nevertheless a complete, success awaits it. (Pavlov 1927)

The importance of Pavlov's theorizing should be obvious at this point: classical conditioning provided a physiological law-like relationship that could take the place of (provide the bodily substrate for) the association of ideas. And it provides a mechanisms for creating, intervening in, or destroying those associations—which no previous theory had managed to do thus far.<sup>11</sup>

<sup>11</sup> I am skipping, for the sake of space, the fascinating history of British psychology during this period, as it adapted associationism to the new physiology. See (Daston 1978)

### Introspection: Wundt

Today, textbooks generally claim Wilhelm Wundt's lab at Leipzig is the first true psychological laboratory. Helmholtz's lab, it is argued, was a lab of physiology, not psychology. That distinction can be debated. Wundt, unlike Helmholtz, believed that the causal relations governing ideas and experience were of a different *kind* than those governing the physical world. And it was the challenge of psychology to discover those laws and observe those regularities.

Wundt was, however, a student of Helmholtz. He didn't run off and join Descartes in meditation. Rather, he believed that the proper explanation of the laws of psychology would make use of the properties of the central nervous system. In Wundt's own words:

Physiology and psychology cover, between them, the field of vital phenomena; they deal with the facts of life at large, and in particular with the facts of human life. Physiology is concerned with all those phenomena of life that present themselves to us in sense perception as bodily processes, and accordingly form part of that total environment which we name the external world. **Psychology, on the other hand, seeks to give account of the interconnection of processes which are evinced by our own consciousness**, or which we infer from such manifestations of the bodily life in other creatures as indicate the presence of a consciousness similar to our own. (1902, p. 1)

Shortly thereafter, he asserts that Psychology is “**the investigation of conscious process in the modes of connection peculiar to them.**”  
(Wundt 1902, p. 2)

As consciousness is a singular and unique phenomenon in this world, it can only be approached with the investigative tools unique to consciousness: direct experience of consciousness by ourselves or inferred in others on the basis of direct observation and analogy.

This does not mean, however, that a science of psychology is purely introspective. On the contrary, Wundt proposed a ‘physiological psychology’: a theory of conscious experience informed by our physiological understanding of the brain, what Wundt calls the ‘bodily substrate of mental life.’

The nervous system was thought to be made up of a ‘central substance’ that maintained an equilibrium and ‘nerve-fibres’ that connected cells together. This ‘central stuff’ was understood not to just transmit information, but to modify it in one of two ways: first, if it were exposed to repeated stimulus, the amount of energy needed to produce a response would decrease, and second, in some cases, it could invert the signal into its opposite (i.e. from ‘x more than equilibrium’ to ‘x less than equilibrium’).

Wundt sought to reduce Hume’s four standard ‘Laws of Association’ of ideas—similarity, contrast, spatial and temporal contiguity—to

simple ‘internal connection’, as ‘contrast’ is a completion of an idea in the same way ‘similarity’ is; and contiguity in space and time are external, not internal, relationships. Ideas tend to produce their contrasting idea, rather than ideas which are similar, when they are accompanied by strong feelings, as all feelings have a kind of ‘elasticity’ to them, always presenting with its opposite feeling implicitly.

‘Internal connection,’ is then explained by what Wundt called ‘central innervation,’ or the properties of the nervous system. (Wundt 1876) A fundamental law of neuroscience, even today, is that ‘neurons that wire together fire together.’ That is Wundt’s claim simplified. For Wundt and his followers, the similarity and contrast of ideas was explainable by the excitation and inhibition properties of these nerves.

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### *Three approaches to unifying experience*

#### American Psychology: William James and the function of consciousness

During this period of profound growth and advancement of psychology in Germany, American Universities were not institutions of research, but institutions of education. Starting in about 1876, that began to change. Johns Hopkins University was founded in Baltimore in 1876 with the explicit mission of “The encouragement of research; the encouragement of young men; the advancement of individual scholars, who by their excellence will advance the sciences they pursue, and the society where they dwell.”<sup>12</sup>

Of the 53 men appointed to the faculty of Hopkins by 1884, nearly all had been educated at German Universities, and 13 held what was then a German degree, the “PhD.” The few exceptions to this

<sup>12</sup> Daniel Coit Gilman, the first President of Johns Hopkins, admired not just the German University, but what he called the “German Mind” as well: “The thoroughness of the German mind, its desire for perfection in every detail, and its philosophical aptitudes are well illustrated by the controversies now in vogue in the land of universities.” (<https://www.jhu.edu/about/history/gilman-address/>)

rule were the eminent American pragmatists John Dewey and C.S. Peirce.<sup>13</sup>

What followed can only be described as an explosion in research universities in America. Clark University was founded in 1887 and the University of Chicago in 1892. In 1860, no PhDs were awarded in America. By 1890, 164 PhDs had been given. The first of these in 'Psychology' was given to G. Stanley Hall by Harvard in 1878.

I mention all of this because the German understanding of the science of the mind—specifically that of Helmholtz and his Anti-vitalists—became synonymous with the understanding of research in Psychology during this period. In short, if one approached the mind in some fashion other than this experimental tradition, it simply was viewed as not contributing to research, and hence, was not considered suitable for graduate instruction. More often than not, advocates for views not in accordance with physiological-psychology were restricted to departments of philosophy or anthropology. A particularly good example of this kind of reasoning is G. Stanley Hall's 1879 paper 'Philosophy in the United States,' in which he laments American Philosophy as not connected to scientific progress and little more mental discipline and moral training in the Christian tradition.<sup>14</sup>

IN THE MIDDLE OF THIS STORM sits William James. James, in many ways, bridges the divide between the older approach to liberal education and the new approach to research as a function of the university. James himself accredits his interest in Psychology to his time spent in Germany, yet his entire career was spent teaching in a Philosophy Department at a traditional college: Harvard. He advocated for experimentalists, but appeared to perform no psychological experiments himself. His students are the major figures in this first generation of research institutions and Psychology departments, including G. Stanley Hall; yet his position was always in the department of Philosophy, something he appeared to have insisted upon.<sup>15</sup> James had a life-long friendship with the Hopkins pragmatist, C.S. Peirce. Moreover, James was in frequent contact with the early British philosophers of mind including Alexander Bain, Herbert Spencer and John Sully.

In 1878 James contracted with the publisher Henry Holt and Company to write a textbook for this nascent field of psychology. The resultant book *The Principles of Psychology* is a classic in the field, usually cited as the first textbook for Psychology. Indeed, many use its publication date as the birthdate of psychology. In it, James defines psychology as "the science of mental life, both of its phenomena and of their conditions" James 1890, p. 1) and identified introspection as its chief method.

James held that consciousness (which was the central phenomenon

<sup>13</sup> Speaking of Behaviorism, George Miller argues that "If Watson had not been so inept as a philosopher, he might have offered behaviorism as a pragmatic theory of mind, comparable to Peirce's pragmatic theory of meaning, James' pragmatic theory of truth, and Dewey's pragmatic theory of value." Miller 1962, p. 66

<sup>14</sup> Hall 1879

<sup>15</sup> See Ch. V of Miller 1962

to be studied by psychology) was like stream, encompassing much more than mere ‘associations’ of ideas. The associationists who followed Hume isolated experiences from their context, and provided a overly simplistic account. The object of study of psychology—the relations, tendencies and emotions that make up the stream of consciousness—are experienced directly in introspection, and form the basis of genuine scientific inquiry into the mind.

James’ fellow pragmatists Peirce, and his student John Dewey, went on to construct a theory of psychology focused on the functions of mental states, what was called ultimately called “The Chicago School.”<sup>16</sup> (James 1904) Dewey argued that explanations of human activity that focused merely on the ‘stimulus’ and ‘response’ or the British thinker W.K. Clifford’s ‘reflex arcs’ were inadequate characterizations of conscious states. In order to truly characterize, and then study, conscious states, science must take into account the function or end of those states. In his words:

the distinction of sensation and movement as stimulus and response respectively is not a distinction which can be regarded as descriptive of anything which holds of psychical events or existences as such. The only events to which the terms stimulus and response can be descriptively applied are to minor acts serving by their respective positions to the maintenance of some organized coördination. The conscious stimulus or sensation, and the conscious response or motion, have a special genesis or motivation, and a special end or function. The reflex arc theory, by neglecting, by abstracting from, this genesis and this function gives us one disjointed part of a process as if it were the whole. Dewey 1896, p. 370

Functional psychology thus emphasizes the role mental entities play in an organisms behavior, not what those ideas represent, or the ‘content’ of those ideas. (Dewey 1916)

### **Experimentalism: Ebbinghaus and the unreliability of introspection**

In or about 1878, inspired by Fechner’s stunning results investigating sensation, Hermann Ebbinghaus started experimenting with memory.<sup>17</sup> Ebbinghaus sought, like all of his contemporaries, to understand the association of ideas. But he was worried, rightfully so, that using existing words or concepts in an experimental design would allow for the individual subject’s previous experience with those words or concepts to influence the result of the experience. Thus, to isolate the association of ideas from any prior influence, he created long lists of nonsense syllables (VAM, ZOK, etc.) and set about memorizing them. He then precisely measured the number of repetitions or amount of time it took to repeat list perfectly, something he called *trials to criterion*. As it turns out, the longer the list, the more time, or

<sup>16</sup> Dewey earned his PhD at Hopkins in 1884 and took a teaching position at the University of Chicago.

<sup>17</sup> See The paradigm in experimental psychology: Hermann Ebbinghaus paragraph 5.1 on p. 156 for more on Ebbinghaus’ experiments. Ebbinghaus 1885

trials, it takes to memorize it. But that was not all: he further tested the process of forgetting.

After some arbitrary period, Ebbinghaus would return to the same list and restart the entire process. If he had completely forgotten the list during the period without practice, the number of trials it took to memorize the list completely would be the same as the first time.

Ebbinghaus found that even if he could not introspectively recall items on the list after a break, it took fewer repetitions for him to learn the list to the criterion of perfection. A decade before Freud made it fashionable to believe in the unconscious, Ebbinghaus had demonstrated empirically that the mind could retain information that it could not bring to subjective, introspective awareness.

This discovery was a bombshell to the introspective protocols of Wundt and James. Pavlov had shown that ‘unconscious’ behaviors like salivation could be trained to a stimulus without the intervention of introspection, but Ebbinghaus showed that a paradigmatic psychological phenomenon—memory—was subject to the same training. While Ebbinghaus’ work was originally published in 1885 in German, it was not published in English until 1913—which ‘just happens’ to be the same year James Watson declared the beginning of the Behaviorist revolution.

### Titchener—The Structure of Consciousness

E.B. Titchener was British psychologist who earned his Doctorate under Wundt’s direction in 1892. He emigrated to the US for a position at Cornell University in Ithaca, NY. Titchener defined Psychology as the “*science of mental processes.*” (Titchener 1896, p. 5) The term ‘mental’ should give us a little pause at this point.

Jump back, for a moment, to René Descartes. In Pre-history of Psychology: Empiricism about the Mind subsection 2.2 on p. 23, we discussed Descartes’ argument for the existence of the mind as separate from the body on the basis of language and language use.

Titchener’s definition of ‘mental’ follows in the Cartesian tradition of introspectability: “A mental process is any process, falling within the range of our experience, in the origination and continuance of which are ourselves necessarily concerned.” Titchener 1896, p. 5  
Psychology is the science of the ‘mind’ insofar as we understand ‘mind’ to be the sum total of mental processes experienced by an individual over the course of a lifetime.

*The problem of a Psychology is*

- (1) to analyze concrete (actual) mental experience into its simplest components,
- (2) to discover how these elements combine, what are their flaws which govern their combination and
- (3) to bring them into connection with their physiological (bodily) conditions. (Titchener 1896, p. 12)

As science begins with analysis—breaking up phenomena into its component parts<sup>18</sup>—the first task is to divide and separate mental processes until we arrive at the base unit of analysis: the mental experience. Laws for combining and associating these experiences are then introduced, and the connection thereof to the physical body.

For Titchener, the fundamental unit—the ‘atom’, as it were—of psychology is sensation. Sensation comes to experience fully formed, and cannot be further divided.<sup>19</sup> Sensation is inherently personal, as no one can directly observe another’s sense experiences. Investigating sensation therefore requires introspection. But this does not mean it is unscientific. Indeed, introspection can be performed in reliable ways that would allow for replication by others:

Have yourself placed under such conditions that there is as little likelihood as possible of external interference with the test to be made.

Attend to the stimulus, and, when it is removed, recall the sensation by an act of memory. Give a verbal account of the processes constituting your consciousness of the stimulus. (Titchener 1896, p. 36)

Titchener’s influence on the History of Psychology was two-fold:

1. One of Titchener’s students, and devotee, named E.G. Boring published his *History of Experimental Psychology* in 1929. As the first history of psychology, it largely shaped how Psychology understood itself, enshrining Tichener’s views on science as analysis and sensation and perception as the starting point in Psychology for generations.
2. Titchener’s insistence on Wundt’s introspective method as the starting point for Psychology sparked the first revolution: behaviorism.

### *First Revolution: Behaviorism*

John B. Watson (1878–1958) opens his 1913 manifesto “Psychology as the Behaviorist Views it.” with the bold claim that **Psychology**

**“is a purely objective branch of natural science.** Its theoretical goal is the prediction and control of behavior. Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness. The behaviorist, in his efforts to get a unitary scheme of animal response, recognizes no dividing line between man and brute. The behavior of man, with all of its refinement and complexity, forms only a part of the behaviorist’s total scheme of investigation.”

(Watson 1913, p. 158)

In a 1929 debate with the Harvard professor and physiological-psychologist William MacDougall (1871–1938), Watson anticipated a

<sup>18</sup> Students who have read Descartes ‘methods’ will no doubt recognize his continuing influence on Titchener’s thinking.

<sup>19</sup> Much of Titchener’s work looks, to the contemporary reader, more like philosophy and phenomenology than psychology.

common criticism of behaviorism: that it cannot explain our rich interior mental life—what William James called the “stream of consciousness.” Watson responded that if we were to take the inner mental life as the object of study, rather than observable behaviors, there would be “as many analyses as there are individual psychologists. There is no element of control. There is no way of experimentally attaching and solving psychological problems and standardizing methods.” Thus, scientific standards require Psychologists to limit themselves to “things that can be observed, and formulate laws concerning only the observed things.” ( Watson 2013)

According to Watson, ‘observable things’ includes only “what the organism says or does,” which must then be described “in terms of ‘stimulus and response.’” By ‘stimulus,’ Watson means:

any object in the general environment or any change in the physiological condition of the animal, such as the change we get when we keep an animal from sex activity, when we keep it from feeding, when we keep it from building a nest. By response we mean that system of organized activity that we see emphasized anywhere in any kind of animal, as building a skyscraper, drawing plans, having babies, writing books, and the like.

Watson’s behaviorism explains the behavior of all organisms (not just humans) by producing laws of correlation between stimuli and responses. This was a massive extension of the field of psychology, as animals and babies were not able to give introspective reports. Following Pavlov, Watson contends that an organism initially engages in some random behavior (say, a baby squirming) in response to a stimulus: what we now call ‘Classical Conditioning’. After repeated exposures to the unconditioned stimulus alongside the conditioned stimulus, the organism produces the condition responds to the conditioned stimulus without the unconditioned response. Thus, to explain any given behavior, one must find the conditioned stimulus that is now correlated with the conditioned response.

MacDougall, among others, challenged Watson to answer Descartes’ challenge: to explain “thinking” or “thought” in terms of stimulus and response. Watson does not shy away from this challenge:

“The increasing dominance of language habits in the behavior of the developing child leads naturally over into the behaviorist’s conception of thinking. The behaviorist makes no mystery of thinking. He holds that thinking is behavior, is motor organization, just like tennis playing or golf or any other form of muscular activity. But what kind of muscular activity? The muscular activity that he uses in talking. Thinking is merely talking, but talking with concealed musculature.” ( Watson and MacDougall 2013, p. 464)

According to Watson, a child initiates verbal behavior by talking aloud to and about his surroundings. As that behavior is negatively

reinforced, it changes to mumbling to oneself, and ultimately to keeping one's lips closed. It follows that thinking is not an activity of the mind/brain alone, but a kinesthetic experience of the entire organism—in short, a behavior. Words are, in Watson's view “the conditioned substitutes for our world of objects and acts. Thinking is a device for manipulating the world of objects when those objects are not present to the senses.” ( Watson 2013)

### **Maturing Behaviorism: Tolman and Hull**

During the middle of the 20th century, behaviorism in American divided roughly into two warring factions: Tolman and Hull. Edward Chace Tolman (1886 – 1959) initiated the ‘war’ in 1922 by criticizing Watson.<sup>20</sup> Tolman argued that Watson's belief that all human behavior could be explained in terms of “muscle contraction and gland secretion, as such, would not be behaviorism at all but a mere physiology.”<sup>21</sup> ( Tolman 1922, p. 45)

For Tolman, a behavioristic science must answer three major problems:

- (1), given the stimulating agency, determining the behavior-cues
- (2), given the behavior-cues, determining the behavior-object and
- (3), given the behavior-object, determining the behavior-act.” Tolman 1922, p. 51

(1) is the problem of psychophysics, which is adequately solved by Fechner. (2) is accessible, with rewording, by classical conditioning. (3) is the “important problem of motive.” A proper science of behavior must answer all three of these problems. Doing so, Tolman contends, would allow the behaviorist to understand and better elucidate introspection.

Opposing Tolman, Clark Hull (1884 – 1952) contended that in order for a postulate or theorem to be “truly scientific,” it must “take the form of specific statements of the outcome of concrete experimentations or observations.”<sup>22</sup> ( Hull et al. 1940) Simple classification of behavior are not, themselves, scientific. But neither is talk of such things as motives. Scientific explanations must make use of clear, unambiguous terms that refer to observable behavior. Everything else is simply not considered to be ‘science.’ Hull contends that psychology should produce mathematical equations that would specify precisely all the relationships between variables that account for an organisms behavior. The specific behavior of a given organism would be an instance of these universal mathematical generalizations.

<sup>20</sup> Today, Tolman is sometimes called a ‘Cognitive Behaviorist’ (see Holland 2008, e.g.) The term was used by Hull's defender, Spence, to refer to Tolman's views in 1950. ( Spence 1950).

<sup>21</sup> In the interests of conciseness, I am skipping over the fascinating and under-rated history of Gestalt psychology. I do this with a heavy heart, as it is one of my favorite topics in the history of psychology. Characters who wish to engage with the tradition of behaviorism, however, should pay careful attention to Wolfgang Köhler's presidential address, included in the appendix, for the Gestalt concerns about this period in American Psychology.

<sup>22</sup> This is only one of Hull's four criteria. The other are: (1) The definitions and postulates of a scientific system should be stated in a clear and unambiguous manner, they should be consistent with one another, and they should be of such a nature that they permit rigorous deductions. (2) The labor of deducing the potential implications of the postulates of a system should be performed with meticulous care and exhibited, preferably step by step and in full detail. It is these deductions which constitute the substance of a system. (4) The theorems so deduced which concern phenomena not already known must be submitted to carefully controlled experiments. The outcome of these critical experiments, as well as all previous ones, must agree with the corresponding theorems making up the system.

HULL'S PRIMARY CONTRIBUTION to behaviorism is the thesis that when a given stimulus has the effect of reducing a biological need, the connection between the stimulus and the response is strengthened automatically. While that statement may seem like a commonsense position today (food given as a reward, e.g.), the important part of it in 1935 was the word of 'automatically.' Contrary to the introspectivists or even commonsense, one need not be aware of the satiation of one's physical desires in order to strengthen the association between the conditioned stimulus and the conditional response. In fact, most conditioned associations are not accessible to introspective awareness.

Methodologically, Hull's insistence on the mathematical-deductive structure of theory led to a cadre of young psychologists who were able to represent complex relationships between variables mathematically. ( Hull et al. 1940) Many members of that generation ended up at Stanford, ultimately providing much of the theory of information processing that allowed the cognitivists to advance sophisticated mathematical and computer models of cognitive states.

In response to Hull, Tolman argued that simple stimulus-response connections were insufficient to explain behavior: specifically rats running a maze for a food reward. In his famous 1948 paper "Cognitive Maps in Rats and Men," Tolman presented evidence that showed rats that were allowed to wander around a maze randomly before the beginning of training period learned the maze more quickly than rats that began training without prior exposure to the maze. ( Tolman 1948)

TOLMAN ARGUED THAT the best explanation for this phenomenon—and our general intuition about why rats appear to pause before beginning down a specific course—is that the rats have built up a 'cognitive map' of the maze through their random explorations. He goes so far as to suggest that the rats had the ability to learn through 'Vicarious Trial and Error,' or 'imagining' what would happen if they responded to a particular stimulus. For Tolman, this was:

evidence that in the critical stages—whether in the first picking up of the instructions or in the later making sure of which stimulus is which—the animal's activity is not just one of responding passively to discrete stimuli, but rather one of the active selecting and comparing of stimuli. ( Tolman 1948, p. 200)

One of Tolman's students, Ritchie, constructed further experiments to test the capacity of the rats' cognitive maps. By starting rats on the far side of the laboratory, Ritchie found that the rats tended to navigate not by the direct path to the reward, but to the walls of the room itself. Thus, Tolman contends, the rats' cognitive maps were 'strip-like' and 'narrow.'

It is this concept—the breadth or narrowness of cognitive maps—that allows Tolman to extrapolate to the human mind. He suggested that we may interpret the various psychological mechanisms posited by psychoanalysts as “narrowings of our cognitive maps due to too strong motivations or too intense frustration.” Thus, racists, sexists, pathological patriots, etc. are individuals with too narrow a ‘cognitive map.’ A healthy mind—and a well educated person—is one who can use reason, i.e. “broad cognitive maps” to

look before and after, learning to see that there are often round-about and safer paths to their quite proper goals-learn, that is, to realize that the well-beings of White and of Negro, of Catholic and Protestant, of Christian and of Jew, of American and Russian (and even of males and females) are mutually interdependent. ( Tolman 1948, p. 208)

### Operant Conditioning & Radical Behaviorism: Skinner

Starting in 1938, Behaviorism underwent a radical transformation. In that year, Burrhus Frederic Skinner (1904 – 1990) published *The Behavior of Organisms: An Experimental Analysis*, in which he introduced the idea of *operant conditioning*.<sup>23</sup> ( Skinner 1990) Skinner’s insight was not entirely without precedent, but rather built upon the concept of ‘instrumental conditioning’ originally introduced by Edward Thorndike (1874–1949).

According to what is now called ‘Thorndike’s law of effect’, if a response is followed closely by a pleasurable experience, it is more likely to be associated with the stimulus than if it is followed by an unpleasant or neutral experience. Skinner turned this idea into the central explanatory mechanism of behaviorism: rather than the conditioned stimulus occurring simultaneously with the unconditioned stimulus, the conditioning stimulus occurs immediately after the desired behavior as a consequence of the desired behavior. In his own words:

Operant behavior usually affects the environment and generates stimuli which is “feed back” to the organism. Some feedback may have the effects identified by the layman as reward or punishment. Any consequence of behavior which is rewarding or, more technically, reinforcing increases the probability of further responding. ( Skinner 1972, p. 129)

By introducing the idea of *reinforcement* of a behavior as whatever makes it more likely that that behavior will occur, Skinner was able to undercut Tolman’s insistence that a purpose or goal was required to explain the behavior of animals.<sup>24</sup>

As a boy, Skinner was fascinated with mechanisms. Legend has it that he even built a steam cannon out of a discarded water boiler. Extraordinarily intelligent, Skinner found Francis Bacon’s works at about fourteen, and became enamored with the idea that Bacon may

<sup>23</sup> See the section on behaviorism in the ‘Public Character info’ section for more on the difference between operant and classical conditioning.

<sup>24</sup> MacDougall criticized Watson for ignoring motive as well. See MacDougall 2013.

have written Shakespeare's plays.<sup>25</sup> He majored in English and literature at Hamilton College, where he became famous for elaborate practical jokes. During his time at Hamilton, he expressed significant interest in the authors Joyce and Proust—but also physiological psychologists Pavlov and Jacques Loeb. Legend has it that he met Robert Frost, who encouraged him to become a writer. After that did not pan out, he returned to behaviorism through the work of Bertrand Russell—specifically Russell's comparison between 'reflex' and 'force' in physics.<sup>26</sup>

Inspired by Pavlov's maxim "control the environment and you will see order in behavior," as well as his passion for inventing mechanisms, Skinner began to create machines that would control behavior of an organism by automatically rewarding the desired behavior and punishing behavior that was not desired.

These successes led Skinner to hypothesize that all animal behavior—including human behavior—resulted from such forces. He delineated four types of operant conditioning: *positive reinforcement*, *negative reinforcement*, *punishment* and *extinction*, which he studied with mathematical precision. Skinner shifted behaviorism's emphasis from reflexes to regularities of the whole organism, moving from the causal link between stimulus and response to the relationship between the response and its reinforcement.

According to Skinner, this form of behaviorism was the inevitable development of psychology into a full-fledged science. Often pulling on an analogy to the history of physics, chemistry and biology, he argued that 'consciousness' and 'inner causes' were the remnants of superstition, and human psychology and society could be perfected through the principles of operant conditioning.

Skinner adamantly insisted that scientific inquiry could not countenance hypothetical unobservable entities. Following Russell, Skinner argued that explaining a given behavior, such as 'eating,' in terms of a mental state, such as 'being hungry,' was *ad hoc*, equivalent to the pre-scientific explanation of physical events in terms of vitalistic 'forces.' For example, if I explain why a glass breaks by referring to its fragility, I've really explained nothing at all—I've only explained breaking in terms of being likely to break. A genuine explanation of a glass's breaking is in terms of the environmental conditions and events immediately prior to the breaking of the glass. Likewise, explaining eating in terms of 'hunger' is hollow, repeating only the likelihood of eating behavior.

Throughout his career, Skinner argued that radical behaviorism alone was the scientific approach to psychology. Theories—including Hull's—cannot refer to underlying entities. If one were to object that paradigmatic sciences like physics postulate unobservable underlying

<sup>26</sup> "Gradually it was found that all the equations could be written down without bringing in forces. What was observable was a certain relation between acceleration and configuration; to say that this relation was brought about by the intermediacy of 'force' was to add nothing to our knowledge. Observation shows that planets have at all times an acceleration towards the sun, which varies inversely as the square of their distance from it. To say that this is due to the 'force' of gravitation is merely verbal, like saying that opium makes people sleep because it has a dormitive virtue. The modern physicist, therefore, merely states formulae which determine accelerations, and avoids the word 'force' altogether. 'Force' was the faint ghost of the vitalist view as to the causes of motions, and gradually the ghost has been exorcized." (Russell 2013, p 495)

entities such as electrons, Skinner would retort that these are not believed by physics to really exist, but are merely convenient placeholders for the mathematical relationships that hold between observable entities.<sup>27</sup> A scientist must restrict his or her work to observation, not theorizing. In retrospective appraisal of his own work, Skinner would claim of his work in *Behavior of Organisms*:

The notes, data, and publications which I have examined do not show that I ever behaved in the manner of Man Thinking as described by John Stuart Mill or John Dewey or in reconstructions of scientific behavior by other philosophers of science. I never faced a Problem which was more than the eternal problem of finding order. I never attacked a problem by constructing a Hypothesis. I never deduced Theorems or submitted them to Experimental Check. So far as I can see, I had no preconceived Mode of behavior—certainly not a physiological or mentalistic one and, I believe, not a conceptual one.” (1972, p. 112)

In the years following, Behaviorism came to utterly dominate American Psychology. By 1960, for example, the standard textbook for experimental psychology, Burton G. Andreas' *Experimental Psychology* could confidently assert:

**Psychology seeks to express the laws of behavior.** It makes the assumption that all aspects of behavior, like other natural phenomena, are dependent on the conditions under which the behavior occurs... Psychology seeks to describe the dependence of the activities of people or animals on their environments and states of being. Psychology's place is delineated by this particular goal and the specific techniques devised for striving toward it. Andreas 1960, p. 4, emphasis in original

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<sup>27</sup> See, e.g. interview with Skinner, p. 39 pf Baars.

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### *Concurrent developments: Logic and Computing*

In 1812, George Boole (1815–1864) published *The Laws of Thought*, which is now regularly classified as a classic work in Logic. The opening paragraph, however, suggests a different discipline:

The design of the following treatise is to investigate the fundamental laws of those operations of the mind by which reasoning is performed; to give expression to them in the symbolic language of a Calculus, and upon this foundation to establish the science of Logic and construct its method; to make that method itself the basis of a general method for the application of the mathematical doctrine of Probabilities; and, finally, to collect from the various elements of truth brought to view in the course of these inquiries some probable intimations concerning the nature and constitution of the human mind. (Boole 1853, Ch1 Para1)

Boole, like his predecessor David Hume, believed that the rules that regulate the human mind were simple, and complex ideas were structured out of simple ones in the same way complex theorems are constructed out of simple axioms via logical transformations.

The history of Logic is of great importance here because in 1950, a brilliant young logician named Alan Turing<sup>28</sup> proposed a theoretical physical machine that would be capable of carrying out all logical functions.

He further proposed that such a machine could be taught to understand human language, and one could test the sophistication of that teaching by a simple empirical test, now known as the 'Turing test.' An interviewer would have a conversation with two individuals, one human and one computer, for a period of time. If, after five minutes or so, the interviewer could not tell the difference between the two, we would be in a position of calling the machine a 'thinking' machine. Writing in 1950, Turing claims:

"I believe that in about fifty years' time it will be possible, to programme computers, with a storage capacity of about  $10^9$ , to make them play the imitation game so well that an average interrogator will not have more than 70 per cent chance of making the right identification after five minutes of questioning." (Turing 1950)

In short, Turing's ideal machine would, in Descartes' words: 'respond to the sense of all that will be said in its presence, as even the dullest men can do.' The challenge set by Descartes and dreamt

<sup>28</sup> You can read more about the life of Alan Turing, who is one of the greatest, yet least well known, scientists of the 20th century, in the section Brief History of Homosexuality.

about by Hobbes, Locke and Hume to create a physical device capable of using language in a productive and systematic way was to be met, at least, theoretically, by a machine. Turing's machine, once constructed, became known by the job title of the women who carried out his Mathematical calculations: computer.

The question that remains for you, in the course of this game, is whether or not Turing's discovery of the logical functions that meet Descartes' challenge *in fact* lead to, in Boole's words "probable intimations concerning the nature and constitution of the human mind," and whether or not those 'probable intimations' are scientific in nature.

### *The Second Revolution: Cognitive Science*

In 1957, two books were published on the topic of language use by humans. As we have discussed, philosophers of mind since have long considered language-use *the* defining characteristic of humanity—the behavior that distinguishes humans from animals and thinking from instinct. The empirical study of language-use therefore, has the potential to quantify, analyze and observe, with scientific reliability, what we are as thinking beings.

IN THE FIRST, \*VERBAL BEHAVIOR\*, B.F. Skinner explained humans' language use in terms of operant conditioning. Verbal behavior is particularly interesting for the behaviorist because it isn't directly reinforced by the world, but rather mediated by another person via his or her own verbal behavior. In fact, this unique feature comes to form Skinner's definition of verbal behaviors: those behaviors that are 'reinforced through the mediation of other persons' ( Skinner 1957, p. 2). He later refines and restricts that definition thus: "If we make the further provision that the 'listener' must be responding in ways which have been conditioned *precisely in order to reinforce the behavior of the speaker*, we narrow our subject to what is traditionally recognized as the verbal field." (p. 225) This definition, you'll no doubt notice, makes no reference to vocalization, words, sentences, thoughts, phonemes, meanings, semantics, grammar, or anything else typically associated with language-behavior.

THE SECOND WAS NOAM CHOMSKY'S *Syntactic Structures*. Chomsky opens by noting that the set of all grammatical sentences in any given language, while infinite, is not random. There are sentences like 'Colorless green ideas sleep furiously' which may have never occurred in English before 1957, but nonetheless are grammatical sentences; while at the same time, there are sentences like 'Furiously sleep ideas green colorless' that are not grammatical. He then proposes that an

adequate theory of language ought to describe a device that generates all and only the sentences that are grammatical in that language. Any theory that can't generate the set of grammatical sentences simply is not an adequate explanation of human language-behavior.

Central to Chomsky's theory is the thesis that humans differ from animals in their ability to use language. You'll remember from the beginning of this history that that view was shared by Rene Descartes and the Port-Royalists, who used it to argue for the distinction between the soul (mind) and the body. For Chomsky, however, the ability to use language does not entail a non-physical soul. Alan Turing's machines showed that a physical entity can generate new and novel sentences that follow the grammatical structures. Verbal behavior, the defining feature of human psychology, is the ability to structure sentences in new and novel ways, but that does not mean that human minds are non-physical entities. It simply means that minds may be physical computing devices.

Not only do the cognitivists reject the behaviorists conjecture that one can explain human behavior without reference to internal states, they reject the behaviorists rejection of the thesis that there is a dividing line between "man and brutes." Animals may make sounds that mimic language, but they do not respond to "the sense of all that is said in its presence."

IN 1959, CHOMSKY PUBLISHED a vitriolic review of Skinner's *Verbal Behavior*, in which he claimed that not only were Skinner's definitions of reinforcement and conditioning either confused or circular, he argues that empirically, children learn grammar at a higher rate than can be explained by operant conditioning. It is included in Chomsky, N. "Review of *Verbal Behaviour* by B.F. Skinner" 1959 section E on p. 411.

In the decade before these tumultuous years, the Macy foundation had sponsored series of conferences that introduced some of great early mathematicians and computer scientists including John von Neumann (the father of computer science), Norbert Weiner (founder of cybernetics), Claude Shannon (creator of Information theory), Warren McCulloch and Walter Pitts (who together created a mathematical model of a neuron, which is the basis for all neural network architecture), Julian Bigelow and Arutuo Rosenbluth (also pioneering cyberneticists) to the great social scientists and psychologists of the day, including the anthropologist Margaret Mead, the Gestalt psychologist Wolfgang Köhler. The goal of these workshops was to investigate the similarities between computational machines and human minds and social structures. Behaviorists almost never attended. While the results from these conferences were minimal, they set the stage for

MIT's Second Symposium on Information theory, September 10–12 1956, that forever changed forever the face of psychology.

At that conference, Alan Newell and Herbert Simon, computer scientists from Carnegie-Melon, presented a simple machine that could do logic proofs and Noam Chomsky presented his idea of a transformative-generative grammar as the basis of language. George Miller writes, in an unpublished paper presented at MIT and repeatedly cited by historians of cognitive science, that he came away from the conference with a sense “more intuitive than rational, that human experimental psychology, theoretical linguistics, and the computer simulation of the cognitive process were all the pieces from a larger whole, and that the future would see a progressive elaboration and coordination of their shared concerns.” Miller recalls Newell telling him “Chomsky was developing exactly the same kind of ideas for language that he and Herb Simon were developing for theorem-proving.” (Miller 1979)

And so began “the Cognitive Revolution.”

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### 2.3 *Brief History of the Study of Homosexuality in America*

While homosexual behavior has appeared throughout human history, the notion of homosexuality as an “orientation” or “personality” is relatively recent. The word ‘homosexual’ itself first appears in print in English in C. G. Chaddock translation of R. von Krafft-Ebing 1892 *Psychopathia Sexualis*. Relevant sections are reproduced in Appendix Excerpt 1 subsection B on p. 208.

The idea of homosexuality as a lifestyle connected to personality is, in the English speaking world at least, indelibly linked to the public persona of the author Oscar Wilde. While he was studying classics at Oxford, he began advocating aestheticism, the view that aesthetic values override moral or social values in the understanding of art and literature. Wilde parlayed his success as a playwright into fame, cultivating a flamboyant public personal, known for dressing immac-

ulately and flamboyantly, entertaining wealthy society women, having a sharp wit and a talent at dinner conversation. His masterwork 'The Portrait of Dorian Gray' plays with this persona in the characters of Lord Henry Wotton and Dorian Gray himself.

In 1895, he and his companion Alfred Taylor were convicted of acts of 'gross indecency'<sup>29</sup> and sentenced to two years hard labor. Their trial was 'the trial of the century' in the English upper-class, and to this day, many of Wilde's personal characteristics inform the common stereotypes of homosexual men; fastidiousness with respect to personal appearance, wittiness and social adeptness, esp. with upper-class women, are all traceable to Wilde himself.

The next fifty years were not kind to gay folks. "Treatments" for homosexuals included surgical interventions such as castration, vasectomies, lobotomies, sterilization, clitoridectomies, hysterectomies; chemical interventions such as sexual stimulants, depressants, hormonal injections, and pharmacological shock; psychological interventions included adjustment therapy, psychoanalysis, hypnosis, aversion therapy that included electric shock and desensitization;<sup>30</sup> and social psychological interventions patterned on Alcoholics Anonymous like 'Homosexuals Anonymous' and others.

ONE OF THE SADDEST STORIES of this era is that of Alan Turing, who was mentioned in the section above on Concurrent developments: Logic and Computing subsection 2.2 on p. 45. Turing was one of the greatest mathematicians and logicians of his era, if not the greatest. During WWII, he worked at Bletchley Park as one of Churchill's famed code-breakers. His efforts in breaking the German codes lead directly to the development of modern logic and the invention of the electronic computer. He is generally considered to be the founder of both modern cryptography and computer science. While working at Princeton, he became friends with Claude Shannon, who is now recognized as the father of information theory. Quite literally, Turing is to the contemporary information age what Newton was to the age of mechanics, or Einstein the nuclear age.

But Turing was also gay. In 1952, he was prosecuted and convicted for being a homosexual. Sentenced to hormone therapy and stripped of his military clearance. As all his work during the war was classified at the highest levels of secrecy, this loss meant he had no access to his lives' work—and what is worth, most people knew nothing about it. He committed suicide on June 7th, 1954. His contributions to the war effort became known only in the 1980s with work by Andrew Hodges, a British Historian. In 2004, the British government released details of Turing's code-breaking machine, the Colossus. The Colossus existed before the 'Eniac,' which was previously thought to be the first

<sup>29</sup> In Victorian England, 'gross indecency' was defined as sexual acts between men that did not rise to the level of 'buggery'.

<sup>30</sup> There is a superb website in the UK that is collecting stories of patients, doctors and nurses from this era. All are deeply disturbing, some downright terrifying. See <http://treatmenthomosexuality.co.uk/>. I'll quote just one example here, as it so perfectly illustrates classical conditioning: "We need to remember that the discussions that went on at Maudsley in the early 50s were constantly searching for ways in which we could understand the relationship between events, so again referring to the ideas put forward by Pavlov, Skinner and Wolpe, if a situation produces anxiety and at the same time there is another even occurring then by the process of conditioning it's quite likely that the reaction of anxiety will become associated with the unconditioned stimulus. By thinking along those lines it seemed to me that if the process of sexual arousal and gratification is linked with something, it may well become the preferred method of seeking gratification. It seemed to me that if a person wanted to stop being involved in and interested in male figures—so long as he had bisexual potential or interests—we might be able to utilize the other half of the spectrum of potential arousal signals. And, if we did that often enough, he then might be gratified by femininity." From 'A Psychological Career', anonymous testimonial from <http://www.treatmenthomosexuality.co.uk/>.

electronic computer.<sup>31</sup>

In 2009, the British Government started a program of accepting online petitions from citizens of the UK. One of the first to be submitted, and promoted by Richard Dawkins, was a call for an official apology to Alan Turing for unjust prosecution. On 10 September 2009, Prime Minister Gordon Brown issued a formal apology to Alan Turing, stating:

It is thanks to men and women who were totally committed to fighting fascism, people like Alan Turing, that the horrors of the Holocaust and of total war are part of Europe's history and not Europe's present. So on behalf of the British government, and all those who live freely thanks to Alan's work I am very proud to say: we're sorry, you deserved so much better.<sup>32</sup>

Turing was pardoned by Queen Elizabeth II in 2013, and in 2019, by public vote, was announced as the next Briton to be depicted on the £50 note.

DURING THIS DARK PERIOD OF PERSECUTION, advocates for homosexuals (at this time called 'homophile' organizations) focused primarily on changing the stereotypes of the homosexual as a step towards ending the criminalization of homosexual acts as well as the psychological and medical 'treatments.' There was little activity within the scientific and academic communities on the issue.

That all started to change when a young social psychologist named Evelyn Hooker started teaching at UCLA.

During WWII, young men and women who were accused of homosexuality in Pacific theater of operations tended to be discharged from the military in California ports, including San Diego, Long Beach and San Francisco. Many, if not most, of these young people could not return to their hometowns because of their dishonorable discharge from the military. As a result, a organic community of homosexuals began taking shape in many of these cities.

Hooker became friends with one of her UCLA graduate students, Sam Fromm. Sam was gay. In 1943, he challenged her to study 'people like him' to determine if they were mentally ill (specifically 'neurotic') independently of the biases against homosexuality inherent in the psychiatric tradition.<sup>33</sup> In a 1998 interview, Hooker explained the significance of this phrase:

"This bright young man, somewhere in his early thirties, had obviously been thinking about this for a long time. And by 'people like us' he meant, 'We're homosexual, but we don't need psychiatrists. We don't need psychologists. We're not insane. We're not any of those things they say we are.'" (Eric Marcus, WindyCityTimes-current.pdf, October 31, 2007 • vol 23 no 07)

<sup>31</sup> Hollywood made a biopic of Turing called 'The Imitation Game' in 2014. It does a good job of introducing the public to Turing's achievements. A better source is Hodges 1992

<sup>32</sup> For the full statement, see <http://www.number10.gov.uk/Page20571>

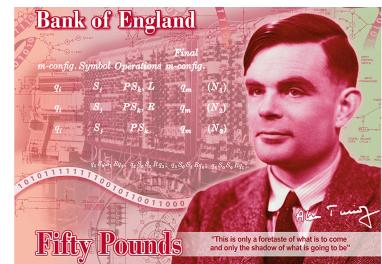


Figure 2.3: Announcement that Alan Turing will be on the 50£note starting in 2020

<sup>33</sup> You'll recall that Freud and the psychoanalytic tradition that followed him believed homosexuality was a regression fixation caused by an underlying, probably narcissistic, neurosis. See *Introductory Lectures* p. 376–384 and 529–531)

During the 1940s, Evelyn Hooker became a trusted 'outsider' of the gay community in L.A., but didn't want to conduct research on people she saw as her friends.

### *The Kinsey Report*

In 1948, Alfred C. Kinsey (b. 1894 – d. August 25, 1956) published *Sexual Behavior in the Human Male*. It was revolutionary.

Kinsey and his assistants had interviewed 5,300 white males from all walks of American life. The interviews required up to 521 questions, depending on the interviewee's experiences. Kinsey reported that a large number of men—up to 45%—reported having at least one homosexual encounter during his adolescence. These encounters are most frequent at young age, dropping to a stable 10% of the population by age 20–25. These numbers, Kinsey fears, may not tell the whole story because:

The social significance of the homosexual is considerably emphasized by the fact that both Jewish and Christian churches have considered this aspect of human sexuality to be abnormal and immoral. ... Social custom and our Anglo-American law are sometimes very severe in penalizing one who is discovered to have had homosexual relations. In consequence, many persons who have had such experiences are psychically disturbed, and not a few of them have been in open conflict with the social organization. (Kinsey, Pomeroy, and Martin 1998, p. 610)

The Kinsey report found that homosexual activity as a common part of male sexual development. Self-identifying as a homosexual, or engaging exclusively in homosexual activity, was found to be more rare. But at 10%, it was almost twice as high as any previous scientific estimate<sup>34</sup>. Almost as importantly, Kinsey identified the source of psychic disturbance *not* to be the homosexual activity itself, but the social structures that penalize such behavior.

### *Early 'Homophile' movements*

Two years after the publication of the Kinsey report, a group of 'homophile' activists founded the Mattachine society, which is now generally recognized as the first national gay-rights organization.<sup>35</sup>

The Mattachine society, named for a European tradition of theater masks, sought to change the prevailing view of homosexuality by presenting the membership as no different than the mainstream heterosexual society. Its members dressed in suits and skirts, and showed no 'outward signs' of homosexuality. These 'outward signs' are, of course, those stereotypes we identified earlier as originating with Oscar Wilde. Mattachine society demonstrations—held annually in front of Independence Hall in Philadelphia on July 4th—were sober affairs

<sup>34</sup> The often repeated statistic that 10% of any given population is gay or lesbian originates with Kinsey's study.



Figure 2.4: 'Homophile' activists picketing in 1965. From <http://bilerico.lgbtqnation.com/>

<sup>35</sup> The 'Society for Human Rights' was founded in 1924, but never gained national prominence.

of men in gray suits and women in dresses walking up and down in straight lines, conspicuously *not* holding hands or being affectionate to one another. When couples held hands, one of the leaders of the Mattachine society, Frank Kameny, famously scolded “None of that!” See the “Rules for Picketting” published by the Mattachine Society in Figure 2.6

At about the same time, a secret social club for Lesbians called “The Daughters of Bilitis” was founded in San Francisco by Del Martin and Phyllis Lyon. To stay in touch with its members they created a magazine called ‘The Ladder’, which came under the editorship of Barbara Gittings in 1963. The magazine flourished under Gittings’ direction, growing from a simple hand-stapled newsletter to a true 40-page magazine. Gittings became a leader, along with Frank Kameny, of the Mattachine society.

### *Connecting these threads: Evelyn Hooker*

After the publication of the Kinsey report, Hooker finally decided to meet Fromm’s challenge. She designed an experiment to determine if homosexuals were mentally disturbed, for which she received a grant from the National Institute on Mental Health in 1954. She recruited 30 homosexual males from the Mattachine society as well as the gay community generally. An equal number of heterosexual men were recruited from civil organizations around the L.A.. Individuals in the groups were matched with respect to age, IQ and education level. All people currently in therapy for mental health were excluded from the study.

This alone was a major step forward in the study of male homosexuality, as all previous psychological studies had found their subjects in psychiatric wards, army barracks or clinical settings. This practice meant that it was impossible to distinguish between behaviors that originate in the person from behaviors that result from the treatment itself.

Hooker tested the resulting 60 men using standard psychological tests: the Rorschach, Thematic Apperception Test (TAT) and the Make-A-Picture-Story Test (MAPS). The data was blinded and mixed, and then sent to psychologists with expertise on these the tests who were instructed to score them normally and return the scores. Hooker found no significant difference between the 30 homosexual and 30 heterosexual males with respect to standard tests for mental disturbances, indicating that homosexual men were no more likely to be neurotic than equivalent heterosexual men.

Hooker presented her findings at the 1956 APA in Chicago. Her paper was published in 1957,<sup>36</sup> shortly after Sam Fromm’s death in a

PENALTIES FOR SEX OFFENSES IN THE UNITED STATES - 1964				
				MALE/FEM and/or DEPONIMENT for FIRST OFFENDER unless otherwise noted; or, if 1960, when TWO NUMBERS ARE GIVEN, THEY REPRESENT MALE AND MALE/FEM PENALTIES
STATE	SEXES*	PUNISHMENT	ADDITIONAL	COMBINATION
ALABAMA	2-10 yrs.	\$100 to 7 yrs. or both	\$100 to 7 yrs. or both	
ALASKA	3-10 yrs.	\$500 or 2 years or both	\$200 or 3 mos.	
ARIZONA	2-10 yrs.		3 yrs.	
ARKANSAS	2-12 yrs.			\$20-120**
CALIFORNIA	2 yrs. to 7			\$100 or 1 yrs. or both
COLORADO	2 yrs. to 10 yrs.	\$200 or 6 mos.*** or both	\$200 or 6 mos.*** or both	
CONNECTICUT	30 years			
DELAWARE	3 yrs. to 7 yrs.	\$500 or 6 mos. or both	\$500 or 1 yrs. or both	
FLORIDA	\$1000 or 3 yrs.			
GEORGIA	\$1000 or 10 yrs.	\$500 or 6 mos. or both	\$500 or 1 yrs. or both	
KANSAS	10 yrs.			
LAWRENCE	1-10 yrs., 2nd conv. 10-30 yrs., 1st conv.	\$1000 or 12 mos. or both	\$1000 or 12 mos. or both	
LOUISIANA	\$1000 and 20 yrs.	\$100-150 or 1-3 yrs.	\$100-150 or 1-3 yrs.	
MARYLAND	3 yrs. to 7	\$500 or 6 mos. or both	\$1000-1000 or 1 yrs. or both	\$100 or 6 mos. or both
MISSOURI	3 yrs. to 7	\$500 or 6 mos. or both	\$500 or 1 yrs. or both	
NEVADA	10 yrs.			
NEW HAMPSHIRE	5 yrs. to 7	\$500 or 6 mos. or both	\$500 or 6 mos. or both	
NEW JERSEY	10 yrs.			
NEW MEXICO	10 yrs.			
NEW YORK	10 yrs.			
NEVADA	10 yrs.			
NEW HAMPSHIRE	5 yrs. to 7	\$500 or 6 mos. or both	\$500 or 6 mos. or both	
NEW JERSEY	10 yrs.			
NEW YORK	10 yrs.			
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NEVADA	10 yrs.			
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NEW YORK	10 yrs.			
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NEW YORK	10 yrs.			
NEVADA	10 yrs.			
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car accident.<sup>37</sup>

### *Stonewall: The street activists*

By the 1960s, tensions were growing in the gay community. Another group of younger gay<sup>38</sup> activists were growing irritated with both the slow progress of the Mattachine society and its restrictions on behavior. In 1968, a group of young ‘street-activists’ disrupted a meeting of the American Medical Association in New York by shouting down Charles Socarides, a Psychiatrist known for his psychoanalytic treatment of homosexuals.

But everything changed forever on Saturday, June 28, 1969 at 1:20 AM, when the police raided the Stonewall Inn in Greenwich Village. These raids were common—the police would arrest everyone, roughing people up, stealing money for bribes and generally intimidating the population. But this time, for reasons we still don’t exactly understand, the gay and lesbian patrons of the Stonewall Inn resisted. Events escalated. The riots that followed lasted until Wednesday night, July 3rd.

On July 4th, the gay community’s attention turned to Independence Hall in Philadelphia and the Mattachine society’s annual march. As usual, Frank Kameny and Barbara Gittings, long time leaders of that gay and lesbian advocacy group, required the women to wear skirts and men suits. But the tide had turned. The young protestors from Stonewall would not conform. Kameny’s approach of assimilation to “straight” behavior had been surpassed by the direct action begun at Stonewall. Militant groups such as the Gay Liberation Front and the Gay Activist Alliance sprouted up overnight (both started in New York). Plans were made to confront those who continued to classify homosexuality as a mental disorder, and directly challenge those who continued to treat homosexuals using barbaric methods.

Those plans included San Francisco, site of the 1970 American Psychiatric Association’s annual convention. And you already know what happened there. (See Prologue section 1.2 on p. 14 if you need a refresher).

## 2.4 Brief History of “mental illness”

What makes a certain condition a ‘mental’ condition or a ‘medical’ or even ‘neurological’ condition? Suppose you are a family doctor, and a patient presents with an unwelcome and unwanted problem—a twitch, perhaps. Do you call a psychiatrist or a neurologist? How do you know?

While behaviors associated with mental illness—hallucinations,

<sup>37</sup> The story of Hooker and Fromm is retold in a number of places, including in

“Hooker, Evelyn” 2005 For more on Evelyn Hooker, see ( Aldrich and Wotherspoon 2005)

<sup>38</sup> The use of the word ‘gay’ as a replacement for ‘homosexual’ dates from precisely this time with precisely these people. The Mattachine society and the older organizations used ‘homosexual’ and ‘homophile’ to refer to themselves. Ironically, the use of ‘Gay’ to mean ‘homosexual’ is no attributed to Frank Kameny himself, who started a “Gay is good” campaign in 1968, to parallel the “Black is beautiful” campaign.

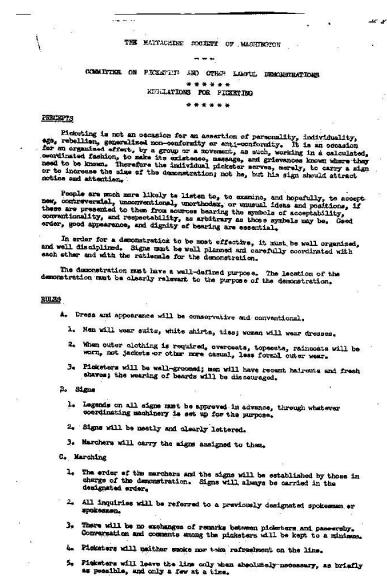


Figure 2.6: Rules for Picketing. From the Kameny papers website: <http://www.kamennypapers.org/memorabilia.htm>, collected 7/14/2016



Figure 2.7: Manuscripts and Archives Division, The New York Public Library. (1970). Frank Kameny and Mattachine Society of Washington members marching Retrieved from <http://digitalcollections.nypl.org/items/510d47e3-af4c-a3d9-e040-e00a18064a99>

catatonic states, mania, etc.—have been known since ancient times, psychiatry dates its regularization as a scientific discipline to the work of the French physician Philippe Pinel. His *Traité médico-philosophique sur l'aliénation mentale; ou la manie* stands as the first attempt at a scientific classification of mental illness. The book, translated as *Treatise on Insanity* in 1806 by D.D. Davis, is excerpted in Appendix Pinel, Philippe. "A Treatise on Insanity", 1806 section A on p. 205.

Pinel was an intellectual disciple of Étienne Bonnot de Condillac, who in turn, was a disciple of the English empiricist John Locke.<sup>39</sup> Locke is most well known as the intellectual progenitor of the American Constitution, but his views on the nature of mind and the empirical basis of knowledge held sway over much of the Western intellectual world in the first half of the 19th century. Locke's influence on Condillac and hence Pinel was two-fold: first, he held that all our ideas originate in sensation and reflection. Second, and as importantly, Locke followed Francis Bacon in teaching that all knowledge must be based on careful, systematic observation.

For the empiricists, it follows that insanity, which is a severe form of our ideas 'leading us astray', is explained by an incorrect connection and association of ideas. Some of our ideas have a natural affinity or connection with one another. Others are held together by mere custom or habit. Cases of insanity are cases where habitual associations become so disorganized they begin to effect the 'natural' associations. This misassociation can become so extreme that it can "set us awry in our actions, as well moral as natural, passions, reasonings, and notions

<sup>39</sup> See, e.g. *Treatise on Insanity*, p. 46

themselves'' (Locke 1959, Bk 2, Ch 33, p 9. Pg. 531). To this day, we use metaphors like 'lost his senses' to describe someone with mental illness; and we describe poorly chosen actions as 'not very sensible.'

This is simply the theoretical basis for understanding insanity in the broadest possible terms. To truly understand how mental disorder is defined and classified, we must consider how the mentally ill have been treated.

### *Foundations*

#### **Foundation in Empiricism: Philipe Pinel**

Philipe Pinel (1745–1826) revolutionized the treatment of the insane. When, in 1792, he was appointed a physician at the main asylum in Paris—the Bicêtre hospital—the situation was dire. According to a biographer in 1846:



Figure 2.8: Charles Louis Müller CC BY-SA 3.0 url<https://creativecommons.org/licenses/by-sa/3.0>

The buildings were unfit for habitation. In them were congregated men crouching together in the mud, in stone cells, narrow, cold, damp, destitute of air and light, and merely furnished with a straw bed, seldom renewed, and soon becoming foul and offensive; wretched dens, in which one would hesitate to place the meanest animal. The insane, who were immured in these filthy holes, were at the mercy of their attendants, and these persons were malefactors released from prison. The wretched patients were loaded with chains and manacled like convicts. Thus given up defenseless to the wickedness of their guardians, they were the sports of an insulting mockery, or of a brutality all the more blind that it was gratuitous. Marx 1846, p. 194-195

Upon his arrival, Pinel immediately began advocating pity, respect, and compassion for the patients, not only for humanitarian reasons, but also in order to allow the Baconian method of careful observation.

Given the terrible conditions at the Bicêtre, Pinel argued, one would never be able to determine if the behavior of the patients was the result of some underlying condition, or the condition of the Hospital itself. Bicêtre's chief physician, Pussin, was sympathetic to Pinel's techniques, and began a pilot study of unchaining the patients.

Two years later, Pinel was appointed chief physician of the Hospice de la Salpêtrière—Paris' parallel institution for women. There, the women were kept chained, often naked, in subterranean cells; subjected to the terrors of abusive guards and hungry rats. Pinel immediate banned the use of metal chains as restraints, allowed the women clothing, and established something resembling human civility.<sup>40</sup> This act was mythologized during the French Revolution as part of the overthrow of the aristocratic order, and has been duly commemorated in Art.

Pinel's revolutionary kindness is not just a story of a sympathetic humanitarian. Pinel's goal was to systematical classify mental illness in the Baconian manner. The conditions of confinement found in the Bicêtre and the Salpêtrière compounded the patients' mental illness, and confounded his attempts at observation. In these conditions, one could not determine if the regularity of symptoms found in the population resulted from the illness or the 'treatment.' By providing the patients respect and dignity, he believed he could observe their mental illness in an untainted form.

In general, Pinel followed Locke and Condillac in holding that insanity was 'derangement of the understanding,'<sup>41</sup> yet extended the view to cover cases where memory, understanding and judgment were perfectly sound, and still the patient was maniacal.

Pinel explicitly based his system on "the numerous and important facts which have been discovered and detailed by modern pneumatologists" (Pinel 1806, p. 135) abandoning any formal all-encompassing theoretical explanation of insanity *per se*, especially that which originated in Ancient Greek thought. The Greeks, he reasoned, believed the brain was a heat-dispersion device and thoughts originate in the heart. They were wrong about that, so as their theories of insanity based on this mistaken physiology, is equally unreliable.

Name	Presentation and Specific Character
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<sup>40</sup> From a letter of honor, included in Marx 1846: "He who walks in an odiferous flower-garden, which had formerly been a pestilential swamp, will best be able to appreciate what you effected in madhouses. Formerly an atmosphere almost stifling, damp rooms, the clank of chains, the cries of those under the lash, the hoarse growl of the rough attendants, the desperate frenzy of the ill-used patients; these succeeded by clean apartments, the greatest humanity in personal attentions, and an atmosphere of peace and confidence throughout the whole establishment. Marx:1847vc

<sup>41</sup> See, e.g p. 3, Section 4, p 134. Also, from the Marx (1846): Every delusion is the result of confused modes of thinking; wrong and crime originate in ignorance." Marx:1847vc



Figure 2.9: Robert-Fleury Dr. Phillippe Pinel at the Salpêtrière 1795 Public domain. From Wikimedia commons

Melancholia or delirium upon one subject exclusively	Presentation: taciturnity, a thoughtful pensive air, gloomy suspicions, and a love of solitude. (§54) Specific characterization: no propensity to acts of violence, independent of such as may be expressed by a predominant and chimerical idea: free exercise in other respects of all the faculties of the understanding: in some cases, equanimity of disposition, or a state of unruffled satisfaction: in others, habitual depression and anxiety, and frequently moroseness of character amounting even to the most decided misanthropy, and some times to an invincible disgust with life.(§59)
Mania without delirium	Presentation: no period do they give evidence of any lesion of the understanding, but are under the dominion of instinctive and abstract fury(§60)  May be continued or intermittent. No Sensible change int eh functions of the understanding ; but perversion of the active faculties, marked by an abstract and sanguinary fury, with a blind propensity to acts of violence. (§64)
Mania with delirium	Presentation: faculties may be excited by intense or vehement passions, bu exalted and furious enthusiasm, or whatever strong emotions that may originate in fanaticism or chimerical delusion.(§60)  May be continued or intermittent, with regular or irregular returns of the paroxysms. It is distinguished, both in respect to the functions of mind as well as those of the body, by a strong nervous excitement; and marked by the lesion of one or more of the functions of the understanding, accompanied by emotions of gaiety, of despondence or of fury.(§67)
Dementia, or the abolition of the thinking faculty	Presentation: extreme volatility, thoughtless absence, extravagant improprieties, and wild eccentricities(§68)  Rapid succession or uninterrupted alternation of insulated ideas, and evanescent and unconnected emotions. Continually repeated acts of extravagance: complete forgetfulness of every previous state: diminished sensibility to external impressions: abolition of the faculty of judgement: perpetual activity.(§67)
Idiotism	Presentation: partial or total abolition of the intellectual and active faculties.(§72)  Total or partial obliteration of the intellectual powers and affections: universal torpor: detached, half articulated sounds; or entire absence of speech from want of ideas: in some cases, transient and unmeaning gusts of passion.(§76)

Table 2.3: Pinel's classification system

Pinel spent a great amount of time showing that the conditions

he was treating did *not* have a physiological basis. Much of his argumentation in *Treatise on Insanity* turns on the dissections performed on patients who had died while at the Bicêtre. The reason for this was two-fold: first, the ancient Aristotelean understanding of the mind held that mental illness resulted from too much or too little of one of the four main ‘humours’: black bile, yellow bile, blood and phlegm.<sup>42</sup> By showing that the mentally ill had no significant lesions in the brain, or imbalances in their ‘fluids’, Pinel was able to establish the independence of psychiatry from other forms of medicine.

Secondly, there is a long tradition of defining the ‘mental’ as that which is opposed to the ‘physical’. For example, René Descartes famously argues that the actions of our bodies can be explained entirely in physical, mechanistic terms, except that which can be attributed to, in his terms, our ‘souls.’ It follows then, that if an illness is to be truly mental, it must not have a physical explanation. And most importantly, physical causes are treated with physical interventions. As insanity was non-physical, the treatment cannot be physical. Hence, psychiatry is a discipline independent from physical medicine.

While Pinel had no strong theoretical commitment or agenda, by following Locke’s notion of mental illness as a confusion of ideas, he made two significant contributions to both psychiatry as a medical discipline and our understanding of the mind more broadly: First, if insanity was just a misassociation of ideas, it was not a permanent, inherited incurable disease. Second, if insanity is a misassociation of ideas, it does not depend on or result from physiological changes. Explanations for mental illness thus did not require autopsy; and treatment did not require surgery.<sup>43</sup> Psychiatry was, as a result, independent of medicine.

It is likewise important to recognize that Pinel was precisely following Bacon’s system of investigation. He was not attempting to form an overarching explanation. He was setting down tables upon tables of observed facts, classifying and arranging phenomena, highlighting privileged instances, and was open to any and all techniques that might shed light on these cases. After initial observation, he split “insanity” into four varieties, distinguishing between the incurable dementia and idiocy from the often transient and curable mania and melancholy.

Therapeutically, Pinel called his humane treatment of the insane the ‘moral treatment.’ In his words,

I then discovered, that insanity was curable in many instances, by mildness of treatment and attention to the state of the mind exclusively, and when coercion was indispensable, that it might be very effectually applied without corporal indignity. (p. 108).

His therapeutic program meant paying attention to the environ-

<sup>42</sup> Each humour had an associated personality type. Imbalance in a given humour was thought to be the cause of imbalances in mood or personality: people with too much black bile were melancholic, yellow bile choleric (full of energy), blood sanguine (impulsive), and phlegm phlegmatic (emotional). See Aristotle’s *Problems* Bk 3, Section 1 Galen’s *De temperamentis*, and Avicenna’s *The Canon of Medicine* for more detail.

<sup>43</sup> The modern reader of *A Treatise on Insanity* is impressed by the number of times that Pinel stresses these two features of mental illness. We take both of these for granted to such an extent that the work can seem highly repetitive and redundant. But they were radical theses in the late 18th century, and Pinel’s thoroughness in covering the topics no doubt reflects the importance of these thesis in his own mind. (Cite Data – number of pages, examples, etc.).

ment in which the insane were confined. He changed the architecture, the diet, the way the nurses and orderlies treated the patients, everything. He even went so far as to allow the higher-functioning patients to work as nurses for the lower-functioning. Patients were listened to. Careful, detailed personal histories were taken. Bathing, walking and gardening were encouraged.

A LACK OF THEORETICAL COMMITMENT meant that Pinel could borrow techniques from the many snake-oil salesmen and charlatans who populated Western Europe at the time. One of these fads happened to be mesmerism, now known as hypnosis. We'll come back to the importance of mesmerism in the rise of psychoanalysis below.

As a follower of Bacon, Pinel was only interested tabulating observations of results, and comparing them against the observations of the condition without intervention. He insisted that we cannot cure a disease until we know of the progression of the disease *without* intervention. In his own words, "We cannot cure diseases by the resources of art, if not previously acquainted with their terminations, when left to the unassisted efforts of nature." (p. 109). For him, extreme treatments could only be used in extreme cases. The curable would be cured by simple humane treatment.

It is worth pointing out that the word 'asylum' means, of course, a sanctuary or refuge. It first appears in English in the 1808 translation of Pinel's *Treatise on Insanity*, to reference the Bicêtre. It appears in English newspapers starting in the 1860's, to describe leper colonies—long after Pinel's 'moral treatment' had come to dominate the English treatment of the mentally ill.

### **Mental Alienation - Esquirol**

While Pinel tended to think of transient mental illness as a confusion of ideas, he occasionally spoke of the role of passions in mental illness. In the early pages of the *Treatise*, he hypothesizes three different causes of insanity:

I now proceed to describe the general progress of periodical insanity. Among its various causes; exclusive of changes in the state of the atmosphere, my experience leads me to enumerate as the most frequent; undue indulgence of the angry passions; any circumstances calculated to suggest the recollection of the original exciting cause of the disease, intemperance in drinking, inanition, &c. (Pinel 1806, p. 12)

Pinel's greatest student, Esquirol built on this hypothesis of 'undue indulgence of the angry passions' and redefined the notion of transient insanity as 'mental alienation.' It was Esquirol who grew the empirical understanding of the mind into a full-fledged psychiatric

system. But like Pinel, the set of conditions he sought to explain were those with symptoms that were not obviously explained by physical, bodily conditions.

Esquirol split Pinel's 'Melancholia' (see Pinel's classification system Table 2.3 on p. 57, into 'monomania,' or obsession with a single idea, and 'lypemania.' The latter he renamed partially because the 'melancholia' implied the medieval theory of 'humors' and 'black bile,' which Pinel specifically wanted to banish.

Monomania, lypemania and mania were distinguished by the nature of the passions that are out of order: "The passions of the insane are impetuous, especially in mania and monomania. They are of a depressing character in lypemania. In dementia and imbecility, those only exist, which spring from the first wants of man,—love, anger, jealousy." ( Esquirol and Hunt 1845, p 26)

As the curable, transient forms of insanity were diseases of malformed passions, their treatment required reforming or redirecting the passions. His five varieties of insanity are defined thus:

1. Lypemania (melancholy of the ancients) delirium with respect to one, or a small number of objects, with predominance of a sorrowful and depressing passion.
2. Monomania, in which the delirium is limited to one or a small number of objects, with excitement, and predominance of a gay, and expansive passion.
3. Mania, in which the delirium extends to all kinds of objects, and is accompanied by excitement.
4. Dementia, in which the insensate utter folly, because the organs of thought have lost their energy, and the strength requisite to fulfill their functions.
5. Imbecility, or idiocy, in which the conformation of the organs has never been such, that those who are thus afflicted, could reason justly. ( Esquirol and Hunt 1845, p. 29)

It is important to note here that the passions *accompany* delirium with respect to collections of objects. One cannot be passionate without being passionate about something. The 'something' that is the object of passion is supplied by the senses—and hence, we're still within a Lockean framework of understanding the mind.

According to the Lockean framework, all ideas originate in sense experience or internal reflection. When the passions directed at one of these ideas becomes excessive and out of control, lypemania or monomania results, depending on the nature of the particular passion that becomes excessive. When the passions are exaggerated without

a specific object, and hence apply themselves to every object, or whatever object is before the senses at a particular moment, we call that mania.

"are as numerous as its forms are varied." Case studies presented in his *Mental Maladies* include climate, seasons, age, sex, temperament, trauma (especially during the first menstrual cycle for young women), excessive study, ambition, etc. Again, as in Pinel, the difference between the mentally ill and the mentally stable is one of scale, not of kind. Everyone has passions—they are why we grieve, fall in love, work for that 'A', make personal sacrifices for our friends and families, etc.—the question of insanity is whether these passions are appropriate or excessive and whether they are directed at an appropriate or inappropriate object.

According to Esquirol:

"The first wants of man, limiting themselves to those connected with his preservation and reproduction, provoke the determinations of instinct; an internal impulse leads us to gratify them.

The secondary wants, attach themselves to the first, and the desires which they excite, acquire as much more energy, as we have means of satisfying them. They produce the primitive passions; in fine, they are the wants which are connected with our preservation; and are the fruit of our increasing intelligence and civilization. They engender the factitious passions,—those passions which cause the greatest injury to man, especially in the higher walks of life.

Infancy, except from the influence of the passions, is almost a stranger to insanity; but at the epoch of puberty, the sentiments, unknown until this period, cause new wants to arise. Insanity then appears, to trouble the first moments of the moral existence of man. At mature age, the relations become extended, social wants multiple and the passions take a new character. In proportion as the amorous passions become enfeebled, those of a factitious nature grow strong. Personal interest, ambition, love of distinction and avarice, replace the charms of love and delights of paternity.

At this period of life also, mental alienation appears; insanity is more obstinate, and more concentrated. It passes more readily into a chronic state; and is more dependent upon abdominal lesions.

A sense of his weakness, renders the old man more clam; and while meditating upon the errors to which the passions lead, he isolates himself, and becomes an egotist.

Insanity from a moral cause, rarely exists with him, and when he loses his reason, it is because his organs are fatigued and exhausted. Hence, it is neither mania nor monomania which is developed, at this period, but senile dementia.

Of all moral causes, those which most frequently produce insanity, are pride, fear, fright, ambition, reverses of fortune, and domestic trouble.

This last should have been placed, relative to its great influence, at the head of the moral causes, if it be limited to a simple ideas; but by domesticate troubles, I express all the pains, all the griefs, all oppositions, misfortunes and dissensions that grow out of the family state. (Esquirol and Hunt 1845, p. 45-46)

Esquirol began to gather around himself a ‘circle’ of students who are sometimes referred to as the ‘mental alienists.’ Two of the most famous of his students were Charles Lasègue, who is now credited with working out the first definition of hysteria and first documenting *anorexia nervosa*; and Étienne-Jean Georget who delineated four sub-types of ‘monomania’: theomania (religious obsession), ertomania (sexual obsession), demonomania (obsession with evil) and homicidal monomania.

Esquirol’s concept of monomania sparked what is probably the first recorded wave of copy-cat psychosis. In November 1825, a young single mother of two named Henriette Cornier, decapitated the 19 month-old child of her neighbors. She had prepared her room for the act, even placing a bucket to catch the blood. She had known the family of the infant for only ten days, and had, up until this event, been nothing but loving and gentle towards the little girl who would be her victim. When the police arrived, she offered no resistance to the police, and did not flee. She confessed, saying that the idea had taken hold of her, and she simply had to act upon it.

The case became a sensation across Europe. Georget diagnosed her as a ‘homicidal monomaniac.’ At her trial, the jury decided that the act had not been premeditated and as a result, she was sentenced to life in prison with hard labor instead of death. This ruling makes little sense: Cornier admitted that the idea had occurred to her before the event, and she had carefully prepared her room for the murder. Thus, many commentators have attributed the jury’s leniency to Georget’s diagnosis of mental alienation.<sup>44</sup> After all, if Cornier was mentally ill, does pre-planning count as ‘premediation’?

The idea of the murderous monomaniac took off across Europe, informing or appearing in some of the greatest literature of era, including (according to various literary critics) Poe’s “The Tell-Tale Heart,” the character of Raskolnikov in Dostovesky’s *Crime and Punishment*, and even Heathcliff in Bonte’s *Wuthering Heights*. The Marquis de Sade is also said to have been a monomaniac.

### *Early Neurology*

Western medicine understood that the nervous system used, or conducted, electricity from the Galvani’s famous frog-leg experiments of 1780. There were, as one might expect, different interpretation of the

<sup>44</sup> Include Lisa Appignanesi (Appignanesi 2009, p 75)

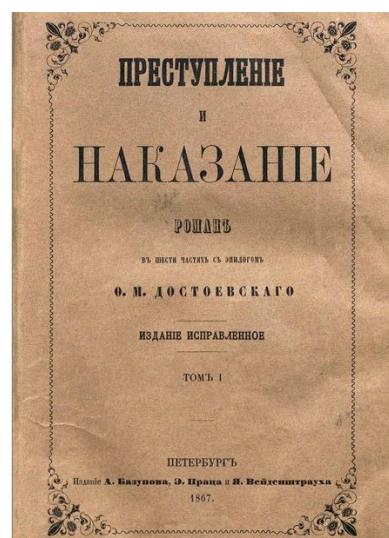


Figure 2.10: Cover of first edition of ‘Crime and Punishment’ by Fyodor Dostoevsky By [Public domain], via Wikimedia Commons

relationship between nerves and electricity—Galvani believed electricity was the ‘vital force’ contained in living things.<sup>45</sup> Galvani’s colleague Volta, who went on to lend his name to the ‘Volt’, argued that the frog leg reacted to electricity, but did not contain it. The precise relationship between nerves and electricity, as well as the relationship between the nervous system and our psychology, was not nailed down for a long time. But that didn’t stop researchers in this era from speculating wildly. One of the most famous, whose theories about psychology are enshrined in our language in terms as frequent as ‘nervous’, is George Beard.

### American Nervousness — George Beard

George Beard (1839–1883) was an American physician who started out advocating for the use of electricity as a medical intervention. His first book *Medical Uses of Electricity* (Beard and Rockwell 1867) suggested that electricity could be used to cure ‘general nervous debility,’ including dyspepsia, chorea, neuralgia, anaemia, or amenorrhoea. Beard was a charismatic popular author, who went on to write a series of popular home-healthcare books starting with *Our Home Physician: Handy Book of Family Medicine* in 1869.<sup>46</sup>

Starting in the 1870s, Beard became increasingly interested in psychological disorders. In 1881, he published *American Nervousness*, a book that came to define psychological treatment for a generation. ‘Nervousness’ did not mean then what it means today: jitteriness or tension. Then, it denoted a kind of fundamental exhaustion—what we still call a ‘nervous breakdown’. Technically, Beard defined it as:

“deficiency of lack of nerve-force. This condition, together with all the symptoms of diseases that are evolved from it, has developed mainly within the nineteenth century, and is especially frequent and severe in the Northern and Eastern portions of the United States. Nervousness, in the sense here used, is to be distinguished rigidly and systematically from simple excess of emotion and from organic disease.” Beard 1881, p. vi

It was caused by “modern civilization, which is distinguished from the ancient by these five characteristics: steam-power, the periodical press, the telegraph, the sciences, and the mental activity of women.” (p. vi)

Beard was building on both folk theory of innate energy as well as recent discoveries in neurology.<sup>47</sup> But he extended his view to cover diseases such as “neurasthenia (nervous exhaustion... hysteria, hay-fever, sick-headache, inebriety... some and phases of insanity.” (p. vii) whose ‘signs’ could include:

The nervous diathesis; susceptibility to stimulants and narcotics and various drugs, and consequent necessity of temperance; increase of

<sup>45</sup> And hence, the frequently-used trope of science fiction dating back to Frankenstein that the dead can be brought back to life with electricity.

<sup>46</sup> For more, see Beard 1875



Figure 2.11: See page for author Public domain via Wikimedia Commons

<sup>47</sup> Compare, for example, the concurrent theory of ‘specific sense energies’ proposed by Müller – see the Birth of Psychology: German Physiological Psychology in the 1880s-1890s subsection 2.2 on p. 29.

the nervous diseases inebriety and neurasthenia (nervous exhaustion), hay-fever neuralgia, nervous dyspepsia, asthenopia and allied diseases and symptoms; early and rapid decay of teeth; premature baldness; sensitiveness to cold and heat; increase of diseases not exclusively nervous, as diabetes and certain forms of Bright's disease of the kidneys and chronic catarrhs; unprecedented beauty of American women; frequency of trance and muscle-reading; the strain of dentition, puberty and change of life; American oratory, humor speech and language; change in type of disease during the past half century, and the great intensity of animal life on this continent. (p. vii-ix)

Beard died shortly after the publication of *American Nervousness*, but his cause was taken up by Silas Wier Mitchell (1829–1914), who popularized a standard treatment for American Nervousness: the rest cure. As you can probably imagine, if the cause of American Nervousness was modern civilization, including women having a mental life, the cure was removal from modern civilization, including banning women from having a mental life.

In 1885, at the age of 25, Charlotte Perkins Gilman, a member of a prominent family of American progressives that included the abolitionist author Harriet Beecher Stowe, the suffragist Isabella Beecher Hooker, and the charismatic clergyman Henry Ward Beecher, gave birth to her only child Katharine Beecher Stetson. After the birth, Charlotte Perkins-Gilman experienced what we now recognize as a severe case of post-partum depression.

She was taken to see Silas Wier Mitchell. She described her experience of the treatment she received thus:

"During about the third year of this trouble I went, in devout faith and some faint stir of hope, to a noted specialist in nervous diseases, the best known in the country. This wise man put me to bed and applied the rest-cure, to which all still-good physique responded so promptly that he concluded there was nothing much the matter with me, and sent me home with solemn advice to 'live as domestic a life as far as possible,' to 'have but two hours' intellectual life a day' and 'never touch a pen, brush or pencil again' as long as I lived. This was in 1887." ("Why I wrote *The Yellow Wallpaper*, 1913)

Her experiences you may know from the American Standard short story *The Yellow Wallpaper* (1892). Gilman acknowledged that she never suffered from the hallucinations her character does, but that she "came so near the borderline of mental ruin that I could see over." (1913)

While Beard and Wier Mitchell are today often ridiculed as snake-oil salesmen playing on political concerns over rapid modernization and the suffragist movement, they made a number of notable contributions to our commonsense understanding of psychological disorder. First, they indelibly linked mental disorders to neurology. As

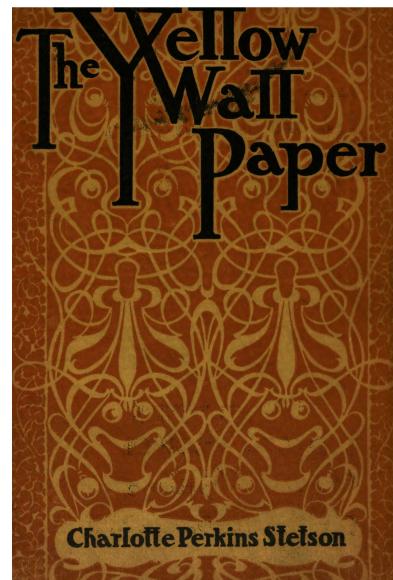


Figure 2.12: By Small, Maynard & Company (File:The Yellow Wall Paper.djvu) (Public domain), via Wikimedia Commons

mentioned above, we still use phrases like ‘nervous breakdown’ in common parlance to explain psychological disorder. Second, by prescribing puberty, birth, menopause and the ‘unprecedented beauty of American women’ as prime causes of mental illness, they further established a link between the onset and frustration of sexuality with mental illness, a point upon which Freud would build psychoanalysis.

It would be a mistake, however, to accept the simplistic narrative that the doctors of this era were manipulating and abusing their female patients without their consent. Historians of Psychology Laura C. Ball and Jennifer L. Bazar have recently demonstrated that in some cases, some women aggressively sought out procedures, such as clitorectomies, in this period. In one remarkable case, a patient even ‘tormented the doctors to operate again.’ (Ball and Bazar 2010)

ANOTHER WAY TO CHART the rise of psychiatric diagnosis is to consider how people with mental illness are counted in the US census. The US census included categories for the disabled, including ‘blind’ and ‘deaf,’ in 1830. (Gorwitz 1974) From 1840–1870, the census included a category for ‘idiocy/insanity.’

Starting in 1880, however, the federal government began using categories of mental illness. In 1880, those categories were:

<b>21</b>	<b>Mental Disease, Insanity</b>
00	Melancholy
01	Mania
02	Hysteria
03	Nerves
04	Dementia
05	Insane (not elsewhere classified)
<b>22</b>	<b>Mental Retardation, Idiocy</b>
00	Idiotic

Table 2.4: Mental Illness Classification used in the US Census of 1880

Readers of these sections will no doubt recognize this taxonomy as owing an intellectual debt to both Esquirol (Melancholy, Mania, Hysteria and Dementia) and Beard (Nerves).

### Early Neurology — Charcot

Charcot began his career at the Salpêtrière tending to the ‘incurables’—the patients whose conditions had been classified as ‘idiocy’

or ‘dementia.’ Charcot saw himself primarily as a nosologist: a classifier or taxonomizer of disease, rather than a healer. His appointment was, in many ways, ideal. This was a patient population for which there was no hope of cure, and moreover, had not been studied in a careful way.

Charcot is, today, often classified as a neurologist. That is a bit of historicism, as there was no such field when he began work. In fact, the ‘neuron doctrine’, or the idea that the nervous system is composed of individual cells called ‘neurons,’ is not formally advanced until 1891. And it isn’t until 1911 that Ramon y Cajal uses the Golgi stain to highlight neurons in the hippocampus, confirming the neuron doctrine.

None of that stopped Charcot from classifying a huge number of conditions and diseases we still recognize today: multiple sclerosis, amyotrophic lateral sclerosis (ALS or “Lou Gerig’s disease,” it was once called “Charcot’s disease”), lenticulostriate artery (“Charcot’s artery”), joint arthropathy (“Charcot’s joint”), peroneal muscular atrophy (“Charcot-Marie-Tooth disease”), Charcot Wilbrand syndrome, Charcot’s intermittent hepatic fever and even Parkinson’s disease were all first named or described by Charcot.

Methodologically, Charcot advocated what he called the ‘anatomoclinical’ method, which meant careful anatomical analysis performed largely post-mortum combined with case studies of vivisection in both animals and human subjects. Once a behavioral deficiency has been identified, careful anatomical studies are carried out to determine any corresponding anatomical ‘deficiency,’ or lesion. In his own words:

Allow me to recall to your minds the opinion which that most illustrious physiologist, Claude Bernard, thus expressed:—“Pathology,” said he, “should not be subordinated to physiology. Quite the reverse. Set up first the medical problem which arises from the observation of a malady, and afterwards seek for a physiological explanation. To act otherwise would be to risk overlooking the patient, and distorting the malady.” These are excellent words, which I have ventured to quote verbatim, because they are absolutely significant. They enable us to clearly understand that the whole domain of pathology appertains strictly to the physician, who alone can cultivate it and make it fruitful, and that it necessarily remains closed to the physiologist who, systematically confined within the precincts of his laboratory, disdains the teaching of the hospital ward. (p. 8)

In 1878, he began extensive work on hypnosis. Hypnosis had been practiced at the Salpêtrière for over 50 years—since the days of Pinel, in fact. Charcot became increasingly interested in the therapeutic use of hypnosis to cure what he called ‘hysteria’, a vaguely-defined collection of usually transient symptoms that included paralysis, anesthesia, visual or auditory agnosias, temporary blindness or deafness,

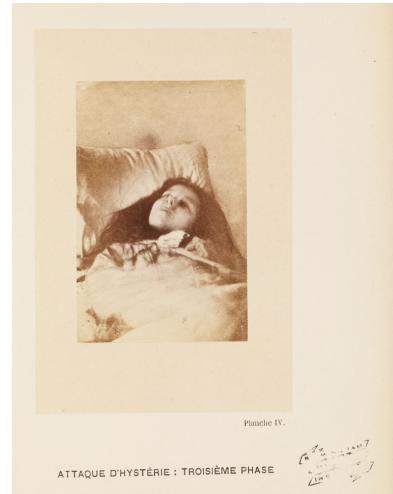


Figure 2.13: Photo of patient of M. Charcot in the Salpêtrière. From Wellcome images, <https://wellcomecollection.org/works/fh922zk8>

amnesia and seizures. While 'hysteria' came to be identified closely with women, Charcot himself believed that it could effect men, and treated many men that he diagnosed with hysteria.

This does not mean, however, that Charcot gave up his commitment to neurological explanations of behavior. He simply allowed functional and/or physiological explanations in addition to the anatomical. In his words:

There is another important fact in the history of neuroses in general, and of hysteria in particular, which clearly shows that these diseases do not form, in pathology, a class apart, governed by other physiological laws than the common ones. (13)

I've quoted this passage because it is the first use of the word 'neuroses' in print. Its root in neurological terminology is obvious, but here Charcot uses it to demarcate transient, psychological, functional or dynamic neurological conditions from the incurable, intransient, anatomical neurological conditions. The former we classify as 'mental', the latter 'neurological'—even today. 'Neurosis' thus supplants 'mental alienation' and 'nervousness' as the descriptor of the set of psychological conditions that cannot be explained physically, even though its root is connected to the idea of a physical manifestation in 'neurons.'

Blocked from further education by antisemitism in Germany from further education, a young Sigmund Freud came to study with M. Charcot in 1890. There, he learned the techniques of hypnosis and studied many cases of hysteria. Later in life, Freud frequently referred to Charcot as his 'mentor,' and even attributed the idea that all neuroses originate 'in the genitals' to Charcot.<sup>48</sup>

In his eulogy for Charcot, Sigmund Freud said:

He was not a reflective man, not a thinker: He had the nature of an artist—he was, as he himself said, a 'visuel', a man who sees... He used to look again and again at the things he did not understand, to deepen his impression of them day by day, till suddenly an understanding of them dawned on him. In his mind's eye the apparent chaos presented by the continual repetition of the same symptoms then ave way to order: the new nosological picture emerged, characterized by the constant combination of certain groups of symptoms... He might be heard to say that the greatest satisfaction a man could have was to see something new—that is, to recognize it as new; and he remarked against and again n the difficulty and value of this kind of 'seeing'. (Quoted in Mad, Bad and Sad, p. 128)

It should be fairly obvious that Freud here is dismissing, essentially, Charcot's Baconian approach to scientific classification: careful, close observation with only careful, conservative theoretical suppositions. Unlike Charcot, who is remembered only in the names of the diseases

<sup>48</sup> In his 'History of the Psychiatric Movement', Freud writes: "...It was the case of the young married couple from the far East. The wife was a great sufferer and the husband was impotent, or exceedingly awkward. I head Charcot repeat: "Tâchez donc, je vous assure vous y arriverez." Brouardel, who spoke less distinctly, must have expressed his astonishment that such symptoms as those of the young wife should have appeared as a result of such circumstances, for Charcot said suddenly and with great vivacity: "Mais, dans de cas pareils, c'est toujours la chose génital, toujours—toujours—toujours." And while saying that, he crossed his hands in his lap and jumped up and down several times, with the vivacity peculiar to him." Freud and Brill 1938, p. 937-938

We know that George Beard and Silas Wier Mitchell had the same view at this point, and that Freud was familiar with their work on 'hysteria.' What is unknown, given that Freud's retelling of this anecdote is based on his memory alone, is the accuracy of this story. It might be the case, and it might just be Freud misattributing a theory he picked up from Beard and Wier Mitchell to his mentor years after the fact.

he classified, Freud became globally famous for his theoretical suppositions. Whereas Charcot was content with describing neuroses and localizing them in the nervous system, Freud sought to explain the origins of neuroses in non-physical terms.

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### Rise of Psychoanalysis

#### Hysteria and Hypnosis: Freud & Breuer on Anna O.

By the end of the 19th century, we find general agreement that mental illnesses are characterized by symptoms with no bodily, physical (or in Beard's terms 'organic') explanation.<sup>49</sup> That understanding defined the limits of psychiatry. When a condition could be explained in anatomical terms, it was no longer considered psychiatric and reverted to medical or neurological. When it could not be understood physically—when it had to be explained in terms of 'psychic energy'—it was given to the psychiatrists.

This thesis was rarely challenged because psychiatrists largely practiced in hospitals that contained psychiatric patients. That sounds circular, but it isn't: Pinel, Esquirol and Charcot were attempting to create a theory of mental illness that could explain the patients they saw before them. The patients they saw before them were not brought there because they fit the theory, or because they had chosen to be there. They were brought to the Bicêtre and Salpêtrière when the rest of the medical community had given up attempting to explain their symptoms.

The same can be said for Beard and Wier Mitchell: Perkins Gilman was taken to see Wier Mitchell only after all other physical interven-

<sup>49</sup> See, for example, Drelich, Marvin G. "Classical Psychoanalytic School" in Arieti 1974

tions had failed.

These founders of psychiatry theorized about a population that had been deemed mentally ill *because the medical community had given up explaining their symptoms*. Not the other way around. The psychiatric hospital was a kind of catch-all for those individuals whose symptoms could not be alleviated by physical medicine, and hence it is unsurprising that the definitions of insanity we find in this era require the absence of a physical explanation.

Without a control population, there was no way these classifications could tease apart underlying conditions from any effects that may have resulted from being classified this way in the first place.

IN 1880, JOSEF BREUER, a student of the great psycho-physiologist Ewald Hering, was studying the ear as a part of his research at Vienna General Hospital. It was there that he first met 'Anna O.', a young woman with an extremely acute cough. Finding *no physical reason* for the cough, her family physician diagnosed her with "typical *tussis nervosa* [nervous cough]" Freud, Breuer, and Luckhurst 2004, p 27

Shortly thereafter a number of other symptoms arose. Freud & Breuer describe her case thusly:

Before this time she too had always enjoyed good health, showing no sign of nervous indisposition during her development. Of considerable intelligence, remarkably acute powers of reasoning, and a clear-sighted intuitive sense, her powerful mind could have digested, needed even, more substantial intellectual nourishment, but failed to receive it once she had left school. Her rich poetic and imaginative gifts were controlled by a very sharp and critical common sense. The latter also made her quite closed to suggestion. Only arguments had any influence on her, assertions were without effect. Her will was energetic, tenacious and persistent, sometimes heightened to such obstinacy that it would give way only out of kindness and consideration for others.

One of her principle traits was a sympathetic kindness. Even during her illness, she benefited greatly from the care and support she gave to some sick and poor people, for it allowed her to satisfy a strong drive. Her spirits always tended slightly to exaggeration, whether of joyfulness or grief, and as a consequence she was also somewhat moody. The element of sexuality was remarkably undeveloped: the patient, whose life became transparent to me in a way that seldom happens between people, had never been in love, and not once in the mass of hallucinations that occurred during her illness did this element of the inner life emerge...

...The course of the illness falls into several distinct phases. They are as follows:

A) Latent incubation. From mid-July 1880 to approximately 10 December. This case was exceptional because it afforded so complete an insight

into a phase that in most cases escapes us, and for this reason alone its pathological interest could not be overestimated. I will expound on this part of the history later.

B) Manifest illness: a peculiar kind of psychosis, paraphasia, *stabismus convergens* [convergent squint], sever visual disturbance, paralyzing contractures, complete paralysis in the upper right and both lower extremities, partial paralysis in the upper left extremity, paresis of the neck muscles. A gradual reduction in the contracture of the right extremities. Some improvement, interrupted by a sever psychical trauma (death of the father) in April, after which

C) A period of continual somnambulism ensues, which then alternates with more normal states; continuation of a series of chronic symptoms until December 1881.

D) Gradual winding down of mental states and symptoms until June 1882. Freud, Breuer, and Luckhurst 2004, p25-26

Breuer took over her care during the period of 'manifest illness,' during which, Anna O. slept for great periods of time ('somnambulism'), but when she awoke in the evening, she would complain of 'torment.' Her speech lost all grammatical structure ('paraphasia') and she would piece together words and phrases from the five distinct languages she spoke, producing an incomprehensible jargon. This same jargon appeared in writing, so Breuer knew that it was not a dysfunction of the physical mechanism of speech.

In the early spring of 1881, Anna O fell mute for a period of two weeks. At this point, Breuer claims that he

knew she had taken great offense at something and had resolved to say nothing about it. When I guessed as much and forced her to talk about it, the inhibition, which had until then made it impossible for her to speak about anything else either, disappeared. ( Freud, Breuer, and Luckhurst 2004, p 29)

After her father's death, her illness became much more severe. Breuer noticed, however, that her periods of sleep in the later afternoon, during which she was 'tormented' by hallucinations, resembled hypnotic states. He decided to preemptively hypnotize her and prompt her to 'talk through' these tormenting phantasies. The symptoms subsided quickly. The day after a session, she would become 'quite calm' and 'agreeable, obedient, industrious and even in good spirits'. The second day after a session she would be 'increasingly moody, contrary and disagreeable, and this worsened on the third.' Anna O. named these sessions (in English) the 'talking cure' and 'chimney-sweeping.' Breuer preferred the more sophisticated 'cathartic procedure.'

Breuer communicated this to his friend Sigmund Freud, who offered to co-author a paper laying out the findings. That paper, titled 'The Psychic Mechanism of Hysterical Phenomena,' first appeared in 1893, but was republished as the first chapter of Freud and Breuer's *Studies on Hysteria* Freud, Breuer, and Luckhurst 2004, 1895. In it, Freud and Breuer propose a new form of hysteria, called 'traumatic hysteria', which they conjecture is always connected to some traumatic event that evokes the syndrome. They further hypothesize that the traumatic event can be unavailable to the conscious, reflective mind of patient—i.e. be unconscious—yet still be causally responsible for the hysterical symptoms. Moreover, they hypothesize that making the patient aware of the trauma, via Breuer's 'cathartic procedure' using hypnosis if necessary, alleviates the hysteria.

### **Freud: The foundation of psychoanalysis**

The seeds of psychoanalysis were planted by Charcot and Breuer, but they did not develop into a full-fledged system of Psychiatry until Freud worked independently. Building on his theory of unconscious trauma to explain hysteria, Freud hypothesizes that traumatic events may manifest themselves in the mind indirectly in the form of symbols. He then went on to hypothesize that the fantasy lives of psychotic patients are full of such symbols, and recovering the original trauma requires investigation of the mechanisms of symbolization.

It was this realization that gives us the basis for psychoanalysis, for it is this realization that allows Freud to argue that the hallucinations and fantasies experiences by the psychotic are not significantly different from the dreams of the sane. Whereas prior to Freud, dreams and hallucinations were thought to be without meaning, after Freud they were seen as full of symbolic representations, the meanings of which were available empirically through systematic investigation of the mechanisms of psychological representation. Freud's proposed mechanisms are introduced in the Classical subsubsection 4.1 on p. 125.

The barrier between the mentally ill and the mentally healthy had been permanently broken.<sup>50</sup> No longer does the theory of psychiatry apply only to those who cannot be helped by medicine. Now the theory applies to everyone: a healthy person could become ill through unhealthy habits of mental representation, and ill people could become healthy through the process of discovering their habits of mental representation and recognizing their unconscious traumas.

This conflation of psychiatric conditions and normal life left Freud in the precarious position of having to define 'mental illness.' He did so thus:

<sup>50</sup> I am simplifying here a bit. While Freud is commonly believed to originate the idea that dreams and psychotic hallucinations were best understood on a continuum, the ideas appears in the work of the British associationist Alexander Bain. See, e.g. Bain 1903, p. 45

Symptoms—and of course we are dealing now with psychical (or psychogenic) symptoms and psychical illness—are acts detrimental, or at least useless, to the subject's life as a whole, often complained by him as unwelcome and bringing unpleasure or suffering to him. (Freud 1929, p. 445)

Table 2.5: Freud's Definition of Mental Illness

**Neurosis v. Psychosis.**<sup>51</sup> The psychoanalytic taxonomy of mental illness has three main divisions: psychosis, neurosis and 'other' or 'borderline' between the two.

One of the hallmarks of Freud's theory is his thesis that there is no hard and fast distinction to be made between the mentally ill and the mentally healthy. His *Introductory Lectures* are structured to introduce the reader to psychopathology in everyday life before extending the analysis of common activities to psychotics and neurotic patients. As such, there are no hard and fast definitions of either psychosis or neurosis<sup>52</sup>.

During the course of normal development of mentally healthy adults, Freud hypothesized, the ego<sup>53</sup> must become 'reasonable': it must no longer let

itself be governed by the pleasure principle, but obeys the reality principle, which also at bottom seeks to obtain pleasure, but pleasure which is assured through taking account of reality, even though it is pleasure postponed and diminished. (p. 444)

A neurotic's ego fails to make this transition, and gets stuck at one point in development. Thus, the neurotic's libido and ego are still struggling in a child-like way, but the contents of the struggle have been transformed into objects of adulthood. Neurotic symptoms are the "outcome of a conflict which arises over a new method of satisfying the libido" (p. 446) and a person is ill from neurosis only if "his ego has lost the capacity to allocate his libido in some way" (p. 480). A psychotic patient, however, has lost the battle for the reality principle, and the libido has created its own reality.

The object of a neurosis, then, is relevant to the diagnosis only insofar as it is a stand-in for the actual conflict by the mechanisms of repression, reaction formation, isolation, etc. According to Freud:

clinical psychiatry takes little notice of the outward form or content of individual symptoms, but psychoanalysis takes matters up at precisely that point and has established in the first place the fact that symptoms have a sense and are related to the patient's experience. (p. 318)

<sup>51</sup> See Lectures 22 and 23 of the *Introductory Lectures* for a full discussion of neurosis and its origins.

<sup>52</sup> The distinction between neurosis and psychosis has always been controversial. Consider Pavlov's comment in his 1927 lectures: "Contemporary medicine distinguishes "nervous" and "psychic" disturbances—neuroses and psychoses, but this distinction is, of course, only arbitrary. No real line of demarcation can be drawn between these two groups: it is impossible to imagine a deviation of higher activities from normal without a functional or structural disturbance of the cortex." Pavlov 1927, Lecture 23

<sup>53</sup> See the Structural Hypothesis on page 126

## The Clark Lectures

In 1909, G. Stanley Hall, first president of the American Psychological Association, invited Freud and Jung to give a series of lectures at Clark University. The conference itself was a major moment in the intellectual history of America, as such luminaries as William James, Franz Boas, Adolf Meyer and E.B. Tichner were in attendance, as well as the famed Anarchist Emma Goldman.<sup>54</sup>

After the lectures, James Jackson Putnam, a neurologist in New York City, invited Freud and Jung to retire to his family's Adirondack 'great camp' for the weekend. ( Prochnik 2006) Putnam became an important advocate for psychoanalysis in the United States, establishing its legitimacy as a treatment for hysteria. While there are articles prior to 1909 on psychoanalysis (notably one by Putnam himself in 1906), we don't find significant discussion of psychoanalysis in the mainstream journals of Psychology until after the Clark lectures.<sup>55</sup> An effort to convince the American public of the scientific nature of psychoanalysis was mounted by Putnam camp attendees A.A. Brill, founder of the New York Psychoanalytic Society, and Ernest Jones, student of Freud. By 1916, Jones had published 20 articles, notes and reviews in the *Journal of Abnormal Psychology* offering or advocating for psychoanalysis.<sup>56</sup>

Putnam and Freud went on to become close friends, and Putnam spent much of the rest of his career attempting to professionalize and regularize the practice of psychiatry. He founded the American Psychoanalytic Association (APsaA) in 1911, which is still active today. His posthumously published *Addresses on Psychoanalysis*, which contains a preface by Freud himself, not only seeks to introduce Freudian theory to his scientific community, but also to dispel misunderstanding gained "through the gossip of prejudice and misconception" ( Putnam 1921, p. 3).

Putnam's influence here cannot be understated. Putnam introduced psychoanalytic ideas to the budding field of medical neurology. His position as a medical doctor at Harvard gave psychoanalysis legitimacy as a medical practice in America, and his stature in the neurological community helped to assuage any doubts about the lack of a physical basis for the hypothetical entities posited by Freud's structural hypothesis.

The story is not all smooth sailing. In 1916, the Princeton philosopher and psychologist Warren Fite reviewed of Jung's *Psychology of the Unconscious* for *The Nation*, writing that it "presents some five hundred-odd pages of incoherence and obscenity in the form of a psycho-analytic interpretation of the experiences of a sentimental young American woman." Fite 1916 The fact that the United States

<sup>54</sup> See, for example Jacoby 2009  
Experienced Reactors may recognize Emma Goldman from Mary Jane Tracey's Suffrageist game

<sup>55</sup> For a discussion, see Hornstein, Pickren, and Dewsbury 2002

<sup>56</sup> See, e.g. Hornstein, Pickren, and Dewsbury 2002, p. 474

was at war with Germany didn't help the psychoanalytic cause.<sup>57</sup>

What followed is a history of tension between those in the psychological and psychoanalytic communities. Helped by the military's preference for psychoanalysts in the treatment of 'shell-shock' during WWI and 'combat fatigue' in WWII, psychoanalysis gained credibility in the eyes of the American public.<sup>58</sup>

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<sup>57</sup> For example, Christine Ladd-Franklin, a student of C.S. Peirce and protege of Hermann Helmholtz as well as one of the first women to join the APA, called Freud's theory the product of an "undeveloped... German mind."

<sup>58</sup> See Chapter 1 of Menninger and Neimiah 2000 for an interesting discussion of this history.

### *Classification of Mental Illness, 1918–1952*

In 1917 during its annual meeting in New York, the American Medico-Psychological Association (now the American Psychiatric Association) in cooperation with the National Commission on Mental Hygiene formed a committee on statistics and charged it with creating a guide for classifying mental illness. The resulting document, *Statistical Manual for the Use of Institutions for the Insane*, was published in 1918 and adopted around the nation. It is available freely on google books. The manual outlined 21 medical-psychological categories, displayed in table 2.6:

Major Category	Minor Category
<b>1. Traumatic psychoses</b>	
(a)	Traumatic delirium
(b)	Traumatic constitutional
(c)	Post-traumatic mental enfeeblement (dementia)
<b>2. Senile psychoses</b>	
(a)	simple deterioration
(b)	Presbyophrenic type
(c)	Delirious and confused types
(d)	Depressed and agitated states in addition to deterioration
(e)	Paranoid types
(f)	Pre-senile types

---

**3. Psychoses with cerebral arteriosclerosis**

---

**4. General paralysis**

---

**5. Psychoses with cerebral syphilis**

---

**6. Psychoses with Huntington's chorea**

---

**7. Psychoses with brain tumor**

---

**8. Psychoses with other brain or nervous diseases**

---

The following are the more frequent affections and should be specified in the diagnosis

Cerebral embolism

Paralysis agitans

Meningitis, tubercular or other forms

(to be specified)

Multiple sclerosis

Tabes

Acute chorea

Other conditions (to be specified)

---

**9. Alcoholic psychoses**

---

- (a) Pathological intoxication
  - (b) Delirium tremens
  - (c) Korsakow's psychosis
  - (d) Acute hallucinosis
  - (e) Chronic hallucinosis
  - (f) Acute paranoid type
  - (g) Chronic paranoid type
  - (h) Alcoholic deterioration
  - (i) Other types, acute or chronic
- 

**10. Psychoses due to drugs or other exogenous toxins**

---

- (a) Opium (and derivatives), cocaine, bromides, chloral, etc. alone or combined  
(to be specified)
  - (b) Metals, as lead, arsenic, etc. (to be specified)
  - (c) Gases (to be specified)
  - (d) Other exogenous toxins (to be specified)
- 

**11. Psychoses with pellagra**

---

**12. Psychoses with other somatic diseases**

---

- (a) Delirium with infectious diseases
  - (b) Post-infectious psychosis
  - (c) Exhaustion-delirium
  - (d) Delirium of unknown origin
  - (e) Cardio-renal diseases
  - (f) Disease of the ductless glands
  - (g) Other diseases or conditions (to be specified)
- 

**13. Manic-depressive psychoses**

---

- (a) Manic type

- (b) Depressive type
  - (c) Stupor
  - (d) Mixed type
  - (e) Circular type
- 

**14. Involution melancholia****15. Dementia praecox**

- (a) Paranoid type
  - (b) Catatonic type
  - (c) Hebephrenic type
  - (d) Simple type
- 

**16. Paranoia or paranoic conditions****17. Epileptic psychoses**

- (a) Deterioration
  - (b) Clouded states
  - (c) Other conditions (to be specified)
- 

**18. Psychoneuroses and neuroses**

- (a) Hysterical type
  - (b) Psychasthenic type
  - (c) Neurasthenic type
  - (d) Anxiety neuroses
- 

**19. Psychoses with constitutional psychopathic inferiority****20. Psychoses with mental deficiency****21. Undiagnosed psychoses****22. Not insane**

- (a) Epilepsy without psychosis
  - (b) Alcoholism with psychosis
  - (c) Drug addition without psychosis
  - (d) Constitutional psychopathic inferiority without psychosis
  - (e) Mental deficiency without psychosis
  - (f) Others (to be specified)
- 

Table 2.6: Statistical Manual for the Use of Institutions for the  
Insane: classification of insanity, 1918

Notice that Pinel's broad categories: Melancholia, Mania, Dementia and Idiotism, have largely disappeared. Melancholia has a 'header' category called 'Involution' in number 14, which I suppose means 'involuntary—but the subcategories, Lypemania and Monomania (and its subtypes) are no where to be found. 'Mania' is now combined with 'depressive psychoses' in 13. 'Dementia' has 'praecox' (which means 'early)—what we would not call 'early onset dementia') added for 15, and 'Idiocy' is no longer included.

invited the Public Health Service, the Army and Navy Medical De-

partments and the American Hospital Association to collaborate on a standard nomenclature of disease. That standard was first published in 1933 as *A Standard Classified Nomenclature of Disease*, generally referred to as *The Standard*, and was widely used until at least the 1960s.

Houts 2000

In its original form, it used the following ten categories, as displayed in table 2.7:

<b>Code</b>	<b>Condition</b>
0	Diseases due to prenatal influences
1	Diseases due to lower plant and animal parasites
2	Diseases due to higher plant and animal parasites
3	Diseases due to intoxication
4	Diseases due to trauma or physical agents
5.0	Diseases due to circulatory disturbances
5.5	Diseases due to disturbances of innervation or of psychic control
6	Diseases due to or consisting of static mechanical abnormality (obstruction; calculus; displacement and gross changes in form etc., due to unknown cause).
7	Diseases due to disorders of metabolism, growth or nutrition
8	New growths
9	Diseases due to unknown or uncertain causes, the structural reaction (generative, infiltrative, inflammatory, proliferate, sclerotic, or reparative) to which is manifest; and hereditary and familial diseases of this nature.
X	Diseases due to unknown or uncertain causes, the functional reaction to which is alone manifest; and hereditary and familial diseases of this nature.

Table 2.7: Standard Classified Nomenclature classification of disease, 1933

You may notice that the medical classification is entirely based on the *origin* or *cause* of a condition ('Diseases *due to...*'), not the symptoms. The term 'innervation' in item 5.5 is an archaic word for 'nervous' in the sense of 'nervous system.' In the Table 2.6, classification system, mental diseases are classified by the Freudian terms 'psychosis' and 'neurosis'.

During WWII, psychiatrists each branch of the armed forces used a different set of diagnoses for mental conditions. This was inefficient and precluded inter-branch communication. To fix the problem, Brigadier General William C. Menninger issued a bulletin called "Medical 203" in 1943 that laid the foundations for medical classification of mental illness.

The International Statistical Classification of Diseases (ICD) included a taxonomy of mental disorders for the first time in 1949. Its

classification system is displayed in table 2.8:

<b>(300-309)</b>	<b>Psychoses</b>
300	Schizophrenic disorders (dementia praecox)
300.0	Simple type
300.1	Hebephrenic type
300.2	Catatonic type
300.3	Paranoid type
300.4	Acute schizophrenic reaction
300.5	Latent schizophrenia
300.6	Schizo-affective psychosis
300.7	Other and unspecified
301	Manic-depressive reaction
301.0	Manic and circular
301.1	Depressive
301.2	Other
302	Involutional melancholia
303	Paranoia and paranoid states
304	Senile psychosis
305	Presenile psychosis
306	Psychosis with cerebral arteriosclerosis
307	Alcoholic psychosis
308	Psychosis of other demonstrable aetiology
308.0	Resulting from brain tumour
308.1	Resulting from epilepsy and other convulsive disorders
308.2	Other
309	Other and unspecified psychoses
<b>(310-318)</b>	<b>Psychoneurotic disorders</b>
310	Anxiety reaction without mention of somatic symptoms
311	Hysterical reaction without mention of anxiety reaction
312	Phobic reaction
313	Obsessive-compulsive reaction
314	Neurotic-depressive reaction
315	Psychoneurosis with somatic symptoms (somatisation reaction) affecting circulatory system
315.0	Neurocirculatory asthenia
315.1	Other heart manifestations specified as of psychogenic origin
315.2	Other circulatory manifestations of psychogenic origin
316	Psychoneurosis with somatic symptoms (somatisation reaction) affecting digestive system
316.0	Mucous colitis specified as of psychogenic origin
316.1	Irritability of colon specified as of psychogenic origin
316.2	Gastric neuroses

316.3	Other digestive manifestations specified as of psychogenic origin
317	Psychoneurosis with somatic symptoms (somatisation reaction) affecting other systems
317.0	Psychogenic reactions affecting respiratory system
317.1	Psychogenic reactions affecting genito-urinary system
317.2	Pruritus of psychogenic origin
317.3	Other cutaneous neuroses
317.4	Psychogenic reactions affecting musculoskeletal system
317.5	Psychogenic reactions affecting other systems
318	Psychoneurotic disorders, other, mixed and unspecified types
318.0	Hypochondriacal reaction
318.1	Depersonalisation
318.2	Occupational neurosis
318.3	Asthenic reaction
318.4	Mixed
318.5	Of other and unspecified types
(320-326)	<b>Disorders of character, behaviour, and intelligence</b>
320	Pathological personality
320.0	Schizoid personality
320.1	Paranoid personality
320.2	Cyclothymic personality
320.3	Inadequate personality
320.4	Antisocial personality
320.5	Asocial personality
320.6	Sexual deviation
320.7	Other and unspecified
321	Immature personality
321.0	Emotional instability
321.1	Passive dependency
321.2	Aggressiveness
321.3	Enuresis characterising immature personality
321.4	Other symptomatic habits except speech impediments
321.5	Other and unspecified
322	Alcoholism
322.0	Acute
322.1	Chronic
322.2	Unspecified
323	Other drug addiction
324	Primary childhood behaviour disorders
325	Mental deficiency
325.0	Idiocy
325.1	Imbecility
325.2	Moron

325.3	Borderline intelligence
325.4	Mongolism
325.5	Other and unspecified types
326	Other and unspecified character, behaviour and intelligence disorders
326.0	Specific learning defects
326.1	Stammering and stuttering of non-organic origin
326.2	Other speech impediments of non-organic origin
326.3	Acute situational maladjustment
326.4	Other and unspecified

Table 2.8: CD-6 classification of mental diseases, 1949

The 1949 classification clearly descends from the 1918 version in table 2.6. ‘Mania’ is completing missing on its own, but still appears connected to ‘depression.’ This time, however, ‘manic-depressive psychosis’ has become ‘manic-depressive reaction,’ implying some underlying trauma or condition to which this is a reaction. ‘Dementia praecox’ is listed as an older word for ‘Schizophrenic disorders,’(300) strangely enough. And ‘Involutional melancholia’ is still on its own in 302. Monomania and Lypemania are completely missing, although its modern descendent, obsessive-compulsive reaction is introduced. Hysteria is a reaction, like the others, at 311. The word ‘Idiocy’ is back in 325.0, as a subtype of ‘Mental deficiency’.

The overarching categories here are important. Everything we have already discussed is *under* ‘Psychoses’, ‘Psychoneurotic disorders’ and ‘Disorders of character, behavior and intelligence’. Or, in other words, the Freudian categories we mentioned on page 72

In the interest of unifying these different classification schema, the American Psychiatric Association voted to create the first Diagnostic and Statistical Manual (DSM). The nomenclature committee adapted the Medical 203 bulletin into the DSM and circulated it to a randomly selected sample of the membership (10%). When it was overwhelmingly approved by those who replied, the APA adopted it as the standard for diagnosis in medical treatment of psychological disorders. It is included as Appendix G

THE FIRST DSM DISTINGUISHED between “Disorders caused by or associated with impairment of brain tissue function,” “Mental Deficiency,” “Disorders of psychogenic origin or without clearly defined physical cause or structural change in the brain” and “Nondiagnostic Terms for Hospital Record.” This fourth category included “Alcoholic intoxication (simple drunkenness),” and “Dead on admission.” It is the third category, those without a physical cause, that is of the most interest to us. They are displayed here in table 2.9

<b>Identifier</b>	<b>Condition</b>	<b>Identifier in 1949</b>	<b>ICD-6 Ref</b>
<b>Psychotic Disorders</b>			
-7	Disorders due to disturbance of metabolism, growth, nutrition or endocrine function		
000-796	Involuntary psychotic reaction	(302)	
-X	Disorders of psychogenic origin or without clearly defined tangible cause or structural change		
000-x10	Affective reactions	(301.2)	
000-x11	Manic depressive reaction, manic type	(301.0)	
000-x12	Manic depressive reaction, depressive type	(301.1)	
000-x13	Manic depressive reaction, other	(301.2)	
000-x14	Psychotic depressive reaction	(309.0)*	
000-x20	Schizophrenic reactions	(300.7)*	
000-x21	Schizophrenic reaction, simple type	(300.0)	
000-x22	Schizophrenic reaction, hebephrenic type	(300.1)	
000-x23	Schizophrenic reaction, catatonic type	(300.2)	
000-x24	Schizophrenic reaction, paranoid type	(300.3)	
000-x25	Schizophrenic reaction, acute undifferentiated type	(300.4)	
000-x26	Schizophrenic reaction, chronic undifferentiated type	(300.7)	
000-x27	Schizophrenic reaction, schizo-affective type	(300.6)	
000-x28	Schizophrenic reaction, childhood type	(300.8)	
000-x29	Schizophrenic reaction, residual type	(300.5)	
000-x30	Paranoid reactions	(303)	
000-x31	Paranoia	(303)	
000-x32	Paranoid state	(303)	
000-xyo	Psychotic reaction without clearly defined structural change, other than above	(309.1)*	
<b>Psychophysiologic autonomic and visceral disorders</b>			
-55	Disorders due to disturbance of innervation or of psychic control		
001-580	Psychophysiologic skin reaction	(317.3)	
002-580	Psychophysiologic musculoskeletal reaction	(317.4)	
003-580	Psychophysiologic respiratory reaction	(317.0)	
004-580	Psychophysiologic cardiovascular reaction	(315.2)	
005-580	Psychophysiologic hemic and lymphatic reaction	(317.5)	
006-580	Psychophysiologic gastrointestinal reaction	(316.3)	
007-580	Psychophysiologic genito-urinary reaction	(317.1)	
008-580	Psychophysiologic endocrine reaction	(317.5)	
009-580	Psychophysiologic nervous system reaction	(318.3)	
00x-580	Psychophysiologic reaction of organs of special sense	(317.5)	
<b>Psychoneurotic Disorders</b>			

---

-X	Disorders of psychogenic origin or without clearly defined tangible cause of structural change	
000-x00	Psychoneurotic reactions	(318.5)*
000-x01	Anxiety reaction	(310)
000-x02	Dissociative reaction	(311)
000-x03	Conversion reaction	(311)
000-x04	Phobic reaction	(312)
000-x05	Obsessive compulsive reaction	(313)
000-x06	Depressive reaction	(314)
000-x0y	Psychoneurotic reaction, other	(318.5*)
<b>Personality Disorders</b>		
-X	Disorders of psychogenic origin or without clearly defined tangible cause of structural change	
000-x40	Personality pattern disturbance	(320.7)
000-x41	Inadequate personality	(320.3)
000-x42	Schizoid personality	(320.0)
000-x43	Cyclothymic personality	(320.2)
000-x44	Paranoid personality	(320.1)
000-x50	Personality trait disturbance	(321.5)
000-x51	Emotionally unstable personality	(321.0)
000-x52	Passive-aggressive personality	(321.1)
000-x53	Compulsive personality	(321.5)
000-x54	Personality trait disturbance, other	(321.5)*
000-x60	Sociopathic personality disturbance	(320.7)*
000-x61	Antisocial reaction	(320.4)
000-x62	Dysocial reaction	(320.5)
000-x63	Sexual deviation. <i>Specify supplementary term</i>	(320.6)
000-x64	Addiction	
000-x641	Alcoholism	(322.1)
000-x642	Drug addiction	(323)
000-x70	Special symptom reactions	(321.4)*
000-x71	Learning disturbance	(326.0)*
000-x72	Speech disturbance	(326.2)*
000-x73	Enuresis	(321.3)
000-x74	Somnambulism	(321.4)
000-x7y	Other	(321.4)*
<b>Transient Situational Personality Disorders</b>		
000-x80	Transient situational personality disturbance	(326.4)*
000-x81	Gross stress reaction	(326.3)*
000-x82	Adult situational reaction	(326.6)*
000-x83	Adjustment reaction of infancy	(324.0)*
000-x84	Adjustment reaction of childhood	(324.1)*
000-x841	Habit disturbance	(324.1)*

---

000-x842	Conduct disturbance	(324.1)*
000-x843	Neurotic disturbance	(324.1)*
000-x85	Adjustment reaction of adolescence	(324.2)*
000-x86	Adjustment reaction of late life	(326.5)*

Table 2.9: DSM-I Classification of mental disorders. Corresponding diagnosis from the ICD-6 are noted in the right most column, 1952

Again, while the major classification here is ‘Psychotic Disorders’, the word “reaction” appears in 41 of the 48 diagnoses. The major categories are, like 2.8, the classical Freudian categories: Psychotic disorders (psychoses), ‘Psychoneurotic disorders’ and ‘other’—except now, we have the modern term ‘Personality disorder.’ See the overview of Classical Psychoanalysis in section 4.1 on page 125.

The APA published the revised DSM-II in 1968. It is included as Appendix I.

### *The Rise of Psychopharmacology*

Because psychoanalysis in the US at that time was primarily practiced in military setting, a kind of stable truce—the more cynical might even say a ‘cold war’—settled over the obvious intellectual conflict between psychological behaviorism and psychiatric psychoanalysis. By and large, psychoanalysis confined itself to the medical setting; while behaviorism confined itself to pure research. There were, no doubt, volleys across the bow of one or the other from time to time. But until Skinner’s wide-ranging proposals for behaviorism as social reformation, there were few open hostilities.

Much of the scientific credibility for psychoanalysis turned on its success in treating psychotic patients. Medical Doctors tend not to worry so much about the putative mechanism of a therapy, so long as that therapy works for the individual patient in question. It isn’t uncommon for a drug to help some small portion of the population and fail with another. Generalizations to universal laws are uncommon in the practice of medicine, and much the of time the cause of a certain medical condition remains unknown, even if we understand how to cure it (consider cancers like lymphoma, for example). Thus, when psychologists objected that psychoanalysis did not generalize or did not rise to the scientific standard of replicability, its mechanisms were untestable, and as a treatment it was highly individualistic, medical practitioners were not overly impressed.

All of that changed starting in 1955 when Wallace Labs began marketing the world’s first popular psychotropic for the treatment of anxiety: *Miltown*. The Wallace Lab claimed that *Miltown* controlled

anxiety without reducing mental function, allowing patients to return to their normal lives. It was quickly followed by *Trofranil*, an antidepressant, in 1959; *Librium*, an anti-anxiety medication, in 1960; and *Valium* in 1963. In 1969, the neurologist Oliver Sacks administered a new drug L-DOPA to patients who had been comatose for almost 40 years. They woke up. His experiences were immortalized in the book and subsequent movie, *Awakenings*. ( Sacks 1974)

These drugs did—in short order—what years of psychoanalysis, hypnosis, electro-shock therapy (the decedent of Beard’s treatments) and confinement could not: they allowed patients with crippling anxiety to return to normal or close-to-normal functioning.<sup>59</sup>

## 2.5 Setting the stage for 1971

In 1961, Thomas Langer and Stanley Michael conducted 2-hour interviews with 1,660 individuals chosen at random from the streets of Manhattan. This was the first wide-scale study of the psychology of people *not already* seeking treatment for psychological trouble. Their findings are quite simple: socio-economic status and age are able to explain most of an individual’s mental health—not internal conflicts or unconscious trauma.

The study was revolutionary. S. H. Kraines of the University of Chicago said in her review of the book: “[this study] is a pioneer in obtaining ‘objective’ information. Psychiatry is too prone to the philosophical rather than the factual.” ( Kraines 1964, p. 464)

Since the origin of psychiatry, there has been a distinction made between those disorders that can be directly attributable to a biological dysfunction of the brain and those that cannot. The former were classified as ‘neurological,’ and the latter ‘psychiatric.’ The inability to find a biological etiology of the disorder *defines* the domain of psychiatry. So what happens now that biological mechanisms stimulated by pharmaceuticals are alleviating psychiatric symptoms?

Two major trends are appearing in psychology and psychiatry:

1. The current psychoanalytic taxonomy of mental states is based on conjectures and assumptions based on a few case studies, and they have not been tested against evidence and observation.
2. Psychiatric disorders must have a physical component, and hence, the line between psychiatry and neurology may be breaking down.

In light of these trends, what will happen to the field of psychiatry?

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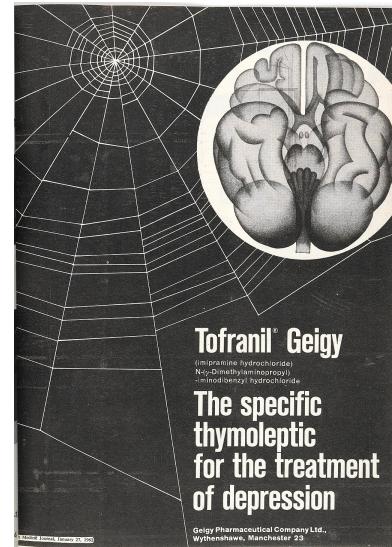


Figure 2.14: ([https://creativecommons.org/licenses/by/4.0](https://creativecommons.org/licenses/by/4.0/)), via Wikimedia Commons [https://commons.wikimedia.org/wiki/File:Advert\\_for\\_Tofranil\\_Geigy\\_Wellcome\\_L0043517.jpg](https://commons.wikimedia.org/wiki/File:Advert_for_Tofranil_Geigy_Wellcome_L0043517.jpg) See page for author CC BY 4.0

<sup>59</sup> For a particularly fascinating example, see <https://prescriptiondrugs.procon.org/view.resource.php?resourceID=005707>

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# 3 Game Play

## 3.1 Major Issues in the Game

All psychological theories hold that human action can be described, understood, predicted and controlled based on previous actions or mental processes of that human. The precise way one makes those predictions—and the underlying mechanisms one posits that explain those actions—separates psychological theories from each other.

When I say ‘mechanism’, I am using a very specific notion in the Philosophy of science. A mechanism is an organization of underlying entities which interact with each other to create the phenomenon of interest. Biologists talk of “mechanisms of cell death”, Doctors and Pharmacists of “drug actions and mechanisms”, Chemists speak of the “mechanisms of reactions,” etc.

### *Metaphors of the Mind*

When one looks at the history of psychological theories, it is not hard to see the metaphorical connections between the psychological mechanisms posited at a certain time and the dominant machines available to that society. Psychoanalysis, which was dominant in American Psychiatry from 1890 until the events of this game, posits an underlying unconscious, which ‘boils’ away, providing energy for all observable behavior. When that behavior is correctly directed with the right set of pressures, it moves the organism forward. When it is not, either the pressure goes out sideways, creating negative behaviors, or it builds towards ultimate ‘explosion’ in psychosis. It is, in short, a steam engine.

Behaviorism sought to explain all behavior in terms of stimulus and response, without recourse to ‘internal states’ or ‘processes’. Behaviorism’s rise which started in 1913 and peaked with the Radical Behaviorism of Skinner in 1958 correspond roughly to the electrification of the United States, as well as the rise of mass media including radio and television. Electric lights, toasters, radios and TVs are straightforward stimulus-response mechanisms: apply electricity and something hap-



Figure 3.1: CC BY 2.0

pens. Don't apply electricity and nothing happens. Think of an old telephone switchboard<sup>1</sup>—direct connections between callers produce information flow. The wiring operates without internal computation or representation: stimulus produces response in a law-like linear relationship.

On the other hand, once the notion of a 'computer' with internal working memory (RAM) and permanent storage (hard drives) arrives in the 1960's, Cognitivism results. And notably, from MIT. Here, the mind is a metaphor of the computer: it takes information in, executes computational functions, and produces behavioral output. Today, we use computer-based nomenclature when talking about the mind all the time: someone might not have the 'bandwidth' for a new task, the 'executive function' system might be down, we look for 'expert systems', or think 'algorithmically.' These are all metaphors—metaphors that compare the human mind to the dominant technological apparatus of our time: the computer and internet.

### *The Central issues*

There are three interweaving threads of debate in this game.

THE FIRST—THE MAIN ISSUE OF DEBATE—is whether or not psychoanalysis is a viable theory of human action. If it is, mental illnesses ought to continue to be classified according to the competing psychoactive mechanisms. If it is not, we need to figure out how mental illness should be classified.

The issue of the demedicalization of homosexuality, which begins this debate, is merely the tip of the iceberg. Hooker's research on homosexuality shows that there is no clear evidence to distinguish between people who have mental illness and those who are reacting to the treatment of mental illness.

THE SECOND IS RESEARCH. Throughout the game, individuals will propose studies to the 'Research committee.' If they are approved, the class will break into a 'lab' session and conduct that research. The propose *must* then report the findings at the next conference.

THE THIRD IS THE RESPONSIBILITY SCIENCE HAS TO SOCIETY. Obviously, the demedicalization of homosexuality was motivated because psychiatrists became aware that the stigma of 'mental illness' was doing more harm than good—it was causing mental illness, not curing it. But the Goldwater affair, and the Supreme Court's citation of Kenneth Clark's work on children internalizing prejudice in the *Brown v. Board of Education of Topeka Kansas* decision weigh heavily on

<sup>1</sup> See, e.g. Spence 1950. I am indebted to Hothersall for pointing out the 'switchboard' metaphor in his explanation of the 'Neobehaviorism' of Skinner in his 1984 *History of Psychology* Hothersall 1984, p. 411



Figure 3.2: "Unknown switchboard operator" by Benedictine University is licensed under CC BY-NC 2.0 <https://search.creativecommons.org/photos/15816e73-fe1e-4622-b95b-c46ff6968285>.



Figure 3.3: Photo of the Xerox Alto, 1973 first computer to have a Graphical User Interface and the 'desktop' metaphor. Taken by <http://flickr.com/photos/map/17692658/> Martin Pittenauer, URL accessed May 21, 2006.

the Psychological and Psychiatric communities.

Table 5.15 summarizes these and other issues that may arise during the course of the game. As with all Reacting Games, other than the first issue—demedicalization of homosexuality—when and how these issues appear is a matter of game play, so the schedule is ultimately up to you.

Issue	Partisans	Session
Homosexuality *is / is not* a mental disorder	Spitzer, Socarides , Bieber , Marmor	Week 1, session A.
The 'medical model' *is / is not* a suitable approach to understanding the human mind	Szasz, Albee v Spitzer and all the MDs	TBD
Psychoanalysis *is / is not* scientific.	Psychoana- lysts v. Cognitivists and Behaviorists	TBD
Mental disorders should be classified according to *observable symptoms / underlying mechanisms*.	Spitzer and the behaviorists v. psychoan- alyst faction	TBD
Mental illness / mental disorder *are / are not* genuine medical conditions and therefore must be treated only by medical doctors.	Psychiatrists (MD) v. Psy- chologists (PhD)	TBD
How do we define a mental illness / disorder—regardless of whether it is or is not a medical condition?	Spitzer, main three factions	TBD
Are mental health norms defined in terms of statistical frequency of a behavior in the population, or in terms of the 'ideal' behavior of an individual?	Anastasi and Bieber	TBD
The mentally ill *must / should be* treated exclusively by *psychiatrists / psychiatrists* and *psychologists / exclusively psychologists*	Albee	TBD
What does scientific research on the mind look like? Does it involve modeling and adductive reasoning, or is it limited to correlations between of observable behaviors?	Cognitivists and Psycho- analysts v. Behaviorists	TBD

What are the ethical limitations on psychological / psychiatric research?	TBD
What is the proper role of an intellectual—specifically a social scientist—in a democratic society?	Chomsky , Clark and Albee v. Tyler and Bieber

Table 3.1: Major Issues for debate

Note that while these questions overlap, none of them ought to determine any of the others. One could believe, for example, that psychoanalysis is a science, but *bad* science. Or one could believe that the medical model *is* a suitable approach, but classifying mental disorders under any criteria is a mistake. The range of positions on these issues can be found distributed between the characters in this game.

### 3.2 Basic game play

Each week (two or three sessions, depending on your schedule) of game play reenacts one annual conference of the APA in the early 1970s. The five weeks of game play cover the years 1971–1975. In reality, these conferences are huge events with over a thousand attendees. There are presentations on current research, symposia on issues facing the discipline, administrative meetings for various committees, public discussions and votes on proclamations, and publishers promoting their products. In game play, players will present papers, propose research projects, vote on resolutions and grants, and hold committee meetings.

EACH CONFERENCE OPENS with a presidential address. The position of President is both an honorific and administrative position. The President is often elected based on his or her reputation as a researcher, but he or she also must have keen leadership skills and knowledge of the policies and procedures of the organization's committee structure.

Since these two areas of expertise do not always appear in the same person, an individual is **not** elected directly to the Presidency by the membership. Rather, the membership holds an annual election for the **Vice-President**, who is then promoted to President after a year of sitting on the Board of Directors and observing the inner workings of the political system. After a President's year in office, he or she becomes the **Former President** and continues to serve on the Board,

guiding the new Vice-President and offering support to the current President.

THE BOARD OF DIRECTORS is composed of the President, the Vice president, the Former President and *two* members elected at large each of whom serving three year terms. For classes smaller than 16, the Board of Directors will be limited to the current President, the Vice President and the Former President. The executive secretary, who serves without vote, is responsible for maintaining the minutes of the Board of Directors and taking whatever actions the committee approves during its meetings.

At each year's conference, the following events occur:

1. Presidential Address
2. Board of Directors circulates proposals to be considered by the membership.
3. Symposia on topics proposed by membership, as scheduled by the program committee
4. Open sessions for presenting current research (papers or plenary addresses), as scheduled by the program committee.
5. Board of Directors meets in open session.
6. All committees and task forces report
7. Old Business (tabled from previous meeting)
8. New Business
9. Discussion of any proposals circulated in step (2)
10. Create and administer ballots for proposals.
11. Election for vice president, who assumes that position at the close of that conference
12. Election for member-at-large on the executive committee (if necessary)
13. Executive committee meet in closed session, if necessary.

Game play may take many forms in the classroom. You may be questioning the President about his or her vision for future directions in psychological or psychiatric research, engaging with or participating in a symposium with two or three of your colleagues on a contentious issue of the day, participating in research, evaluating research results, discussing proposals in committee, or even arguing about

reports from task forces. The schedule of events will be left to the Program Committee, so it is very important that they distribute the schedule early and widely. See Section 'Program Committee subsubsection 4.2 on p. GM27' for more on the potential forms of conference activities.

### 3.3 Basic Principles

Academic associations like the APA not only provide their members with a forum through which they can socialize, share ideas and test or their most recent work; they also represent their discipline to the public. An Association's President is often called upon to act as a spokesperson for the discipline during times of controversy. And the associations often define—sometimes very carefully—the qualifications someone must have to become a member.

During 1970s, the APA is being called upon to represent their membership in both of these ways. It is important, therefore, to ensure that actions of the APA—whether it be the election of a new President or the publication of a statement—represent the will of the membership. The association exists to serve the membership, not the other way around.

#### *Credibility Points*

In academic culture, reputation is capital. But unlike other reputation-based cultures, your reputation depends entirely on the quality of data you produce, your creativity and insight in designing research, and your ability to explain the ideas in clear, simple terms.

Credibility in academic life is capital—those with it have power, those without it do not. In this game, we treat 'credibility' like a currency. Each player starts with a different amount, depending their publication record so far. Players *gain* credibility by presenting papers or research proposals that are of interest to other players, or by serving in positions of power, such as the President or Committee chair.

At the beginning of each conference (i.e. Week), each member of the APA is given one 'credibility point' in the form of a small slip of paper.

At the end of each week (one "conference"), each player must give a credibility point to the speaker they believe presented the best paper, or the best research proposal. No player may keep the weekly credibility point for himself or herself.

There are two ways to earn credibility:

1. Earn credibility by giving a good presentation, in the opinion of your peers, during a conference.

2. When an individual retires from a formal position (President, committee, etc.) the members of that board or committee can confer upon that person a ‘gift’ of credibility points for his or her “distinguished service to the APA.” The members of the board / committee who are voting on this award must do so unanimously. The maximum amount varies by committee, can can be found in table 3.2.

Credibility points, once awarded, *can* be stockpiled by faction or bartered with other players. They can be lent, traded, hoarded, used for bribes, pressure, blackmail, etc. In short, all the things that money is used for in the real world. But, just like credibility in the academy, they have no value outside the game.

The one catch to this rule is that all transfers of credibility **must** be public knowledge. Any character who wishes to transfer his or her credibility to another character must declare during an open session of the APA that he or she is doing so, and the Board of the APA ought to keep a record of this transfer. This is the only legitimate way to transfer credibility once it has been earned.

There is much to be gained in having a position of power—including more credibility when you complete your distinguished service, but it takes credibility to get credibility. The chart below is suggested, but may be modified by the Game Master.

There are two things can be ‘bought’ with credibility:

1. Running for various positions ‘costs’ you credibility. In game play, you must turn in the equivalent number of credibility points when accepting a nomination or declaring that you will run. These are non-refundable.
2. The final vote in the game, the definition of mental illness, is determined by credibility of its supporters.

Position	Cost
Vice-President of the APA	10
Member of the Board	5
Chair, Research Committee	3
Chair, Nomenclature Committee	3
Chair, Program Committee	1

Table 3.2: Credibility ‘costs’ for service to the APA

See Committee structure subsection 3.6 on p. 115 for a description of the structure and responsibilities of each committee.

### Reputation & Replication

Even as you strive for more credibility, reputation is paramount. Disagreements are always professional: you can disagree vociferously

with an opponent, yet respect his or her abilities as a scientist. Attacking a fellow member personally, or using obvious rhetorical fallacies can damage your credibility. In game play, the board can vote to ‘censure’ a member *at any time* and strip him or her of acquired credibility points. A simple majority will do.

AT SOME POINT IN YOUR LIFE—probably 7th grade—you were told that ‘The Scientific Method’ consists of creating hypotheses, designing experiments to test those hypotheses and then formulating a new hypothesis that can be tested. But most importantly, you were probably told that scientific inquiry is distinguished from non-scientific inquiry insofar as scientific inquiry can be replicated by a stranger.

That may be true, but notice that these claims are almost always made with the modal verb ‘can.’ The sad truth is that few, if any, attempts at replicating scientific studies ever occur. The academy is not set up to encourage studies that reproduce known results. At educational institutions, tenure requirements force scientists to concentrate on producing novel results. Industries employ scientists to create new drugs, new techniques and new treatments, not to check the results of old ones. And practitioners are usually so swamped with the demands of their clientele that they may not be able to engage in research at all, let alone focus on replicating someone else’s research.

All of that means that the academic culture relies heavily on reputation. It is generally assumed that academics are honest and that their results could be replicated, but will not be. Many people just assume that the prestigiousness of one’s academic post reflects the reliability of their results—it really is easier to publish a paper if you are from Harvard than if you are from a middle-tier public institution.

Conferences, such as the APA, rely on a system of peer review to ensure that the papers presented represent the best research available. But peer reviewers are often selected in virtue of their reputation for rigorous research and high standards. Members are elected to positions of leadership because of their reputation as psychologists or psychiatrists, not because of their knowledge of the rules of order for a public meeting. As you propose new research and present your findings at the conferences, remember that what counts is not entertainment value or charming banter, but quality of insight and rigor in data collection.

### *The Responsibilities of the President*

While the presidency of the APA is largely an honorific position, it does come with some serious responsibilities. It is awarded by election of the membership, according to standards known only to them.

Traditionally, it has been given to significant figures in the field at the end of their careers as a kind of 'lifetime achievement' award (for example, Koffka in 1958) and advocates for new and promising avenues of research early in their careers. The first president in this game, George Miller, best exemplifies the latter sort.

The President's main responsibilities include presiding over the meetings of the Board of Directors, and opening each conference with a plenary address. These addresses provide the President a huge forum to reflect on recent trends in the discipline and potential future directions.

In reality, all Presidential addresses of the American Psychological Association are published in the *American Psychologist*, which is available at Jstor.org. Potential presidents should consult the journal for examples.

### 3.4 Victory Objectives

The game normally ends with a decisive vote on the definition of 'Mental Illness,' probably in 1975. There are four basic definitions that ought to be advanced, which are included in table 4.1.

Advocates	Definition
APA Task Force	A Medical disorder is a relatively distinct condition resulting from an organismic dysfunction which in its fully developed or extreme form is directly and intrinsically associated with distress, disability, or certain other types of disadvantage. The disadvantage may be of a physical, perceptual, sexual, or interpersonal nature. Implicitly there is a call for action on the part of the person who has the condition, the medical or its allied professions, and society. A mental disorder is a medical disorder whose manifestations are primarily signs or symptoms of a psychological (behavioral) nature, or if physical, can be understood only using psychological concepts.
Behaviorists	A person can be called 'mentally ill' when he or she exhibits emotional or behavioral functioning which is so impaired as to interfere substantially with his or her capacity to function in society.
Psychoanalytic	A person is mentally ill when he or she suffers from internal conflicts that may be subconscious or unconscious, manifesting behavior that is unwanted or disturbing to the individual or the society.
Szasz	There is no 'thing' called 'mental illness,' only sets of behaviors that may be destructive to an individual and his or her society.

Table 3.3: Factional Definitions of Mental Illness

Factional affiliation and objectives vary from individual to individ-

ual.

### **APA Task Force**

A Medical disorder is a relatively distinct condition resulting from an organismic dysfunction which in its fully developed or extreme form is directly and intrinsically associated with distress, disability, or certain other types of disadvantage. The disadvantage may be of a physical, perceptual, sexual, or interpersonal nature. Implicitly there is a call for action on the part of the person who has the condition, the medical or its allied professions, and society.

A mental disorder is a medical disorder whose manifestations are primarily signs or symptoms of a psychological (behavioral) nature, or if physical, can be understood only using psychological concepts. (1978, p. 18)

### **Behaviorist**

A person can be called ‘mentally ill’ when he or she exhibits emotional or behavioral functioning which is so impaired as to interfere substantially with his or her capacity to function in society.

### **Psychoanalytic**

A person is mentally ill when he or she suffers from internal conflicts that may be subconscious or unconscious, manifesting behavior that is unwanted or disturbing to the individual or the society.

### **Szasz (and maybe) Albee**

There is no ‘thing’ called ‘mental illness,’ only sets of behaviors that may be destructive to an individual and his or her society.

The final vote is tallied in credibility. To win, a definition *must* have more than 50% of the credibility available. If no definition surpasses this value, the APA can move forward without a definition, or it can change the rules for voting and vote again—for example, hold a run-off between the top-two vote getters.<sup>2</sup>

<sup>2</sup> The victory objectives can also be “modded” to a compromise. See Section Possible Mod: DSMIV compromise subsection 5.4 on p. GM91 of the Instructor’s Manual.

## **3.5 Special Rules**

If possible, each player must serve on at least one committee at some point during the game.

### **Writing Tasks**

Every player will write and present at least once during the course of the game. Your role sheet should specify the specific tasks you need to complete.

A special note for data-driven writing tasks: don’t say ‘studies have shown that’ or (in the 1st person) ‘I have shown that...’, show it. That

will probably mean that you will have to go to the library, find the original research reports of your character, and familiarize yourself with the basic research design, as well as the relationship between the evidence presented and the thesis that evidence is reported to support. If that sounds like a great deal of effort, it should. Above all, remember that you're not writing a report on this person or position, you are playing the person and defending the position. So don't write about what you (as the character) believe, write as if you believe it.

### *Proposals to the Board*

Proposals should be formal. They should be distributed to the membership at least 24 hours before a vote is called. It is usually sufficient to distribute proposals during the first session of a conference year, and hold a vote during the second (or third). Ample time for discussion should be allotted for each proposal.

Formal proposals begin by laying out the reasons for the proposal with a series of 'WHEREAS...' clauses. It should then state the resolution starting with 'BE IT RESOLVED.' Review the proposals included in the Prologue—the first uses the same structure without the 'WHEREAS', and the second uses the traditional structure. Game proposals can take either form, but they must have reasons leading up to a resolution.

You should follow this format when drafting your proposals. Proposals in the incorrect format cannot be distributed.

### *Papers and Symposia*

Academic conferences are opportunities to discuss and disseminate information you have gathered to support your views. The method of presenting those ideas or that data, however, can vary a great deal. The APA currently supports two kinds of presentations: Individual Reports and Symposia. Individual Reports are talks given by a single researcher or group of researchers. Symposia are 'panel' presentations, where a group of presentations are offered on a theme or a specific problem.

The Program Committee (see Program Committee subsubsection 4.2 on p. GM27) is encouraged to experiment with new kinds of presentations, including posters, round tables, workshops, and even exhibits, if they choose.

The Program Committee reviews all proposals for both individual reports and symposia. The guidelines for proposing a report are included in the Sample call for proposals for APA conference on page 102.

### *Research Grants*

Research grants are 1–2 page proposals specifying a research project you'd like to carry out. These are submitted to the Research committee (see Research Committee subsubsection 4.2 on p. GM25) and follow the form specified in the 'Call for Research Grants', which follows in the sample Call for Research Grants on page 109. If you win a research grant, you will be expected to present your findings at the annual conference that immediately follows the successful completion of your grant.

### *Reading aloud*

Presentations at academic conferences are evaluated by peers primarily on the basis of the content presented, not the style of presentation. While it is important to practice good public speaking skills—making eye contact with the audience, modulating one's voice, etc.—getting the data right is more important than being entertaining. For that reason, this game will allow 'reading' of some experimental reports.

EXPERIMENTAL REPORTS highlight the data presented, and carefully articulate the structure of the experiment performed. It is also advisable to bring handouts of any important charts or datasets for the membership when presenting data.

Note that we're in the early 1970's, so powerpoint will not be allowed. You can, with the approval of the game master, requisition an overhead projector and print our data or charts on transparencies.

PRESIDENTIAL ADDRESSES, however, should be carefully crafted general lectures. These should appeal to the membership of the APA, which includes many individuals from a variety of backgrounds. They should also be understandable by the general public, as the President is often seen as a spokesperson and advocate for the discipline.

SYMPOSIA AND PRESENTATIONS to the committees, however, must be delivered without a transcript. Cue cards or notes are allowed, but in these cases, the speaker must strive to make a personal connection with the audience, and hence, must not simply read a prepared speech.

### *Definitions used by the APA*

The following are quoted from current websites of the American Psychological Association and the American Psychiatric Association.

### **Definition of “psychologist”**

APA policy on the use of the title “psychologist” is contained in the General Guidelines for Providers of Psychological Services, which define the term “Professional Psychologist” as follows:

Psychologists have a doctoral degree in psychology from an organized, sequential program in a regionally accredited university or professional school.

The APA is not responsible for the specific title or wording of any particular position opening, but it is general pattern to refer to master’s-level positions as counselors, specialists, clinicians, and so forth (rather than as “psychologists”). In addition, it is general practice to refer to APA accredited programs as “APA-accredited” rather than “APA approved.” The position as described must be in conformity with the statute regulating the use of the title psychologist and the practice of psychology in the state in which the job is available.

### **Definition of “psychology”**

Psychology is the study of the mind and behavior. The discipline embraces all aspects of the human experience — from the functions of the brain to the actions of nations, from child development to care for the aged. In every conceivable setting from scientific research centers to mental health care services, “the understanding of behavior” is the enterprise of psychologists.

### **Definition of “psychiatrist”**

A psychiatrist is a physician who specializes in the diagnosis, treatment, and prevention of mental illnesses and substance use disorders. It takes many years of education and training to become a psychiatrist: He or she must graduate from college and then medical school, and go on to complete four years of residency training in the field of psychiatry. (Many psychiatrists undergo additional training so that they can further specialize in such areas as child and adolescent psychiatry, geriatric psychiatry, forensic psychiatry, psychopharmacology, and/or psychoanalysis.) This extensive medical training enables the psychiatrist to understand the body’s functions and the complex relationship between emotional illness and other medical illnesses. The psychiatrist is thus the mental health professional and physician best qualified to distinguish between physical and psychological causes of both mental and physical distress.

### *Role of the gamemaster*

The gamemaster’s central responsibility will be to ensure that the conferences run smoothly. The gamemaster must therefore maintain a robust relationship with the program committee. In a small class, the gamemaster may prefer to the responsibilities of the program committee for himself or herself.

- Act as secretary to the Board of Directors if there is no preceptor available.
- Remind / cajole the program committee to prepare the schedule at least 48 hours in advance of each class.
- Maintain the election cycle (see the table in the instructor's manual)
- Distribute research reports where appropriate.

### 3.6 *Outline of the game*

#### *Schedule of Game Sessions*

<b>Year—Location</b>	
<b>Session</b>	<b>Activities</b>
<b>1971—Washington DC</b>	
A	Presidential Address George Miller Symposium: "Psychiatry: Friend or Foe to Homosexuals: A Dialogue," (Dr H. Anonymous, E. Hooker) T. Szasz "The Myth of Mental Illness" Presentation of 'mental rotation' task: gamemaster
B	Marmor "Limitations of Free Association" Proposal from J. Marmor Proposal from C. Socarides . Petition from G. Albee. Research report from G. Miller on 'mental rotation' task
<b>1972—Dallas</b>	
A	Presidential Address Albert Bandura Symposium on Medical Model (G. Albee, T. Szasz) Report from taskforces
B	R. Spitzer 'The Fiegnner Criteria' P. Gebhard on the Kinsey reports H. Harlow 'Lust, latency and love' Research Report
<b>1973—Honolulu</b>	
A	Presidential Address Paper(s) Reports from taskforces
B	Symposium Proposal to create "Spitzer Taskforce" [other proposals] Research Report

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**1974—Philadelphia**

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A	Presidential Address Symposium Paper(s)
B	Open hearings on proposed definition of 'mental illness' [other proposals] Research Report

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**1975—Chicago**

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A	Presidential Address Open vote of the membership on definition of mental illness. Paper(s)
B	Symposium: [other proposals] Research Report

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Table 3.4: Outline of Game sessions

Sample call for papers and symposia.<sup>3</sup>

<sup>3</sup> This entire section is adapted from the "Call for Papers and Symposia" from the 1957 *American Psychologist*.

### *Call for Papers and Symposia*

#### **Introduction**

I. The Program committee herein announces a Call of Papers and Symposia for the annual convention of the APA. Please read the relevant rules carefully if you plan to take part in the program. *Note especially the deadlines, the form for abstracts of contributed papers, the forms for symposium proposals, and the proper persons to receive your correspondence.* The pertinent references have been collected into the box on this page for your convenience.

This year will begin with a plenary address by the President. Current plans allow for 2 individual reports and 1 symposium. The Board of Directors will meet in open session to hear proposals from the membership.

#### **Kinds of Programs and Sessions**

The meetings regularly contain many kinds of programs and sessions, including research papers, symposia, group discussions, addresses, business meetings, and film sessions, as well as other events, such as reunions, dinners, social hours and the like. In general, requests for information should be submitted to the Program Committee.

The APA Program Committee has full responsibility for the conference program. Persons planning to submit proposals that fall outside the lines outlined herein should consult with the chairman of the APA Program Committee for special instructions.

The chairman of the APA Program Committee should also receive all requests for scheduling of nonsubstantive program activities such as reunions, dinners, social hours, headquarters space, luncheons, and the like. To insure publication in the program all requests must be received by the close of business on the Friday before a conference.

#### **Who may participate**

**\*\* Volunteered Papers\*\***

Any member of the APA may read a paper, provided that it has been accepted by the program committee.

**\*\* Non-members\*\***

A non-member of the APA may read a paper provided that he is sponsored by a member of the APA and provided that his qualifications and the quality of his paper are acceptable to the program committee. The APA member who agrees to sponsor a nonmember must submit the abstract of the nonmember's paper to the chairman of the program committee with an accompanying description of the nonmember's scientific qualifications plus the names of recognized scientific societies in which the nonmember holds membership.

**\*\* Symposia and invited addresses\*\***

The program committee may invite distinguished nonmembers to contribute to the program as special speakers or as participants in symposia. Because symposia often involve topics extending beyond the competence of APA members, it is frequently desirable to include nonmembers as participants. Acceptance of a distinguished speaker or of a symposium proposal by the Program Committee constitutes the require sponsorship of nonmember participants.

**Limits of Individual Participation**

Over the past several years the APA's Board of Directors working with the program committee has developed several ground rules for the limits of individual participation in the annual convention program. These rules were designed to ensure the widest possible participation by APA members and also to prevent troublesome conflicts in the time schedule. Briefly, the rules have been that each member may present no more than one volunteered paper and that each member may, in addition, participate in no more than one additional session such as a symposium, discussion group, and the like. It is still strongly recommended that maximum participation be limited to one symposium or discussion group plus one paper.

**Individual Reports**

Unless otherwise indicated, four ten-minute papers will be scheduled for each 50-minute session. In instances of multiple authorship the person whose name is listed first will be expected to present the paper.

A paper previously read at the Annual APA Convention may not be read again, unless it is a substantial elaboration (additional findings, etc.). Two papers which report highly similar findings from a cooperative project may not be read at the convention.

The APA Board of Directors have voted that, for reasons of economy, this rule should be followed: Abstracts printed in the American Psychologist are limited to 100 words. However, it is recognized that more detailed information will be needed by the Program Committee for use in the selection of papers. The procedures for research reports and other individual reports are described below.

**\*\* Research Reports\*\***

*Each author of a research report must submit a 100-word abstract (1 copy) for publication if the paper is accepted, and also a 300-word summary (4 copies) for committee publication.* If the author desires, tables presenting results may be submitted with the 300-word summary. Not more than one page of tables should be submitted. This means that all the data should have been obtained and the analysis completed at the time the abstract and summary are submitted to the Program Committee.

**\*\* Other individual reports\*\***

Theoretical papers, case studies, and the like are perfectly acceptable for the program. *The 100-word abstract of a non-experimental paper must, however, be accompanied by a manuscript of the complete paper in draft form.* The complete manuscript is required in order that the Program Committee may be in a better position to judge the contribution to the program.

**\*\* Form of abstracts and summaries\*\***

All abstracts and summaries must be typed on one side of the paper only, double-spaced throughout and on 8 1/2" X 11" paper.

*The 100-word abstract*

The purpose of the published abstract is to provide information concerning the psychological relevance of the paper. ... primarily to justify its scientific validity. Hence abstracts should be concerned with content ... rather than with method and technique unless the purpose of the paper is essentially methodological). Examples of good short abstracts from many different fields may be found in *Psychological Abstracts*.

Abstracts must be limited in length to 100 words (not counting title, author and institution). Longer abstracts will not be printed but will be listed by title only. Abstracts should not contain tables, drawings, footnotes, or bibliographic entries, as such material will not be printed.

The following outline should be followed in preparing the abstract:

Title of Paper:	
Author(s):	Sponsor (if any):
Institution(s):	
<i>Text of abstract (not to exceed 100 words)</i>	

Because the 100-word abstract will be sent to the printer, do not underline or type anything with all capital letters. The type written abstract should be checked and proofread carefully, since it will be printed in the form in which it is submitted. Authors are urged to give careful thought to the visual aides that will best facilitate presentations of their data. If slides are used, members are urged to consider presenting graphic and tabular material on paper. As a new procedure, authors of accepted papers will be asked to indicate their preference for audio-visual support.

#### *The 300-word summary*

The text of the summary will normally include a statement of the problem, subjects used, procedure, results and conclusions.

Summaries must be limited in length to 300 words (not counting title, author, and institution). The 300-word summary may be accompanied by not more than one page of supplementary tables, drawings, footnotes, etc.

The form for submitting the 300-word summary should be exactly the same as for the 100-word abstract except, of course, for the longer text.

Four copies of the 300-word summary and the supplementary tables, etc. are required. *Author, sponsor, and institution should appear on the first copy only.* The first copy is the one that will be used by the Program Committee Chair in the creation of the Conference Proceedings. The other three copies without identifying data will be used by the Program Committee for judging the acceptability of the paper.

#### **\*\* Where to send abstracts and summaries\*\***

Copies of the abstract and summary of a volunteered paper should be sent to the chair of the Program Committee.

## **Symposia**

A symposium provides for several prepared papers on a single theme or problem. It is an excellent form of meeting if the aim is to bring to an audience several diverse or even contradictory views, presented by a number of "experts." The expectation would be that all papers would first be read; then there would be a substantial period for interchanging of views among the speakers (and invited discussants, if desired); finally, a brief period for questions or points raised from the floor. It is important to plan the time so that there is real interaction among participants after the papers. In order to realize the unique value of the symposium the chairman should select speakers at an early date, arrange for the participants to exchange papers ell in advance of the session, and ensure that ample time is allotted for discussion among the participants and contributors from the audience

**\*\* Initiation of symposia\*\***

Any member of the APA may suggest a symposium topic to the chairman of the Program Committee. Such proposals must be made at an early date as a successful symposium requires much planning and correspondence. A member may also submit a fully organized symposium for the Program Committee's consideration.

**\*\* Form of symposium proposals\*\***

*Suggestions to the Program Committee*

When a member only suggests but does not organize a symposium, he should indicate the title of the topic for discussion, comment on the significance of the topic, and list the names and addresses of the proposed chairman and other participants. Such suggestions should be sent to the appropriate divisional program chairman well in advance of the deadline to allow for ample time for planning.

*Member-Organized symposia*

A member may organize a proposed symposium in complete detail and present it for approval to the Program Committee. Each such proposal should indicate the title of the symposium and list the names of the chairman and participants, together with the titles of participants' contributions, if these titles are to be published. *Five copies of the completed symposium plans must be submitted to the Program Committee by the deadline.*

*Symposia organized by the Program Committee*

Symposia may be organized independently by the Program Committee or in response to the requests of members.

## Special Programs

The Program Committee should feel free to try new kinds of programs. Forums, discussion groups, panels, round tables, conferences, and workshops are often valuable alternatives to papers and symposia. Members are invited to send suggestions for new types of programs to the Program Committee. Special sessions should be suggested well in advance of the deadline to allow for ample time for planning. Procedures for initiating special programs should follow in general the procedures for initiating symposia.

### **Miscellaneous Meetings and Special Sessions**

APA boards, committees, etc. desiring business meetings must send to the Chairman of the APA Program Committee by the deadline a statement of estimated attendance, time required, time and day preferred and whether arrangements for luncheon and dinner are desired.

Luncheons, dinners and social hours may be scheduled for non-APA organizations if they send their request to the chairman of the APA Program Committee by the deadline. Such scheduled events will be listed in the condensed program.

### **Audio-Visual Presentations**

APA members, commercial film producers or distributors who wish to present new films, film strips, or other audio-visual aids (including sound recordings) should make the Program Committee aware of this fact at the deadline. The committee will review and select the audio-visual materials which are to be presented as part of the APA program.

### **Exhibits**

APA members are encouraged to exhibit apparatus, teaching aids, and other materials of scientific and applied interest. Commercial agencies are invited to request arrangements for exhibits. All commercial exhibitors will be charged for space. Those wishing to arrange for exhibits must write to the chairman of the Program Committee.

Table 3.5: Sample call for proposals for APA conference



Sample call for research grants.<sup>4</sup>

<sup>4</sup> This section adapts language from the mission statements of the contemporary APA (<http://www.apa.org/about/>)

### *Call for Research Grants*

#### **Introduction**

The Research Committee of the APA herein solicits proposals for research that will forward the disciplines of psychology and psychiatry. Note especially the deadlines, the form for abstracts of contributed papers, the forms for symposium proposals, and the proper persons to receive your correspondence. The pertinent references have been collected into the box on this page for your convenience.

Winners will be granted the support of the other members of the class for a period of one class session. The primary investigator must specify in the research proposal how the other students will participate: as subjects, participants, observers or confederates.

Winning grants will be determined by the Research Committee, in accordance with the criteria specified herein. All proposals must be in line with the APA's ethical guidelines which are in force at the time of submission.

#### **Research Supported**

The APA seeks to advance the creation, communication and application of knowledge of the mind and behavior to benefit society and improve people's lives. The APA embraces scientific inquiry into all aspects of the human experience — from the functions of the brain to the actions of nations, from child development to care for the aged. And in every conceivable setting from scientific research centers to mental health care services, "the understanding of behavior" is the enterprise of psychologists.

Additionally, the APA aspires to advance the understanding of psychology and psychiatry as scientific disciplines. To that end, it will support any research that follows the standards of scientific inquiry and contributes to the central goals of the association.

It is imperative that all research supported by the APA must be in accordance with the ethical guidelines published by the APA.

## Who May Submit Proposals

### **\*\* Members of the APA\*\***

Any member of the APA may submit a proposal for a research grant. APA membership is limited to those meeting the definition of 'Psychologist' or 'Psychiatrist' used by the APA (see p. 10 of the gamebook).

### **\*\* Nonmembers of the APA\*\***

As the APA Research committee seeks to further the disciplines of Psychology and Psychiatry wherever they are practiced, the primary investigator of a grant need not be a member of the APA. The primary investigator, however, must be a Psychologist or Psychiatrist as defined by the APA (see p. 10 of the gamebook).

### **\*\* Confederates, Observers and Assistants\*\***

Individuals working in psychological research should be engaged in some significant way with the academic pursuit of knowledge. Confederates, observers and assistants in research must therefore be students of psychology or psychiatry, if not psychologists or psychiatrists in their own right.

## Limitations of Participation

A primary investigator may submit one (1) proposal annually. An individual may serve as a consultant, confederate, observer or assistant on any number of grant proposals in addition to proposing himself as a primary investigator.

## Form of the Proposal

### **\*\* Introduction\*\***

Limited to 100 words, the introduction should specify the phenomenon you wish to examine and why. Briefly describe the phenomenon in general, and discuss how it relates to the study of the human mind and behavior.

### **\*\* Background /Review\*\***

Briefly describe the history of research into this phenomenon, and why that history is insufficient. Summarize what is already known about the phenomenon, including the background information you gleaned during your literature review.

### **\*\* Rationale\*\***

Describe the questions you are examining and explore any possible implications of your study. This includes listing the specific questions you are addressing, explaining how your research is related to the larger issues raised in the introduction. Specifically describe the claims, models or hypotheses you will evaluate with your research. Explain how your research will contribute to our understanding of the mind.

**\*\* Method and Design\*\***

Describe how you will go about collecting data and testing the questions you wish to examine. While novel methods are encouraged, the primary investigator must be able to specify the scientific validity of any methods proposed.

Method: How will you collect the data?

- Describe the general methodology you choose for your study, i.e. observational, experimental, etc.
  - Explain why this method is the best method for this question.
  - Specify who will participate in your study, and why.
- 
- Describe the sample you would test and explain why you have chosen this sample. Include age, and language background and socio-economic information, if relevant to the design.
  - Are there any participants you would exclude? Why, why not?

Design

- Describe what kinds of manipulations/variations you would make or test for in order to test your hypothesis(es).
- Describe the factors you would vary if you were presenting a person with stimulus sentences.
- Explain how varying these factors would allow you to confirm or disconfirm your hypotheses.
- Explain what significant differences you would need to find to confirm or disconfirm your hypothesis(es). In particular, how could your hypothesis(es) be disconfirmed by your data?
- Controls: What kinds of factors would you need to control for in your study?
- Describe what types of effects would be likely to occur which would make your results appear to confirm, or to disconfirm your hypothesis(es).
- Describe how you can by your design rule out or control for apparent effects.

#### Procedure

- How are you going to present the stimuli?
- What is the participant in the experiment going to do?

#### Analysis

- How will you analyze the results?
- What kind of results would confirm your hypothesis?
- What kind of results would disconfirm your hypothesis

\*\* Significance and Contribution\*\*

\*\* References\*\*

\*\* Where to send your proposal\*\*

Three copies of the proposal should be sent to the chairman of the Research committee.

#### Reports

Research findings should be submitted to the conference committee for the annual national conference following the awarding of the grant. The primary investigator should follow the guidelines found under 'Research Reports' (see 3.5 in the Schedule of Game Sessions Table 3.6 on p. 102) in drafting his research report. Winning a grant in no way guarantees inclusion in the following year's conference program.

Table 3.6: Call for Research Grants

### *Conference Schedule for 1971*

#### **Presidential Address:**

Dr. G. Miller "The Future of Psychology"

#### **Distribution of proposals to be considered this year:**

- J. Marmor: proposal to remove 'homosexuality' from the DSMII (302.0).
- C. Socarides & I. Beiber: proposal to create taskforce on sexual deviation.
- J. Spiegel and/or R. Green: proposal to create task force of historical study and literature review of homosexuality in psychology and psychiatry.

#### **Symposia**

"Psychiatry: Friend or Foe to Homosexuals: A Dialogue."

- Dr. E. Hooker "The mental health of non-patient male homosexuals."
- Dr. H. Anonymous, "I am a homosexual and a psychiatrist."
- F. Kameny and/or B. Gittings "Gay, Proud and Healthy."

### **Research Papers**

- Dr. T. Szasz "The Myth of Mental Illness."
- Dr. J Marmor "Limitations of Free Association."

### **Open Board Meeting**

#### **General business meeting agenda:**

Committee Reports

- Dr. Tyler (Research)
- Dr. Spitzer (Nomenclature)
- Dr. Hooker (Conference)

\*\* Old Business \*\*

\*\* New Business \*\*

Discussion and vote on:

- Proposal from J. Marmor
- Proposal from C. Socaridies /I. Beiber
- Proposal from G. Albee

Nominations and elections for:

- Vice President 1972
- Replacement for Milgram, member at large on the Board of Directors

Table 3.7: Schedule for first conference

### *Committee structure*

The APA is overseen by a Board of Directors, which is responsible for maintaining the organization, and approving all official public proclamations and publications of the organization. The president, who opens the conference with his or her presidential address, also serves as chair of the Board of Directors during that conference. The secretary of the Board of Directors is responsible for maintaining the minutes for that meeting and implementing whatever policy decisions are required.

In addition to the Board of Directors, there are currently three standing committees of the APA. All standing committees report directly to the Board of Directors annually at the Board meeting. All standing committees have the right to request an open session at the general conference for whatever they wish. If they want to initiate a vote by membership, however, they must file a request with the Board of Directors. If the Board of Directors approves the request, the standing committee can administer a vote.<sup>5</sup>

<sup>5</sup> The gamemaster may choose, depending on the size of the class, to combine these committees, or assign these responsibilities to the Board of Directors.

### **Board of Directors - Instructors manual**

#### **Responsibilities:**

- Hold open meetings each conference where topics can be discussed and voted upon.

#### **Powers:**

- Issue public proclamations on behalf of the membership.
- Maintain official publications, such as the DSM
- Create ad-hoc committees and task forces, as necessary.
- Oversee and receive reports from the standing committees.
- Censure—can strip any member of credibility at any time. Generally reserved for use of ad hominem attacks or other bad behavior. Any number of credibility points can be stripped.
- Banning—rarely used, but available if necessary. Can place a life-time ban on any member at anytime.
- Confer 1–10 credibility points on retiring board members in recognition of their ‘distinguished service’

#### **Initial Membership:**

The membership of the Board of Directors is:

<b>Position</b>	<b>Term</b>
President	Chair of the Board of Directors, serving a 1-year term
Vice-president – elected annually	Serves a 1-year term as Vice-president, automatically promoted to President for the next year at the close of that year’s annual conference
Former President	Serves a 1-year term <i>after</i> their service as the chair of the Board of Directors.
Executive secretary (preceptor), without vote.	
Committee member elected at large	Serving 3-year term.
Committee member elected at large	Serving 3-year term.

Table 3.8: Board of Directors Membership

A sample agenda for a meeting of the Board is available on page Board of Directors - Instructors manual item 3.10 on p. 118.

The membership of the Board of Directors for the course of game-play is contained in table Elections to be held each year Table 5.20 on p. GM73.

Year	Former President	President	President-Elect	Member at large 1	Member at large 2
1971	Harlow	Miller	Bandura	Milgram	Albee
1972	Miller	Bandura	Elected 1971	Elected 1971	-
1973	Bandura	1971	Elected 1972	-	Elected 1972
1974	1971	1972	Elected 1973	-	-
1975	1972	1973	Elected 1974	Elected 1974	-

Table 3.9: Terms for Board of Directors members

The Board of Directors is one of a number of standing committees of the APA. Standing committees are permanent institutions, whose membership is elected by the membership at large. Ad hoc (literally ‘after the fact’) committees or ‘task forces’ are created by simple majority vote of the Board of Directors and are tasked with generating a report on a specific problem or area of research. Usually, these are formed when the Board of Directors believes it has inadequate information on a specific subject. For the purposes of this game, ad hoc committees will conduct literature reviews on behalf of the Board of Directors and report to the membership. Ad hoc committees disband after the report is accepted by the Board of Directors.

The Board of Directors has the power to create ad hoc committees or task forces as it sees fit. The membership of those committees may be specified directly by the Board of Directors at the time of creation, left to the chair of the newly created committee to decide, or even determined by popular vote of the membership. That decision is left to the Board of Directors.

Unlike the creation of ad hoc committees or task forces, the creation of new permanent standing committees require a majority vote of the APA membership, not just the Board of Directors. A full proposal for such a committee, specifying its membership structure, voting procedures, rights and responsibilities should be distributed to the membership at least 48 hours before the vote. Dissolving a standing committee requires a majority vote of the membership.

The Board of Directors represents the membership, it does not act in opposition. It is incredibly important, then, that the Board seeks approval from the membership as a whole at every turn. The Board is a capable of assigning duties to various subcommittees on its own, but all matters of policy should be turned over to the membership for an up or down vote.

1. Reports of the committees and task forces
  - (a) Research
  - (b) Nomenclature
  - (c) Conference program
2. Old Business (any items that were tabled at previous meetings)
3. New Business.
  - (a) Discussion of any proposals already circulated
  - (b) Administer votes on any proposals already circulated)
  - (c) Elections for vice-president and expiring member at large.

Table 3.10: Sample Schedule: Board of Directors

## **Research Committee**

The research committee is charged with distributing grants to fund research as well as enforcing the APA's Ethical Standards in the practice of Psychology and Psychiatry (see F).

### **Responsibilities**

- Solicit proposals in the form of a 'call for research grants'

### **Powers**

- Award grants to those proposals it deems excellent
- Hearing and deciding on cases of research ethics, including punishments for violators up to and including removal from the APA for life.
- Add a paper, panel or symposium topic to any conference agenda without review of the Program Committee
- Confer 1–5 credibility points on retiring board members in recognition of their 'distinguished service'

The Research committee should solicit proposals in the form of a 'Call for Research Grants' that specifies both the deadline for submissions, as well as the time frame for reviewing submissions. The Research Committee should revise the enclosed Schedule of Game Sessions subsubsection 3.6 on p. 109 to suit their needs.

In the context of the game, winning a grant entitles the bearer to access the student body for a period of no more than class session, during which time he or she can perform his or her approved research project. After that period, the grantee will be expected to present his or her findings to the membership as a conference paper / report.

The Research committee should take great care in considering the scientific value of each proposal. The APA does not want to be seen supporting poor or biased research! As such, members of the Research committee are strongly advised to carefully consult the 'Basic scientific research section 5.1 on p. 151 as well as the 'Ethics of human research section 5.2 on p. 182.

THE RESEARCH COMMITTEE is also charged with hearing and ultimately ruling on charges of ethical transgression. The Board alone has the power of censure, but the Research committee can recommend censure to the Board.

The Board of Directors should hold an election each year for a new member of the Research committee.

### **Initial membership**

Members of the Research committee serve for a 3 year term. Members in 1971 are:

- L. Tyler (expiring 1972)
- K. Clark (expiring 1973)
- J. Marmor (expiring 1974)

### Nomenclature Committee

The Nomenclature committee is charged with maintaining the official terminology of psychology and psychiatry. This is embodied by the Diagnostic and Statistical Manual, which is the definitive source for definitions and classifications of mental disorders.

#### Responsibilities

- Maintain the official diagnostic and statistical manual of mental illness

#### Powers

- Define what kind of behaviors qualify as 'mental illnesses', thereby (because of the rise of health insurance and managed care) defining what kind of behaviors psychologists and psychiatrists can get paid to treat.
- Confer 1–5 credibility points on retiring board members in recognition of their 'distinguished service'

The Nomenclature committee determines who can be diagnosed with what, what treatments are considered responsible and what disorders will be covered by medical insurance. If a condition does not appear in the DSM, psychiatrists cannot treat patients with that condition. Given the increasing importance of health insurance in the 1970s, it is vital to have a standardized diagnostic system to support billable treatments.

Members of the nomenclature committee serve for *six years*.

Members of the nomenclature committee are strongly advised to carefully consult the 'Brief History of the Study of Homosexuality in America section 2.3 on p. 48' of the gamebook.

#### Initial Membership

Members of the nomenclature committee in 1971:

- G. Albee (expiring 1972)
- J. Spiegel (expiring 1974)
- R. Spitzer (expiring 1976)

## **Program Committee**

The Program Committee is charged with scheduling the conferences.

### **Responsibilities**

- Solicit proposals from the membership
- Create the schedule for each conference
- Confer 1–3 credibility points on retiring board members in recognition of their ‘distinguished service’

### **Powers**

- Decide who gets to speak at any conference, thereby determining who has the ability to gain credibility.

The committee must remember that each conference opens with a public address from the sitting president, and each standing committee has the right to a session at each conference. Not all the standing committees will make use of that time, but each should be approached before the schedule is drawn up.

Proposals for symposia and presentations should be solicited from the general population. The committee meets in closed session (i.e. after class) to determine the conference schedule after reviewing all of the materials submitted. It is vitally important that the symposia and papers accepted represent the highest standard for academic work. They should be judged by that standard alone, not with respect to theoretical commitment or viewpoint. The conference schedule should be made available to the membership at least 48 hours before the conference begins (i.e. by Friday evening before a new conference).

The Program Committee is composed of three members, each of which serve three year terms. Hence, the Board of Directors must hold an election for a new member every year.

The schedule for the conference is set by the ‘Program Committee’, but there are a number of business events that must take place each year. These are outlined in Board of Directors - Instructors manual item 3.10 on p. 118.

### **Initial membership**

Program committee in 1971:

- E. Hooker (expiring 1972)
- A. Anastasi (expiring 1973)
- P. Gebhard (expiring 1974)

### *Elections*

Elections can be confusing to students initially, but it usually resolves after the first conference. In my experience, they do tend to take on the character of any academic election: a bunch of people sitting around saying ‘not it’. I’ve required *every* member of the APA to hold a position at some point during the game, so that will motivate most students. Ron Gold and some of the other non-APA members can be brought in as members, or, in a smaller class, be given a different role after the demedicalization vote.

The following shows elections that must be held each year, and the character vacating that position in parentheses. Characters serve through to the end of the conference in the year indicated. The VP immediately becomes the president: so while Bandura vacates the position of VP at the end of the conference in 1971, he becomes President at that moment. The election in 1971 is for the VP of 1972, who will be President in 1973.

<b>1971</b>	1972:	A (Milgram) (Bandura)			
<b>1972</b>	1973	B (Albee)	(Tyler)	(Albee)	(Hooker)
<b>1973</b>	1974		(Clark)		(Anastasi)
<b>1974</b>	1975	A	(Marmor)	(Spiegel)	(Gebhard)
<b>1975</b>	1976	B	(elected 1972)		(elected 1972)

Table 3.11: Elections to be held each year

### **3.7** *Assignments*

Every character has at least one writing assignment included in their role sheet. Guidelines for formatting, word count, etc. vary by context, but all formal requirements are included in sections Schedule of Game Sessions Table 3.6 on p. 102.



# 4 Roles and Factions

## 4.1 Main Factions

Players represent three factions with different perspectives on not only the nature of scientific inquiry into the human mind, but the object of those studies themselves. A number of independents, representing a variety of academic disciplines, complement these three factions.

It should be noted that unlike some other reacting games, individuals in these factions are not bound to think or vote the same way on the central issues in the game. The factions represent high-level agreement on the nature of the science of the mind, there is almost complete disagreement on all other issues. In fact, when it comes to actual game play, you might find that your votes are more aligned with members of other factions than your own.

### *Psychoanalysts*

Psychoanalysts are split into three groups: classical (Freudian), Jungian and unspecified. The game contains a number of independent psychiatrists who, while they are familiar with psychoanalysis, are not professed members of the faction.

#### **Classical**

Classical psychoanalysis can be summarized by five basic hypotheses:

1. First, psychoanalysts hold that the mind is composed of entities in conflict, also known as the *hypothesis of intrapsychic conflict* or **dynamic hypothesis**. In classic Freudianism, the hypothesis followed “the discovery of the unconscious” by Breuer and Freud in 1895 (see §2.4). Traumatic event or fantasies can leave a subject with memories that are unacceptable to the conscious awareness. The conscious awareness defends itself by suppressing the traumatic event in the unconscious by means of repression.<sup>1</sup> This hypothesis is sometimes called the **psychodynamic hypothesis**.

<sup>1</sup> See, e.g. *Introductory Lectures on Psychoanalysis*, p. 82, 94 also p. 438

2. Second, psychoanalysis posits that there is a finite amount of psychic energy available to any given individual. This forms the **Economic hypothesis** of classical psychoanalysis.<sup>2</sup> The activities of the mind are “costly,” and hence the mind will optimize its function for the most efficient option.
3. The **topographical hypothesis** is Freud’s most well known: the mind composed of three basic kinds of thoughts: conscious thoughts, pre-conscious thoughts and unconscious thoughts. The term ‘thoughts’ here is used broadly, to include wishes, desires, fears, emotions, etc. Conscious thoughts are those of which we are aware. Pre-conscious thoughts, are not currently conscious, but are readily available to consciousness. The memory of your last birthday, for example, is probably pre-conscious, not unconscious. Unconscious thoughts, which far outnumber the other two categories, are unavailable to consciousness. All these thoughts, however, originate in experience: there is nothing in the unconscious store that is not linked in some way to that individual’s past experiences.<sup>3</sup>
4. The **genetic hypothesis** claims that human behavior is best explained in terms of the original conditions that cause it. In Freud’s theory, the genetic hypothesis takes the form of his theory of infantile sexuality.

For Freud, all behavior ultimately originates in sexual desire. To summarize briefly: Freud hypothesized that sexual drive, the main source of psychic energy, is present from birth. He is explicit in using the term ‘sexual’ here, but it is sometimes easier to understand if we use a softer term like ‘using one’s body for pleasure.’ Freud repeatedly argues for infantile sexuality by pointing out the noncontroversial pleasure children take in tickling or cuddling, but we wouldn’t necessarily call these ‘sexual’ today. Freud himself, somewhat to his detriment, insisted on the term ‘sexual’ even despite these kind of objections.

This drive towards physical gratification takes various forms throughout our lives, moving through the oral phase to the anal phase to the phallic stage. If the internal drives are left unfulfilled, or the internal conflicts unresolved (which is really two ways of saying the same thing), neurotic behavior results.<sup>4</sup>

1. Psychoanalysts differ with respect to the entities that comprise the mind, but most recognize Freud’s basic **structural hypothesis**: the mind is functionally divided between the id, the ego and the superego.<sup>5</sup> The *id*, which is totally unconscious, contains the representations of sexual and aggressive instinctual drives. The *ego*

<sup>2</sup> See Freud, *Introductory Lectures*, p. 26 and 436–7 for the thesis that psychic energy is sexual; p. 340, 442–3 and 466 for an explicit statement. It also appears in *On the Interpretation Dreams*, Ch7.

<sup>3</sup> See, e.g. *Introductory lectures*, p. 25

<sup>4</sup> ‘Neurotic’ behavior results from continuing conflict between the libidinal desires and the ego’s repression techniques. ‘Psychotic’ behaviors result when the libidinal desires assert their reality on the ego. See the discussion of ‘neurosis’ and ‘psychosis’ in the History of the Classification of Mental Illness section below.

<sup>5</sup> See *Introductory Lectures*, p. 365.

The Introductory Lectures were published before Freud solidified the structural hypothesis using this terminology. The beginnings of the idea, however, is present in the later chapters on neurosis: see, e.g. p. 437–438, where he describes the conflict between the ‘libido’ and the ‘ego’. The Introductory Lectures were published before Freud solidified the structural hypothesis using this terminology. The beginnings of the idea, however, is present in the later chapters on neurosis: see, e.g. p. 437–438, where he describes the conflict between the ‘libido’ and the ‘ego’.

regulates and controls the desires of the id in relation to the demands of the external world, which are internalized as the *superego*. The ego follows the **economic hypothesis**, in seeking to maximize gratification of the instinctual desires while minimizing the amount of psychic energy spent in that process. It achieves this end through the use of various mechanisms of representation and repression (sometimes called 'defense mechanisms').<sup>6</sup> They are:

- **Repression:** The first mechanism proposed by Freud (Breuer and Freud), the ego banishes or precludes an idea or feeling from conscious awareness.
- **Isolation:** Ideas are split off from their associated feelings (affect) and presented as alien or foreign in origin.
- **Reaction formation:** replacing the unacceptable desire with its symbolic opposite.
- **Displacement:** unacceptable wishes are removed from their original objects and moved to an acceptable, or at least not-unacceptable one.
- **Projection:** an unacceptable idea or desire is attributed to someone else.
- **Undoing:** painful or unacceptable ideas are minimized by overdoing some opposite action in some opposite arena.
- **Turning against the self:** the original object of an unpleasant desire (usually hate) is replaced with the self.
- **Denial:** the individual remains unaware of certain aspects of reality that would be painful to recognize.
- **Rationalization:** the individual convinces himself or herself that their behavior has a logical, reasonable, or at least neutral, explanation in order to avoid the unacceptable cause.
- **Identification:** usually found during development, a child becomes like another person (usually a parent) in order to deal with separation or loss of a love-object.

These conflicts can be discovered by studying the mechanisms of representation that are used to obfuscate and repress traumatic experiences and latent desires. The mechanisms of representation take the object represented (the 'latent content') and replace it with a representation (the 'manifest content'). There are four mechanisms of representation:<sup>7</sup>

<sup>6</sup> The Introductory Lectures mention only repression, subdivided into 'condensation' and 'displacement' as mechanisms of the ego, but promises further work on the topic (p. 364–366). He began to develop a taxonomy of ego mechanisms later in his life, but the full-fledged taxonomy we see here was developed by his daughter Anna Freud (1936). *The Ego and the Mechanisms of Defense*. C. Baines (trans). Connecticut: International University Press.

<sup>7</sup> see [Lecture VII–X] [Freud 1929]

**Part to whole:** the latent content is fragmented and represented in isolation.

( Freud 1929, p. 147)

**Allusion:** the latent content is represented by, in Freud's words "a caption, as it were, or an abbreviation in telegraphic style." ( Freud 1929, p. 148)

**Plastic portrayal:** the latent content is replaced with a plastic, concrete portrayal of it, taking its cue from the superficial aspects of the latent content. For example, the editor of a 'Survey' may be represented in a dream as a 'surveyor'. ( Freud 1929, p.149)

**Symbolism:** symbols are stable translations of one object into another. The relation between the object symbolized (the latent content) and the object that does the symbolization (the manifest content) is stable in an individual, but may not be stable between individuals. But it is always true that the latent content and manifest content share something in common. It is the task of the psychoanalysts, through the techniques of free association and manipulating transference reactions, to discover the common factors between the latent and manifest content, and hence reveal the symbolic relationships. ( Freud 1929, p. 185)

Table 4.1: Mechanisms of Representation

By revealing these relationships to the patient psychoanalysis, the ego becomes aware of latent trauma and hence can deal with it in healthy ways, removing the conflict and obviating the neurosis.<sup>8</sup>

**INTERPSYCHIC CONFLICT** is a part of the normal maturation of a healthy adult mind. Neurosis and Psychosis occur, therefore, when this development goes wrong in some important way. Development can go awry through *inhibition* or *regression* (see Freud 1929, Ch 22-23). In 'inhibition', portions of function of the ego are held back from development, often because it becomes *fixated* on a particular libidinal instinct. In 'regression' an ego that has progressed further than a given developmental stage returns to that stage was a kind of defense mechanism.

The terms 'neurosis' and 'psychoneurosis':

refer to a class of psychiatric illnesses characterized by prominent symptoms that have no significant somatic origin. The symptoms include disturbances of feelings (anxiety, depression, guilt), disturbances of thought (obsessions), and disturbances of behavior (compulsions and phobic inhibitions), all of which are experienced as alien to the comfort and well-being of the individual ( Arieti 1974, p. 737-738)

- Neurosis, then, is explained when the conflict between the desires of the id and the defense mechanisms of the ego go awry: (1) the

<sup>8</sup> In many works, including *Psychopathology in Everyday Life*, *Introductory Lectures on Psychoanalysis* and *On the Interpretation of Dream*, Freud provides the following outline of the kinds of commonality that underly symbolism: that of number (i.e. '3' and male genitalia), shape (i.e. long, straight objects such as sticks, umbrellas, posts, trees represent the male organ /hollowness or enclosing space such as vessels, bottles, boxes, trunks and ships symbolize female genitals; apples, peaches and fruit symbolize breasts), function (i.e. penetrating the body: knives, daggers, spears, sabers, firearms, rifles, pistols etc.; producing liquids, such as water-taps, water-cans, etc.; and being capable of lengthening or shortening, such as pencils, hanging-lamps, etc.; defying gravity (i.e. balloons, flying machines and zeppelins also represent the male organ). More complicated representations depend on personal associations with or reactions to objects: the complicated nature of landscapes mean they represent female bodies, sweets represent sexual satisfaction. Activities such as playing games, playing piano, sliding, gliding or pulling stand for masturbation because of the similarity of action. On the same note, rhythmic actions such as dancing, riding and climbing stand in for the sex act itself. Simple associations may appear as well: neckties, which are only worn by men, can symbolize men. ( Freud 1929, p. 188-204)

ego's defense mechanism leaves the drive unfulfilled, (2) the defense mechanism imposes a disguised or symbolic form onto the original drive in order to hide it from the consciousness, and (3) the superego imposes some suffering as punishment for the self-denial, such a guilt.

- Psychosis occurs when the id constructs its own reality and imposes it on the ego. The subject can no longer function in normal life—he or she may be beset by hallucinations, persistent delusions, wild mood swings, visual and auditory agnosia, amnesia, etc. It is worth noting that unlike *neuroses*, psychoses may be the result of organic brain syndromes or other physical conditions.<sup>9</sup> Psychoses not associated with physical conditions include schizophrenia, affective disorders and other reactions.<sup>10</sup>

As THE ID is the source of psychic energy, unacceptable drives using one of the mechanisms above will not remain repressed forever. As unacceptable drives gain in strength and threaten to reveal themselves, a number of reactions are possible (see Freud 1929, Ch. 19):

- **Anxiety reaction:** a chronic, free-floating anxiety which may have periods of acute anxiety. Typified by feelings of helplessness; although symptoms include phobias, obsessions, compulsions and depression. It is caused by the failure of all the defenses to keep the unacceptable instinctual drives in stable control. (Freud 1929, Ch. 25, p. 452)
- **Phobic reaction:** typified by one or more prominent phobias: and extreme anxiety focused on an ordinary place, object or situation. The mechanism of displacement moves the anxiety associated with the unacceptable drive to a neutral place, object or situation, which then is allowed to flourish unchecked by the defense mechanisms of the ego. (Freud 1929, p. 495-498)
- **Conversion reaction:** what used to be called 'hysteria', it can manifest itself in many symptoms, including spasms, temporary paralysis, visual or auditory agnosia, weakness, shortness of breath, pains, etc. It results when the unacceptable instinctual drive is 'converted' into apparently physical symptoms. (Freud 1929, p. 485, 497-8)
- **Obsessive-compulsive reaction:** the patient is troubled by persistent thoughts that are usually painful in nature. These obsessional thoughts interfere in some important way with the patient's ability to engage in a meaningful adult life: i.e. intellectually, sexually, socially or professionally. Anxiety at not following through on an

<sup>9</sup> see 290–294 of the DSM II, which is included in Appendix Socardis, S. "Homosexuality and Medicine", 1968 section I on p. 619.

<sup>10</sup> see 295–299 of the DSM II

obsessional thought, which often manifests as repeated actions regarding some mundane object, can be severe and often is only revealed by completion of the mundane task in question.<sup>11</sup> ( Freud 1929, Ch. 17)

By way of illustration, classical psychoanalysis holds that obsessive-compulsive reaction can be traced to unresolved conflicts in the anal stage of development, where frustration at potty-training is turned into rage towards one's mother. That rage, in turn, is found to be unacceptable by the ego and repressed through one of the standard mechanisms creating obsessions with objects or scenarios that are symbolically linked to the original frustration. The particular object of obsession is essentially random, as the subject latches onto some mundane object present at the time of the frustration. The choice of obsessional object, however, can provide clues as to the true cause of the frustration, as it is invariably linked, through one of the mechanisms of representation, to the true object. The compulsive aspect of this conditions is an 'acceptable' outlet for the unacceptable rage towards one's mother. Psychoanalysts go on to hold that obsessive-compulsive is often unconsciously aware of his or her rage and may take extreme steps to avoid losing control when provoked.

*Psychoanalytic Treatment* Psychoanalysis—the process of psychoanalytic treatment—aims at resolving unresolved conflicts that cause neurosis.<sup>12</sup> The psychoanalyst seeks to align the psychic forces within the individual so that they are no longer in conflict. A psychoanalyst must keep all five psychoanalytic hypotheses—the topographical, dynamic, economy, genetic and structural—in mind during treatment, but in practice, tends to focus on one or two at a time.

Classical psychoanalysis makes use of two basic techniques: free association and manipulating transference reactions.

IN \*\*FREE ASSOCIATION\*\*, the psychoanalyst removes himself or herself from the patients line of sight (hence the standard couch with the psychoanalyst seated behind the patients' head), and asks the patient to say whatever comes to mind when prompted regardless of logic, order or social constraint. In a relaxed state, it is theorized, these free-associations will reveal the connections between ideas that, when analyzed, explain the relationships this particular patient uses to represent latent content with manifest content.

Freud is often naively criticized for insisting on universal symbolic relationships: cigars always represent penises, for example. But this simply isn't true: classical psychoanalysis is 'empirical' in the sense that there is nothing in the mind that was not put there from experience. The symbolic relationships found in a patient have built up by

<sup>11</sup> See item 300 in the DSM II for the full taxonomy of neurosis.

<sup>12</sup> There is something of a controversy over whether psychoanalysis can be used to treat psychosis. While many psychoanalysts believe psychosis and neurosis to be on a single spectrum of mental dysfunction, the psychotic patient's connection to reality is so tenuous that the techniques of free-association and transference threaten to develop the psychosis further, rather than dissolve it.



Figure 4.1: "Sigmund Freud Museum, London" by John Kannenberg is licensed under CC BY-NC-ND 2.0 (image cropped)

that patient, based on his or her unique experiences. Where commonalities occur between patients, they are at the level of the language (i.e. symbolic relationships that originate from homophones in German would not be found in an English-speaking patient) or culture (i.e. shared mythology). So while a cigar may represent a penis because of its shape to some, it may represent excrement because of its color to others.

**\*\*TRANSFERENCE\*\* REACTIONS** are inappropriate reactions in which the patient reacts to a person or object in the present as if it were a person or object from the past (Freud 1929, Ch. 27). Transference is, in Freud's terms, a 'repetition,' a reliving of an event, relationship, emotion, attitude, etc. with a substitute person or object. Transference can be a very powerful tool for the psychoanalyst, especially when the object that is the source of the unresolved conflict can be projected onto a substitute, and the patient allowed to address the object directly. If a patient's neurosis originates in unresolved anger towards his dead father, substituting an inanimate object for that father can allow the patient to exorcise the anger and hence dissolve the neurosis. Since Freud's masterwork *Dora*, many psychoanalysts have held transference to be the primary tool of psychoanalysis.

In order for transference to work, however, the patient must be willing and capable of suspending his or her 'ego' and regressing

to the state where he or she really believes that the substitute is the original source of the conflict. As psychotics live in a state where experienced reality is formed by the psychic desire not reality itself; psychotics are not suitable candidates for treatment via transference.

THROUGHOUT TREATMENT, the psychoanalysts must be aware of **resistance**. Resistance is the patient's opposition to treatment. It defends the status quo by maintaining the neurosis or psychosis. Resistance may be conscious, subconscious or pre-conscious. It may hinder or misdirect free association. It may distract via inappropriate and unhelpful transference reactions. It may adapt to novel situations and invent new strategies. As Freud himself said:

The resistance accompanies the treatment step by step. Every single association, every act of the person under treatment must reckon with the resistance and represents a compromise between the forces that are striving towards recovery and the opposing ones. (Freud and Bauer 1994, p. 11).

The psychoanalytic treatment can then be broken down into four basic steps:

- **Confrontation:** The first step in psychoanalysis: the patient's conscious ego must be made aware that there is a problem.
- **Clarification:** The problem is put into sharp focus. Often, this process works with the previous, as minor conflicts give way to greater conflicts.
- **Interpretation:** The process of bringing the unconscious conflict into consciousness.
- **Working through:** the progressive elaboration of resistance mechanisms as they manifest.

There are, of course, many more complications that occur in any single patient's psychoanalytic treatment, but these four basic steps are almost universally recognized.

When embarking on a new treatment, then, the psychoanalyst has three basic aims:

1. To translate the productions of the patient into their unconscious antecedents. The patient's thoughts, fantasies, feelings, behavior, and impulses have to be traced to their unconscious predecessors.
2. The unconscious elements must be synthesized into meaningful insights. Fragments of past and present history, conscious and unconscious, must be connected so as to give a sense of continuity and coherence in terms of the patient's life.

3. The insight so obtained must be communicable to the patient. As one listens one must ascertain what uncovered material will be constructively utilizable by the patient. (Quoted from Arieti 1974, p. 779)

## Jung

Jungian psychoanalysis is distinguished from classical psychoanalysis by two major shifts in the basic theory.

- First, Jungian psychoanalysis holds that the subconscious contains psychical elements that do not originate in the experiences of the individual being psychoanalyzed. As mentioned previously, classical psychoanalysis is empirical about the mind, holding that the mind comes into the world as a blank slate (*tabla rasa*), and is progressively filled by experiences.<sup>13</sup> The contents of the unconscious must therefore be traceable to discrete experiences in the individual's life. And it is the task of psychoanalysis to discover those experiences.

Jungian psychoanalysts believe they have evidence of unconscious contents that are not explainable by the experiences of the individual. Thus, they hypothesize the existence of a deeper 'collective unconscious' that is composed of 'archetypes' that inform and structure the content of both the unconscious as well as our conscious lives.

- Second, on a related note, Jungian psychoanalysis extends the *genetic hypothesis* from Freud's insistence that all psychic energy to include other sources of psychic energy beyond the sexual.

For example, Freud originally posited that neurosis originated in traumatic experience in childhood on the basis of self-reports of his case-study patients. He ultimately came to realize, however, that these self-reports were fictionalizations, theorizing that the true cause of his patient's neurosis lay in their infantile fixations. Once again, Jung extends Freud's insight to allow for fixations throughout life. He argues that:

...the moment of the outbreak of neurosis is not just a matter of chance; as a rule it is most critical. It is usually *the moment when a new psychological adjustment, that is, a new adaptation, is demanded*. Such moments facilitate the outbreak of a neurosis, as every experienced neurologist knows.

This fact seems to me extremely significant. If the fixation were indeed real we should expect to find its influence constant: in other words, a neurosis lasting throughout life. This is obviously not the case. The psychological determination of a neurosis is only partly due to an early

<sup>13</sup> For an explanation of that tradition, see Pre-history of Psychology: Empiricism about the Mind subsection 2.2 on p. 23

infantile predisposition; it must be due to some cause in the present as well. (Jung and Storr 1983a, p. 49 "Psychoanalysis and Neurosis")

That leads to the general proposition that Freud's identification of sexual desire as *the origin* of neurosis was far too narrow. Sexual desire is one of the pleasurable instincts that shape our psychology, but for Jung, "psychoanalytic theory should be freed from the purely sexual standpoint. In place of it I should like to introduce an *energetic viewpoint* into the psychology of neurosis" (Jung and Storr 1983a, p. 50).

Jung hypothesizes that the libidinal energies naturally increased when faced with an obstacle, in order to overcome it through adaptation. When that obstacle is too great, the libido retreats and regresses, and the patient reverts to a more primitive "mode of adaptation." The practice of psychoanalysis is the same, however, as Jung theorizes that the energy that the patient needs to overcome the present obstacle and become healthy is attached to these sexual fixations. By bringing past frustrations and maladaptations to light through psychoanalysis, the libidinal energy is free to return to the present-day task: adaptation to overcome the current obstacle.

The task of a psychoanalyst, then, is not only to discover the original traumatic cause of a neurosis, probably buried deep in childhood, but to discover the current obstacle that is perceived as being insurmountable. Jung agrees with Freud that the childhood fixations determine the *form* of neurosis, but unlike Freud holds that they cannot be considered the *immediate cause* of neurosis.<sup>14</sup>

The difference between practice among the psychoanalytic approaches is emphasis, not technique.<sup>15</sup>

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C Jung et al. 1953. *The collected works of C. G. Jung*

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<sup>14</sup> In Aristotlean metaphysics, the *formal* cause of something is the form of the thing whereas the immediate cause are the events that immediately proceeded the thing in question. The *form* is the pattern or type of thing something is. The immediate cause is what brings that thing into being. In this context, the *form* distinguishes the type of neurosis, the immediate cause is what caused the neurosis to present at this moment.

<sup>15</sup> As J.B. Wheelwright noted in 1963, "Freud focused on sexuality, Adler focused on power, and Jung focused on growth, which he called individuation." (quoted in Arieti 1974, p. 817)

### Behaviorists

Behaviorism holds that psychology is properly limited to the observation, prediction and control of behavior.<sup>16</sup> It typified by four hypotheses:

1. *Internal entities are neither the object of scientific study nor explanatory relevant to psychology.*<sup>17</sup>

Behaviorism begins with the deceptively simply insight that while psychoanalytic explanations are framed in terms of psychic entities (ego, id, etc.), quantities (psychic energy) and interactions (the mechanisms of repression), what all psychological theories seek to explain is behavior. These psychic entities, and the massive vocabulary that is required to discuss them, are all hypothetical, posited for the sake of explaining why people behave the way they do. Moreover, psychoanalytic hypotheses require a sharp dividing line between human behavior and animal behavior, which is not born out by empirical observation.<sup>18</sup>

To be scientific, then, psychology must limit itself to observable behavior. The discourse of psychology as a scientific discipline is restricted to those terms that denote observable variables: behavior and environmental conditions, not internal mental states. From characterizing the phenomenon to be studied to offering an explanation, the behaviorist is committed to avoiding all terms that denote entities, quantities or interactions that are internal or unobservable.<sup>19</sup>

A corollary of the thesis, which is frequently highlighted as an independent claim, is that *introspection is not a scientific form of observation*. One might argue<sup>20</sup> that internal states are scientifically observable via introspection. Behaviorists, however, reject introspection as scientifically unreliable.<sup>21</sup> Evidence from Wundt and James demonstrates, they argue, that introspective procedures produce different results for different practitioners, and scientific evidence should be replicable regardless of the practitioner.

Behaviorists disagree on whether internal mental states are non-existent fictions or merely unavailable to scientific inquiry; but that is not important here. What is important is that these putative internal mental states do not enter into the scientific study of behavior, or the scientific language that describes and explains behavior.

1. *The proper object of study for psychology is the organism and its environment.*

As a corollary of this insight, Behaviorists see behavior as the activity of an *organism*, not the activity of a *mind*. Psychology, for the behaviorist, is not the study of *parts* of an organism (such as the “ego,”

<sup>16</sup> As with most things in the history of ideas, even this definition is controversial. I've chosen this definition, which reflects Skinner's presentation of Behaviorism in his 1953 *Science and Human Behavior*, chapter 1 because it is the most explicit and radical. Watson defines that the goal of behaviorism as the “prediction and control of behavior,” (1913) leaving out observation. To understand the various different forms of behaviorism that have been posited since Watson's, please see Psychoanalysts subsection 4.2 on p. 140.

<sup>17</sup> See, for further explication of this claim Skinner 1953, p. 27-31. Watson does not use the term ‘inner state’, but refers rather to ‘consciousness’, which he (possibly fallaciously) equates with the object of introspection. Thus, after objecting to the unreliability of introspective reports in a laboratory setting he claims “The time seems to have come when psychology must discard all references to consciousness; when it need no longer delude itself into thinking that it is making mental states the object of observation.”

<sup>18</sup> Animals do not have superegos or techniques of repression, so the behaviors explained in psychoanalytic terms should not generalize across species. But they do. Therefore, psychoanalytic explanations are insufficient.

<sup>19</sup> Watson seeks to eliminate the following misleading and unscientific terms from psychology: “consciousness, mental states, mind, content, introspectively verifiable, imagery, and the like.” (Watson 1913)

<sup>20</sup> As historical figures like William James and William Wundt did—see American Psychology: William James and the function of consciousness subsubsection 2.2 on p. 34 and Introspection: Wundt subsubsection 2.2 on p. 33

<sup>21</sup> See, e.g. Watson 1913 “Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness” and Skinner 1953, p. 30

“id,” and “superego”) and their relations, but rather the organism *as a whole* and its relationships with its environments. And similarly, explanations offered by Behaviorists refer to organisms, behaviors and environmental conditions, not methods of repression and techniques of representation. Behaviorism restricts its object of study as well as its explanations to the macroscopic scale: things that can be directly observed by the naked eye. In the classical sense, Behaviorism rejects *as non-scientific* explanations in terms of or investigations into things that are larger (societies, cultures)<sup>22</sup> or smaller (brains, neurons).

This thesis unites behaviorism with classical psychoanalysis in opposition to Jung, because it holds that all present behavior is the result of discrete learning events in the individual’s past. But unlike psychoanalytic explanations that posit unresolved psychic conflict to explain behavior, the behaviorist appeals only to previous learning experiences. To discover the reason for a given behavior then, is to discover the patterns of environmental reinforcement (called ‘conditioning’) that have caused the organism to learn this behavior. To cure a behavior is to ‘extinguish’ those conditioned responses in the organism or block those responses by substituting a new and novel response. Behaviorists hypothesize that learning can be physically realized in neurology, and hence, behaviorism is far more simple and plausible a theory than psychoanalysis, which cannot.

#### 1. *The principles of learning are generalizable across species.*<sup>23</sup>

Behaviorists argue that given that animals are incapable of introspection—or, if they are, they cannot communicate it—psychological theories that make use of introspection are incapable of explaining animal psychology. Behaviorism, however, is not. Non-human animals are organisms living in environments that behave in certain regular ways. All of that is accessible to behavioristic science. And as it is an uncontroversial observation that at least some human behavior is the same as animal behavior (caring for the young, for example), it follows that behaviorism can explain regularities that introspective psychology cannot.

### Learning

A behavioristic explanation of a given behavior takes the form of specifying the mechanism of learning that caused this behavior. A behavioristic treatment seeks to ‘extinguish’ that behavior through providing an antithetical mechanism.

Learning mechanisms in behaviorism are built on the principles of reinforcement and extinction. Explanation of reinforcement and extinction are always specified in terms of stimulus and response.

<sup>22</sup> Recall that Behaviorism was formed in the first half of the 20th century, when Hegelianism was a viable theory of social science. Behaviorists here are not rejecting the plausibility of modern social psychology, anthropology or sociology. They are rejecting the idea of a transcendent spirit that instantiates human culture.

<sup>23</sup> See, e.g. Watson 1913 “The behaviorist, in his efforts to get a unitary scheme of animal response, recognizes no dividing line between man and brute.”

According to Watson, by ‘stimulus’ behaviorists “mean any object in the general environment or any change in the physiological condition of the animal, such as the change we get when we keep an animal from sex activity, when we keep it from feeding, when we keep it from building a nest.” By ‘response’ behaviorists “mean that system of organized activity that we see emphasized anywhere in any kind of animal, as building a skyscraper, drawing plans, having babies, writing books, and the like.” (1929)

In recent years, B.F. Skinner has popularized operant conditioning and the idea of ‘reinforcing’ a behavior. Anything that increases the likelihood of a response given a stimulus is a *reinforcement*. Positive reinforcement takes the form of adding some “rewarding” object to the environment when the desired response occurs. “Negative” reinforcement usually means the removal of such objects. Reinforcing objects need not be physical, tangible objects, but can something as intangible as the attention of a parent. “Punishment” is a negative condition applied to the organism following a behavior.

A decrease in the probability of a response given a stimulus over time is called *extinction*. In classical conditioning models of learning, the lack of repetitive exposure to reinforcement will result in progressive extinction of the conditioned response.

The mechanisms learning are:

- **Classical conditioning**, which is sometimes called ‘past reinforcement,’ occurs when an unconditioned stimulus, such as the presentation of food, causes an unconditioned (‘natural’) response, such as salivation. These ‘natural’ stimulus-response patterns are called “embryologic responses,” and they are raw material of a classical conditioning paradigm. In classical conditioning, the conditioning intervention in the embryological response occurs by pairing a ‘conditioned stimulus’ (such as the ringing of a bell) with the unconditioned stimulus. After repeated exposures, the original unconditioned response can be removed, and the response (now ‘conditioned’) will occur when the subject is presented with the conditioned stimulus. These basic pairings between conditioned stimuli and responses can be generalized over time, so that any loud noise, for example, may cause salivation.
- **Operant conditioning** differs from classical conditioning insofar as the conditioning intervention occurs after the response, rather than concurrent with the unconditioned stimulus. Operant condition introduces the possibility of promised reinforcement, which would occur when the promise of future reinforcement causes behavior.

BEHAVIORAL TREATMENTS IN psychiatry<sup>24</sup>, like behaviorism in psy-

<sup>24</sup> For more on the complicated history of the relationship between psychoanalysis and behaviorism, see Hornstein, Pickren, and Dewsbury 2002.

chology, follows from a simple insight: psychiatric treatment aims at the cessation of maladaptive behavior. Changing behaviors is accomplished through conditioning. Therefore, treatment for “mental illness” entails conditioning patients out of the behaviors that are deemed maladapted through the standard mechanisms of learning.

Like psychoanalysis, behavioral therapies restrict themselves to neurosis, not psychosis.

There are two major kinds of inhibition therapies found in the literature:

- **Reciprocal inhibition**, developed by Wolpe, involves diminishing the maladaptive behavior by conditioning a new behavior in response to a given stimulus that is incompatible with the undesired behavior. For reciprocal inhibition to work, the maladaptive behavior *must be* incompatible with the new conditioned behavior. Aversion therapy, which exposes the subject to the object of desire and conditions a new negative response, is a form of reciprocal inhibition.
- **Transmarginal inhibition**, also known as *flooding*, involves exposing the patient to strong examples of the stimuli for prolonged periods.

Other inhibition therapies, such as ‘retroactive inhibition’ are usually forms of reciprocal inhibition.

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### Cognitivists

Cognitivists reject the behaviorists' conjecture that scientific psychology is limited—as *scientific* psychology—to observable behavior. But neither do they seek to reestablish introspection as a valid observational method. Cognitivists agree that scientific evidence must be observable. But they disagree that the explanations of behavior must necessarily be in terms of observable macro-objects like organisms and environments. Cognitivists see the mind/brain as an information-processing system; therefore an adequate scientific explanations would take form of specifying the mechanisms by which information is processed—including positing algorithms or modeling neural mechanisms that would generate the behavior in question. The difference between the Cognitivists and the Behaviorists is not about the experimental methods they follow, but rather about the structure of a scientific explanation.

Thus, cognitivism distinguishes itself from behaviorism in terms of a meta-theoretical thesis which rejects the half of the first behavioristic hypothesis that *internal entities are explanatorily irrelevant to psychology*. It does not reject the other three, or the corollary of the first, *that introspection is not a form of observation*.

Cognitivism grew slowly between 1955 and 1965, in part because it was not an ‘intentional’ revolution like Behaviorism. George Miller’s 1956 paper “The magical number seven, plus or minus two: Some limits on our capacity for processing information,” is one of the classics of cognitive psychology, although the term ‘cognitive psychology’ does not appear in it. The first use of ‘cognitivism’ belongs to Ulrich Neisser who published a book of that title in 1967. (Neisser 2014)

MILLER ARGUES THAT human’s short-term memory behavior is limited to seven items plus or minus two. These ‘items’, however, need not be individual atomic units like Ebbinghaus’ nonsense syllables. Miller hypothesized that brain could ‘chunking’ information into groups, which then could be easily remembered. To borrow a classic example from Bechtel and Graham, the sequence A, B, C, B, B, C, N, B, C, C, B, S would be difficult to remember on its own, but if it is ‘chunked’ into ABC, BBC, NBC, CBS, remembering it is simple.<sup>25</sup>

According to Miller, “There seems to be some limitation built into us either by learning or by design of our nervous system, a limit that keeps our channel capacities in this general range.” (1956, p. 86).

<sup>25</sup> see §2.2 for a historical introduction.

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## 4.2 Brief Sketch of the Game Characters

Characters are listed alphabetically by faction. Characters with a '\*' will only be included in large classes.

### *Psychoanalysts*

#### **Richard Green, MD Professor of Psychology, UCLA\***

Professor of Psychology and UCLA, Green is most well known for his groundbreaking studies of 'sissy boys' and 'tomboy' girls, conducted with John Money of Johns Hopkins University. Green's recent essay "Mythological, Historical and Cross-Cultural Aspects of Transsexualism", which is reprinted in the book he co-edited with his mentor John Money Transsexualism and Sex Reassignment (1969), traces the "longstanding and widespread pervasiveness of the transsexual phenomenon."

#### *Notable Work*

- Richard Green and John Money. 1961. "EFFEMINACY IN PREPUTIAL BOYS: Summary of Eleven Cases and Recommendations for Case Management". *Pediatrics* 27, no. 2 (): 286–291
- R Green and J Money. 1969. *Transsexualism and sex reassignment*

#### **Robert Hopcke Psychotherapist, San Francisco, CA (Jungian)\***

Robert Hopcke is a counselor, with degrees in both psychotherapy and pastoral counseling, best known for his successful Jungian practice in Bay Area in California.

#### *Notable Work*

- Robert Hopcke. 1991. *Jung, Junians & Homosexuality*
- ROBERT H HOPCKE. 1988. "Jung and Homosexuality: A Clearer Vision". *Journal of Analytical Psychology* 33, no. 1 (): 65–80

**Harold Lief, MD Professor of Psychiatry at the University of Pennsylvania (Jungian)\***

President of the American Academy of Psychoanalysis in 1967, Harold Lief is Professor of Psychiatry at the University of Pennsylvania. He is best known for his advocacy for greater emphasis on sexual education in medical schools.

*Notable Work*

- Leif, H. (1964) "The Psychological Basis of Medical Practice" Post-grad Med J 40:355 doi:10.1136/pgmj.40.464.355-a

**Judd Marmor, MD Psychiatrist, Hollywood, CA (Freudian)**

The 'Psychiatrist to the stars', Judd Marmor has built an impressive psychiatric practice in L.A., after having immigrated to the US from Britain after serving in the British Navy during WWII. Rumor has it that many of the popular portrayals of psychoanalysis in the movies today are based on him.

Initial Member of the Research committee, term expiring 1974.

*Notable Work:*

- Judd Marmor. 1965. *Sexual Inversion. The Multiple Roots of Homosexuality.* New York : Basic Books

**Charles W. Socarides, MD Professor of Psychiatry, Columbia University**

Charles Socarides is a Professor of Psychiatry at Columbia University. Socarides and Bieber have spent most of their career treating and studying male homosexuality. Bieber is primary author of the 1962 study Homosexuality: A Psychoanalytic Study of Male Homosexuals is, in many ways, a response to the Kinsey Report. It reports on you study of 106 male homosexuals and 100 male heterosexuals seeking psychoanalysis for various problems. According to Socarides and Bieber, homosexuality is a neurotic adaptation to unresolved conflict, usually originating in the Oedipal stage of development.

*Notable work*

- Charles Socarides. 1978. *The Overt Homosexual.* Jason Aronson Inc

**Irving Bieber, MD Professor of Psychiatry, NYU Medical College (Freudian)**

Irving Bieber is Professor of Psychiatry at New York University Medical College and Charles Socarides at Columbia University. Socarides and Bieber have spent most of their career treating and studying male

homosexuality. Bieber is primary author of the 1962 study *Homosexuality: A Psychoanalytic Study of Male Homosexuals* is, in many ways, a response to the Kinsey Report. It reports on a study of 106 male homosexuals and 100 male heterosexuals seeking psychoanalysis for various problems. According to Socarides and Bieber, homosexuality is a neurotic adaptation to unresolved conflict, usually originating in the Oedipal stage of development.

*Notable work*

- Irving Bieber. 1962. *Homosexuality: A Psychoanalytic Study*

**John P. Spiegel, MD Director, Lemberg Center for the Study of Violence, Brandeis University**

World-famous for his study of combat fatigue, co-authored with Dr. Roy Grinker in the 1945 book *Men Under Stress*. Grinker and Spiegel argued, quite persuasively, that combat fatigue was not a result of a character flaw, but rather the social circumstances of war. It should, therefore, be treated, not punished. Spiegel is a former president of the American Academy of Psychoanalysis.

Initial member of the nomenclature committee, term expiring 1974.

*Notable Work*

- Dr Roy R Grinker and John Paul Spiegel. 1945. *Men Under Stress*

*Behaviorists*

**Albert Bandura, PhD Professor of Psychology, Stanford**

Initially serving the APA as Vice president (or President-elect) of the APA in 1971, will become president in 1972. He is therefore an initial member of the board of directors.

Bandura was trained in Behaviorism while at the University of Iowa, studying with Hull's advocate Spense. He was not, however, attracted to the strict mathematical-deductive model proposed by Hull, tending towards the work of Tolman. After graduating Iowa, he went west to work with other like-minded Tolman followers on the West coast. Currently, Bandura is a Professor of Psychology at Stanford University. His work on 'social learning,' which was started by his 'bobo-doll' studies, is widely known. Many expect his presidential address in 1972 to both explain his notion of 'vicarious reinforcement,' and articulate the relationship between his behavioristic approach and Miller's new 'cognitive psychology'.

Bandura was elected as a Fellow of the APA in 1964.

*Notable work*

- Albert Bandura. 1965. "Vicarious Processes: A Case of No-Trial Learning". *Advanc. in Experimental Soc. Psychology* 2:1–55

### **Harry Harlow, PhD Professor of Psychology, University of Wisconsin**

Initially 'former' president, serving on the board of directors.

Harlow is most well known for his series of experiments on separation anxiety in baby rhesus monkeys, Harry Harlow has become one of the most important advocates for behaviorism in the APA today. Harlow's primate lab at the University of Wisconsin is widely recognized as one of the top places for training young researchers in experimental psychology. Harlow won the Society for Experimental Psychology's Howard Crosby Warren medal in 1956 and the National Medal of Science in 1967. He served as President of the APA in 1970.<sup>26</sup>

#### *Notable work*

- Harry Harlow. 1958. "The nature of love". 13 (12): 673–685 On Psych Classics: <http://psychclassics.yorku.ca/Harlow/love.htm>.

### **Evelyn Hooker, PhD Emeritus Professor of Psychology, UCLA**

Evelyn Hooker studied with Karl Meunzinger and Robert Yerkes, pioneers in the fields of animal behavior. Starting in the 1950s, Hooker became interested in human sexuality. In 1953, she won a grant from the National Institute of Mental Health (NIMH) to study the mental health of 'non-patient, non-inmate homosexuals'. Hooker showed that if homosexuality itself were removed from the diagnostic information, homosexual men were no more likely to be diagnosed as 'neurotic' than heterosexual men.

On the program for the first class with Dr. H. Anonymous as a panelist on the topic 'Psychiatry: Friend or Foe to Homosexuals: A Dialogue'

Initial member of the Program committee, term expiring 1972.

#### *Notable work*

- Evelyn Hooker. 1956. "A Preliminary Analysis of Group Behavior of Homosexuals". *The Journal of Psychology* 42, no. 2 (): 217–225

### *Cognitivists*

#### **Noam Chomsky, PhD Professor of Linguistics, MIT**

In 1971, Noam Chomsky is a quickly rising star in academia. Currently a professor of Linguistics at MIT, his work is revolutionizing the field, changing the very idea of linguistics from the descriptive study of existing languages to the understanding of how languages result

<sup>26</sup> For the purposes of the game, 1970. In reality, 1958–1959.

from formal (logical) rules. Chomsky is also a harsh critic of Skinner's radical behaviorism. His review of Skinner's 'Verbal Behavior' is widely seen as a devastating blow to behaviorism. It is contained in the appendix.

*Notable work*

- Noam Chomsky. 1959. "Review: Verbal behavior by B.F. Skinner". *Language* 35 (1): 26–58 Electronic copy of 'review' with preface: <http://cogprints.org/1148/0/chomsky.htm> (included in the appendix)
- Noam Chomsky. 2009. *Cartesian Linguistics*. 3rd ed. A Chapter in the History of Rationalist Thought. Cambridge: Cambridge University Press

**George Miller, PhD Professor of Psychology, Harvard**

President of the APA in 1971. When the game begins, Miller is serving on the board of directors and responsible for the Presidential address to open the first game session. Miller was trained in behaviorism, but, in part because of his friendship with Chomsky, has developed a new approach he calls 'Cognitive Psychology.' Miller has a side interest in the history of psychology, having worked with E.G. Boring and authored *Psychology: the science of mental life*.

*Notable Work*

- George Miller. 1956. "The magical number seven, plus or minus two: Some limits on our capacity for processing information." *Psychological Review* 63:81–97
- George Miller. 1962. *Psychology, the science of mental life*. Oxford, UK

**David Marr, ABD Graduate Student, MIT\***

A young neuroscientist from Cambridge, England, not yet finished with his PhD Working on a information-theoretical model of how the brain's visual system works. Influence points: none.

*Independents*

**George W. Albee, PhD Professor of Psychology, University of Vermont (Psychologist)**

Clinical Psychologist. Albee worked as the executive secretary for the APA from 1951–1953, along side Harry Harlow's wife. Many of the committee structures and procedures followed today were actually refined by Albee during his time as secretary. In the 1950s, he

chaired a task force to survey the resources available to mental health professionals. The astonishing clarity of the resulting report, along with Albee's unwavering commitment to preventative mental health practices caused a great stir in psychiatric and psychological circles.

Author of 'A declaration of independence for psychology' (1964), Albee is a major figure in the often 'acrimonious' debate regarding the suitability of the medical model for understanding mental illness. If any questions arise regarding the APA's decision-making procedures, Albee is the person to ask. He has held every position of responsibility in the organization save the Presidency and Vice-Presidency.

Initial member of the nomenclature committee, term expiring 1972. In classes over 16, also 'member at large' for the board of directors starting in 1971.

#### *Notable Work*

- George W Albee. 1957. "Manpower Trends in Three Mental Health Professions". 12 (2): 57-70
- George W Albee. 1970. "The Uncertain Future of Clinical Psychology". 25 (12): 1071-1080

### **Anne Anastasi, PhD Professor of Psychology, Fordham University (Psychologist)**

The 'guru' of psychological testing, Anne Anastasi has developed more psychometrics than anyone else. Her 1954 textbook Psychological Testing is a classic in the field, defining psychometrics for a generation.

Initial member of the Program committee, term expiring 1974.

#### *Notable Work*

- Anne Anastasi. 1967. "Psychology, psychologists, and psychological testing"
- Anne Anastasi. 1945. *Differential Psychology*. Individual and Group Differences in Behavior
- Anne Anastasi. 1968. *Psychological testing*

### **Kenneth Clark, PhD Professor of Psychology, CCNY (psychologist).**

Kenneth Clark, along with his wife Mamie Phipps Clark, are the authors of a hugely famous study of the racial attitudes of young children. Ken and Mamie presented four identical plastic dolls that different only with respect to color to black children between the ages of three and seven. When asked which doll they preferred, the majority selected the white doll. When asked to color in a drawing 'the

same color' as themselves, most of the black children choose yellow or white crayons. Ken Clark testified as an expert in three of the five cases that were combined into the landmark school desegregation decision Brown v. The Board of Education, and his summary was cited by Chief Justice Warren (footnote 11) as influencing the court's decision.

Initial member of the Research committee, term expiring 1973.

*Notable Work*

- Kenneth B Clark and Mamie K Clark. 1939. "THE DEVELOPMENT OF CONSCIOUSNESS OF SELF AND THE EMERGENCE OF RACIAL IDENTIFICATION IN NEGRO PRESCHOOL CHILDREN". *Journal of Social Psychology, S.P.S.I. Bulletin* 10:591–599 (Available at psychclassics: <http://psychclassics.yorku.ca/Clark/Self-cons/>)
- Kenneth B Clark and Mamie K Clark. 1940. "SKIN COLOR AS A FACTOR IN RACIAL IDENTIFICATION OF NEGRO PRESCHOOL CHILDREN". *Journal of Social Psychology, S.P.S.I. Bulletin* 11:159–169 (Available at psychclassics: <http://psychclassics.yorku.ca/Clark/Skin-color/>)

**D Fordney-Settlage, MD Assistant Professor, Obstetrics and Gynecology Division of Reproductive Biology at the Los Angeles County-USC Medical Center(en.wikipedia.org/wiki/Los\_Angeles\_County-USC\_Medical\_Center).** (gynecologist)\*

Assistant Professor of Obstetrics and Gynecology Division of Reproductive Biology at the Los Angeles County-USC Medical Center. Diane Fordney-Settlage has recently come to national prominence as an advocate for women's sexual health following the wide-spread adoption of oral contraceptive. *Notable work*

- Diane S Fordney-Settlage, Sheldon Baroff, and Donna Cooper. 1973. "Sexual Experience of Younger Teenage Girls Seeking Contraceptive Assistance for the First Time". *Family Planning Perspectives* 5 (4): 223–226

**John Fryer, MD Professor of Psychiatry, Temple University (psychiatrist)**

Psychiatrist at Temple University Hospital in Philadelphia, John Fryer is a outspoken advocate for the rights of gay psychiatrists.

**Kurt Freund, MD, Professor Sexology Program at the Clarke Institute of Psychiatry in Toronto**

Czechoslovakian who fled the communist invasion of 1968, as well as a Jewish survivor of the holocaust. Responsible for inventing the most reliable measurement of sexual attraction in men, the 'penile plethysmograph'. His research lead to the legalization of homosexuality in Czechoslovakia and Hungary before the Soviet crackdown.

**Paul Gebhard, PhD Director of the Kinsey Institute, Professor of Anthropology, Indiana University (Anthropologist)**

Director of 'The Kinsey Institute' (The Institute for Sex Research) at Indiana University, where Gebhard is a Professor of Anthropology.

Initial member of the Program committee, term expiring 1973.

*Kinsey Report*

- Alfred Charles Kinsey, Wardell Baxter Pomeroy, and Clyde Eugene Martin. 1998. *Sexual Behavior in the Human Male*. Indiana University Press Currently out of print, but on google books.
- Alfred Charles Kinsey and Institute for Sex Research. 1998. *Sexual Behavior in the Human Female*. Indiana University Press Preview available on google books.

**Ron Gold Journalist for Variety (Journalist)\***

Independent Journalist for Variety, Gold is attending the APA meeting to cover the protests by gay activists.

*Credibility Points:* starts each conference with 10 points to distribute.

**Frank Kameny and/or Barbara Gittings (Activists)\***

Frank Kameny and Barbara Gittings are the co-directors of the Mattachine Society, an organization advocating for greater respect for homosexuals.

**Stanley Milgram, PhD Director, Graduate Program in Social Psychology, CUNY (Social psychologist)\***

Former Director of Harvard's Department of Social Relations, currently director of the Graduate Program in Social Psychology at CUNY. Milgram is most famous for his 'small world' experiments, which asked randomly selected individuals in the midwest to attempt to deliver a message to a randomly selected individual in Boston through their existing social contacts. It was this study that produced

the commonly-held belief that all people are separated by ‘six degrees of separation.’

*Notable Work*

- Stanley Milgram. 1967. *The small-world problem*
- Jeffrey Travers and Stanley Milgram. 1969. “An Experimental Study of the Small World Problem”. *Sociometry* 32, no. 4 (): 425–443

**Jean Piaget, PhD Director of the International Center for Genetic Epistemology in Geneva, Switzerland (Developmental psychologist)\***

Director of the International Center for Genetic Epistemology in Geneva, Switzerland. Currently 76, Jean Piaget is a legend in Psychology, generally recognized as the first main proponent and theorist of developmental psychology. Piaget’s theory of ‘Genetic Epistemology’ marks a different approach to psychology from either Psychoanalysis or Behaviorism, borrowing from both.

*Notable Work*

- Jean Piaget. 2002. *Judgement and Reasoning in the Child*. 1st ed. Routledge available at <http://www.archive.org/details/judgmentandreas0007972mbp>
- J Piaget. 1953. *The origin of intelligence in the child*
- Jean Piaget. 2013. *The Construction Of Reality In The Child*. Routledge
- Jean Piaget. 1952. *The Child's Conception of Number*
- Jean Piaget. 1962. *Play, Dreams, and Imitation in Childhood*. W W Norton & Company Incorporated

**Robert Spitzer, MD Researcher at Columbia Center for Psychoanalytic Training and Research (Psychiatrist)**

Researcher at Columbia Center for Psychoanalytic Training and Research. Spitzer is a brilliant researcher, who has great promise in the field of psychiatry. As a young undergraduate, Spitzer wrote a paper discrediting the fraudulent psychiatrist Wilhelm Reich’s ‘orgone accumulator,’ which he once believed in and sought treatment through. The FDA used his paper in their prosecution of Reich.

Initial member of the nomenclature committee, term expiring 1976.

*Notable Work*

- Robert Spitzer. 2005. *Wilhelm Reich and Orgone Therapy*

**Thomas Szasz, MD Professor of Psychiatry, State Hospital of New York at Syracuse (Psychiatrist)**

Author of the polemic The Myth of Mental Illness (1960) and The Manufacture of Madness: A Comparative Study of the Inquisition and the Mental Health Movement (1970), Thomas Szasz has become a major thorn in the side of the psychiatric community. His position as Professor of Psychiatry at the State Hospital of New York at Syracuse was even threatened in the early Paul Hoch, New York's commissioner of mental hygiene.

On the program for 1971.

*Notable Work*

- Thomas Szasz. 1960. "The Myth of Mental Illness". 15:113–118 available at <http://psychclassics.yorku.ca/Szasz/myth.htm>
- Thomas S Szasz. 2011. *The Myth of Mental Illness*. Foundations of a Theory of Personal Conduct. Harper Collins
- Thomas Szasz. 1997. *The manufacture of madness*. A comparative study of the inquisition and the mental health movement (See esp. the chapter titled "The Modern Psychiatric Scapegoat - The Homosexual")

**Leona Tyler, PhD Emeritus Dean and Professor of Psychology, University of Oregon, (Psychologist)**

Leona Tyler's The Psychology of Human Differences is a classic in the psychology of human differences. Tyler has long sought to increase the respect for individual personalities in the practice of psychology and psychiatry. Her 'choice pattern technique' is one way of measuring these differences, and her work is standard fare for all graduate students of counseling.

Initial member of the Research committee, term expiring 1972.

*Notable Work*

- L E Tyler. 1953. "The work of the counselor."

**Philip Zimbardo, PhD Professor of Social Psychology at Stanford (Social psychologist)\***

Philip Zimbardo has a great deal of promise as a researcher in social psychology, but has yet to gain national prominence.



# 5 Things you should know

## 5.1 Basic scientific research

This section is written for the contemporary reader, not the ‘character’ you’ll be playing. The standards of what makes a good experiment have not changed significantly since the mid 1970s, so there should be no historical anachronisms contained herein.<sup>1</sup>

Figure 5.1) is a clipping from the Washington Post published in 2004. It’s one of these succinct summations of scientific research that appear all the time in the media—there is even a website (<http://kill-or-cure.herokuapp.com/>) that tracks all the things that the British Tabloid *The Daily Mail* has said either causes or cures cancer.

So what, exactly, is the claim being made here? What evidence is given in support of that claim? If we take the main headline

Dogged crying and lower IQs are linked

as the central claim—the conclusion, as it were,—of the study that was performed, what would count as evidence in support? Against?

What, exactly, does it mean to be ‘linked’ anyway? How are they linked? Does increasing one cause increases in the other?

Fortunately, we have the original journal article for this one available, so I’ll quote the abstract:

### Dogged Crying, Lower IQ Linked

Babies older than 3 months who cry uncontrollably without reason are at greater risk of suffering from lower IQ, hyperactivity and discipline problems in childhood, new research has found.

Persistent crying for periods longer than two weeks after that age may suggest subtle neurological problems that are later responsible for developmental deficits, said federal government researchers who published a study last week.

Persistent and unexplained crying when babies are younger than 3 months—commonly known as colic—was not associated with cognitive problems later on.

“Children who had prolonged crying, but not those who had colic, had poorer outcomes on many of the tests of cognitive development,” the researchers wrote in a paper published in the Archives of Disease in Childhood.

The study was based on 327 children in Norway and Sweden who were evaluated at 6 and 13 weeks and had their IQs measured when they were 5 years old. While the study was small, the researchers said the stark differences between the groups strengthened their confidence in the results.

The researchers found no obvious differences to explain the prolonged crying in babies older than 3 months. While maternal smoking has long been associated with colic, it was not associated with prolonged crying after babies were older than 3 months.

— Shankar Vedantam

Figure 5.1: Vedantam 2004

<sup>1</sup> Parts of this section is based on work completed during my Post-Doc at Washington University in St. Louis 2002–2004, in collaboration with William Bechtel, Adele Abrahamson and Carl Craver.

**BACKGROUND:**

Long term studies of cognitive development and colic have not differentiated between typical colic and prolonged crying.

**OBJECTIVE:**

To evaluate whether colic and excessive crying that persists beyond 3 months is associated with adverse cognitive development.

**DESIGN:**

Prospective cohort study. A sample of 561 women was enrolled in the second trimester of pregnancy. Colic and prolonged crying were based on crying behavior assessed at 6 and 13 weeks. Children's intelligence, motor abilities, and behavior were measured at 5 years ( $n = 327$ ). Known risk factors for cognitive impairment were ascertained prenatally, after birth, at 6 and 13 weeks, at 6, 9, and 13 months, and at 5 years of age.

**RESULTS:**

Children with prolonged crying (but not those with colic only) had an adjusted mean IQ that was 9 points lower than the control group. Their performance and verbal IQ scores were 9.2 and 6.7 points lower than the control group, respectively. The prolonged crying group also had significantly poorer fine motor abilities compared with the control group. Colic had no effect on cognitive development.

**CONCLUSIONS:**

Excessive, uncontrolled crying that persists beyond 3 months of age in infants without other signs of neurological damage may be a marker for cognitive deficits during childhood. Such infants need to be examined and followed up more intensively.

Table 5.1: Abstract from Rao et al. 2004

While the journalist<sup>2</sup> used the word 'linked,' the scientific paper makes slightly different claim: that crying "may be a marker" for cognitive deficits during childhood. This word change—from 'marker' to 'link'—has implications that demand investigation.

The former claim—that 'dogged crying' *is linked* to lower IQ—suggests a causal claim: that if you could just stop the child from crying, the child's IQ would remain normal. The second—that crying *may be a marker*—suggests that crying is an early sign of an underlying problem that manifests as lower IQ at a later date. The first implies one-way a causal relationship, the second, that both are caused by an underlying problem.

THE PROCESS OF DRAWING UPON INFORMATION, whether acquired through simple observation or through experiment, to answer questions is the crux of the activity of scientific reasoning. The answers to these questions are what scientists refer to as *hypotheses*. In a scientific investigation, one tests and rejects various hypotheses.

<sup>2</sup> The journalist in question here is Shakar Vendantam, who went on to host the "Hidden Brain" podcast on NPR.

A 'hypothesis' is often defined as an 'educated guess'. This overly-simple definition is really only suitable as a starting point. A hypothesis is a conjecture about the way some phenomenon in the world is or behaves. It might be about the origin of the universe, or the mechanisms of memory, but in either case, the hypothesis claims that something is a certain way. If we discover that the thing is not the way the hypothesis claimed, we have disconfirmed the hypothesis.

Look back at the ‘Dogged crying’ abstract. You should note that this is study **not** an experiment. The authors of the study did **nothing** other than observe: they made no interventions to the babies or the mothers. They merely separated them into two groups, and measured those groups 5 years later.

### *The Paradigmatic experiments*

THE ‘JUNIOR HIGH’ VERSION of the scientific method tells us that to be science, one must observe-hypothesis-experiment-repeat. This simply isn’t true. Science uses a number of different methods, and not everything takes the form of the classic *experimentum crucis* that we were taught in seventh grade.

Constructing good hypotheses and good questions to test hypothesis can be challenging, especially in psychology and psychiatry. In this section, we’ll introduce some basic terminology regarding scientific reasoning and discuss a few model studies—those we call ‘paradigms’—that have influenced how science has progressed.

*The first paradigm: Newton’s experimentum crucis* The concept of an ‘experiment’ in science is actually relatively new.

As you may remember from Pre-history of Psychology: Empiricism about the Mind subsection 2.2 on p. 23, we attribute the birth of the scientific method to Francis Bacon. His study of heat in the *Novum Organon* established a model of scientific reasoning: first, draw axioms from experience; and second, deduce or derive new experiences from those axioms Bacon 2000b, Bk. II, ‘§X

1. Catalog all the instances of the thing (“Table of existence and presence”, §XI)
2. Catalog all the instances of things similar to the items listed in (1), but lacking heat (“Table of Absence”, §XI)
3. Catalog all the instances of things that do not have heat but could (“Table of degrees or comparative instances”, §XIII)
4. Finally, catalog all the instances of things that heat cannot be (“Table of exclusions”, §XVIII)

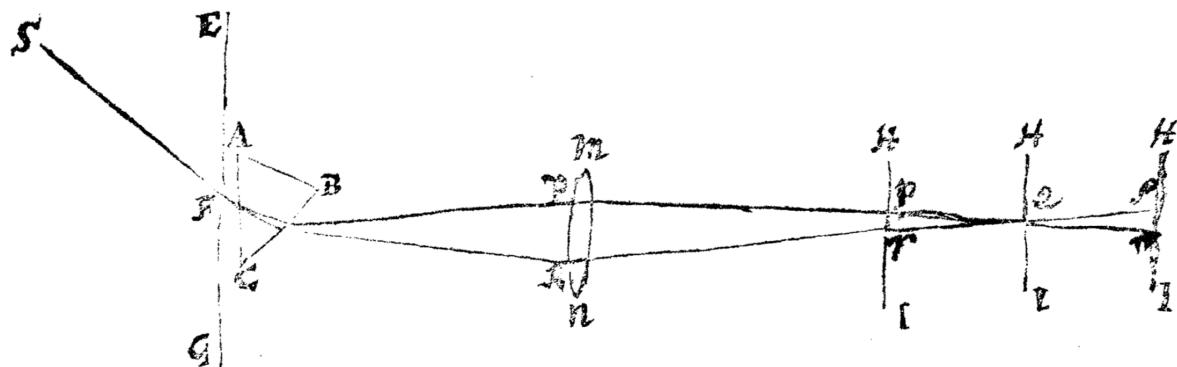
Only after these tables are made are we able to make a ‘First Harvest’, a first attempt to generalize across all these tables and interpret nature. Once this is complete, Bacon suggests we create tables of ‘privileged instances’—27 in total, that specify all instances that are solitary, revealing, concealed, etc. The 14th table is a table of ‘crucial’ or ‘critical’ instances.



Figure 5.2: Photo of poster in abandoned junior high school in Hampstead, Maryland. Photo by Kenny Ditto, former student, 2008. Used with permission.

We take the term from the *signposts* which are erected at forks in the road to indicate amen mark where the different roads go. We have also chosen to call them *decisive instances* and *instances of verdicts*, and in some cases *oracular* and *commanding instances*.

This is where the term *experimentum crucis* comes from, although for Bacon, it was a critical *instance* of observation, not a critical experiment. Robert Hooke, who we now remember for 'Hooke's Law' of springs, was the first to suggest that critical instances could be manufactured in a laboratory, and hence, become *experiments*.



Newton first started his experiments on light and prisms in the early 1670's, reporting his initial findings to the Royal Society in 1671. Newton 1671 It is actually his *second* letter on this topic, published in 1672, that is most frequently cited as the primary source. Newton 1672a.

It is notable that Newton himself does not use the term *experimentum crucis* in his original presentations of his experiments to the Royal Society in two letters in 1671 and 1672. In 1672–1673, Hooke viciously attacked Newton's work. In 1673, Newton was a young man of 30, working primarily in Cambridge, not London. Hooke was 10 years his senior, an original member of the Royal society and well ensconced in the power structures of London.

But Hooke had a theory of light, was well known to be 'irascible', and did not appreciate new-comers. Newton responded in 1672 Newton 1672b, and again in 1673 Newton 1673. But even in these, he does not call his experiments 'crucial'. He only uses that term in his *Opticks*, written 30 years later and published a year *after* Hooke's death. Newton 2018

I mention this because, as most students familiar with Reacting will understand, the *actual* history is far more complicated than the digested version we get in most textbooks. The story Newton tells

Figure 5.3: Illustration of Newton's experiment contained in the 1st letter to the Royal Society, 1671

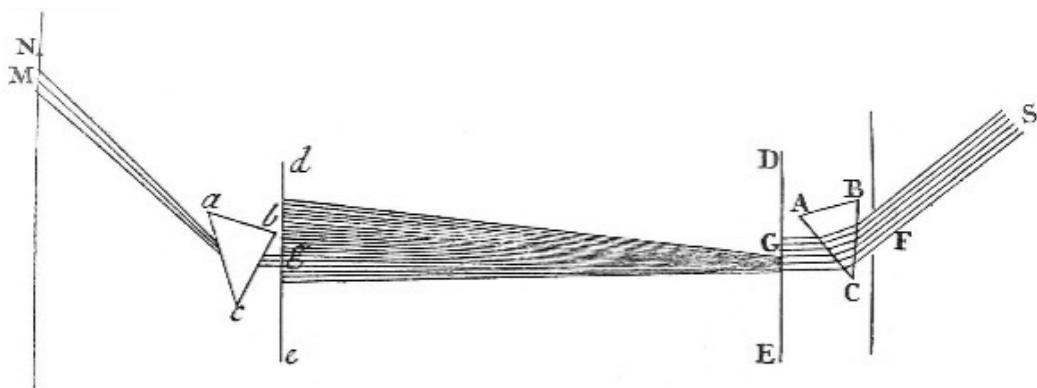
in the *Opticks* of conceiving of and performing a *crucial experiment* deduced by pure logic from the Bacon's tables of induction is nothing more than a post-hoc myth.

But like Franklin's kite, it is the myth, and not the actual history, that matters in understanding Newton's influence on the development of science. So what did Newton show, and why was it 'crucial'?

THE FACT THAT WHITE LIGHT that passes through a prism refracts and takes on the colors of the rainbow was well understood in 1670. What was not understood was whether the colors of the rainbow were existent in the light and 'revealed' by the prism, or whether they were in the prism and 'added' to the white light as it passed through. In short, is the prism breaking light up, or is it acting as a colored filter?

Roughly, Hooke held the second: that light itself does not contain color, but it took on colors as it was 'corrupted' by the prism. Newton, on the other hand, thought that the light's color and the angle of refraction were one and the same, and hence, the colors were contained in the white itself, and were only revealed by refraction through the prism.

A 'crucial' experiment must act like a signpost. It must distinguish absolutely between the two competing theories—like a fork in the road, at a critical experiment, the two theories diverge and cannot be recombined.



**Fig. 18.**

Newton and Hooke both predict that light passing through a prism will refract at a distinct angle, and will take on the colors of the rainbow. What Newton needs is a case in which Hooke predicts one thing, and he the opposite.

So he sets up the experiment as designed in 5.4. Newton darkens the room, and opens a small pinhole in a sheet (F) covering the window. The light starts at (S), enters the room through the (F) and passes

Figure 5.4: Illustration of Newton's experiment contained in the *Opticks*, 1704. Notice that the sun is on the right, and the rays move right to left, unlike the first from 1671.

through prism (ABC). It then falls on sheet (DE), which has a hole (G). The light coming through G is a single color. It then passes through *another* screen and prism. The resultant angle is measured. Newton observes, at least in 1672:

"And I saw by variation of those places that the light, tending to that end of the image toward which the refraction of the first prism was made, did in the second prism suffer a refraction considerably greater than the light tending to the other end. And so the true cause of the length of that image was detected to be no other than that light consists of rays differently refrangible, which, without any respect to a difference in their incidence were, according to their degrees of refrangibility, transmitted to divers parts of the wall."

When light passes through the second prism, it is further refracted, but not changed in color<sup>3</sup>. So how does this observation fit a fork-in-the-road between his view and Hooke's? That's a subject of debate. But here's my best take at his reasoning:

1. Either the colors and their respective angles are in the light itself, and the prism uncovers this fact, or the prism adds the colors and the angles by corrupting the pure white light.
2. If the former, then light passing through a second prism would (a) not change the color (for a color once revealed can't be revealed again) BUT it would (b) double the angle on the second pass.
3. If the latter, the light passing through a second prism would (a) change the color (for the prism adds color to whatever light it touches) AND it would (b) double the angle on the second pass.
4. Passing light through 2 prisms produces the same color as passing light through 1 prism (as well as doubles the angle).
5. Therefore, the colors and their angles are in the light itself

Table 5.2: Logic of Newton's Experimentum Crucis

This experiment—and this reasoning—comes to be *the* standard for a good experimental design. It is the ‘paradigmatic’ experiment of its era, the ‘paradigm’ of good science.<sup>4</sup>

<sup>3</sup> Newton himself describes the logic of his *experimentum crucis* like this:

To determine by Experiments these and such like Queries which involve the propounded theory, seems the most proper and direct way to a conclusion. And therefore I could with all objects were suspended, taken from Hypotheses or any other heads other than these two; of showing the insufficiency of Experiments to determine these Queries or prove any other parts of my theory, but assigning the flaws ad defects in my conclusions drawn from them; or of producing other Experiments which directly contradict me, if any such may seem to occur. For if the Experiments, which I urge, be defective, it cannot be difficult to show the defects. But if value, then by proving the theory they must render all Objections invalid.  
Newton 1672a, p. 5005

<sup>4</sup> In contemporary academic English, the word ‘paradigm’ is used to mean, roughly ‘word–view’. That usage descends from this use of the term, as the modern use can be traced back to Thomas Kuhn’s *Structure of Scientific Revolutions* (Kuhn 1996). In it, he describes scientific progress as changing eras in which scientists look to a particular experiment as the best model of scientific reasoning, and seek to replicate that experiment in their own work. That experiment is the ‘paradigm’ for that era of scientific inquiry. Over time, people started using the word ‘paradigm’ to refer to the era, and the people in it, rather than the experiment they valued.

*The paradigm in experimental psychology: Hermann Ebbinghaus* As you may recall from 2.2, in the 1860s and 1870s a handful of researchers in Germany started applying the experimental method to sensation and perception. Fechner's law was one of the first great successes of this era, as for the first time, it related a physical phenomenon to a psychological one with the precision of mathematics.

Today, Ebbinghaus is frequently characterized as the 'founder' of experimental psychology—as the site 'encyclopedia.com' does—and his experiments frequently taught in intro to research methods courses. This makes his work a 'paradigm' for contemporary psychology. In order to understand what counts as 'good science' in this environment, we must understand Ebbinghaus.

The first step in scientific endeavor into a new domain, according to Ebbinghaus, is to

The method of obtaining exact measurements i.e., numerically exact ones of the inner structure of causal relations is, by virtue of its nature, of general validity. This method, indeed, has been so exclusively used and so fully worked out by the natural sciences that, as a rule, it is defined as something peculiar to them, as the method of natural science.  
Ebbinghaus 1885, p. 7

Following Fechner, the primary goal of scientific investigation—perhaps *the* defining feature of science itself—is the creation of mathematically precise descriptions of natural phenomena.

When Ebbinghaus first approached the question of memory, he needed to create an environment, like Newton's darkened room, where comparisons between different tasks could be compared.

The first step is to control "the mass of conditions which have proven themselves causally connected with a certain result", then, one of those is systematically varied, and the resulting effect measured.

**EBBINGHAUS SET OUT TO SYSTEMATICALLY MEASURE MEMORY**—so he created a protocol for testing his own memory. In order to control his own personal associations with words, which might make them more memorable, he created a list of 2,300 1-syllable nonsense words. These were drawn randomly for each experiment. He then memorized lists and he measured how many he could remember after a given time period—he didn't do this by introspection, but forced himself to actually write down all that he could recall, and check to see how accurate he was. He formalized the process of memorization, going so far as to use a clockwork mechanism to ensure that he spent the exact same amount of time memorizing each list.

There were things he could not control, of course. He recognized that his own accent and 'mother-tongue' might influence the test, the 'conditions of his daily life' might have an impact—he recognizes

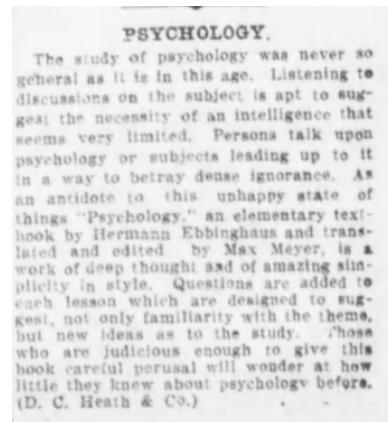


Figure 5.5: Notice of Ebbinghaus' book "Psychology", from the Brooklyn Daily Eagle, Dec 19, 1908

that his mind is typically fresher in the morning than the evening, for example. The experiments took months to complete, and there could be seasonal effects.

He then varied the length of the lists and compared it against the time it takes to memorize. And he did this repeatedly, recording 518 lists over two periods, 1789–1790 and 1883–1884.

Series of 16 syllables, for the most part read	Each syllable required the average time of	Number of series	Number of syllables
8 times	0.398 sec.	60	960
16 “	0.399 “	108	1728

Series of X syllables	Were in part read, in part recited on an average Y times	Each syllable re- quired an average time of Z secs.	Number of series	Number of syllables
X=	Y=	Z=		
12	18	0.416	63	756
16	31	0.427	252	4032
24	45	0.438	21	504
36	56	0.459	14	504

He also counted, using a string of beads, the number of repetitions it took to memorize a list. This produced, after many variations and trials, the chart to the right, not called 'The learning curve'.

EBBINGHAUS THEN TURNED HIS ATTENTION TO RECALL AND RETENTION. Working from the commonsense notion that the longer you study, the longer it is retained, Ebbinghaus designed a protocol whereby he would measure the number of repetitions it would take to not re-learn a list after a given amount of time. Perfect recall would 'cost' no further repetitions or time. Total failure would (presumably) require the same amount of time as it took in the first place.

As before, this protocol is designed to create a numeric representation (number of repetitions) of a psychological idea (ability to recall). As one might expect, the higher the number of repetitions on learning, the fewer needed after 24 hours to recall the list perfectly.

Figure 5.6: Ebbinghaus' first table of results in his *Memory*, 1885

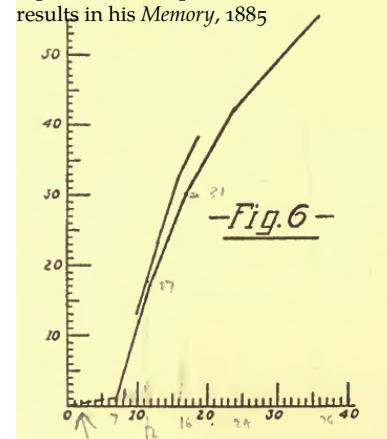


Figure 5.7: Screenshot of "Fig 6" from p. 48, Ebbinghaus 1885. Now called 'the learning curve.'

Measuring in seconds, Ebbinghaus determined the amount of time ‘saved’ when re-learning by repeating the learning in the first place—and the average number of seconds saved by each additional repetition. His results are remarkable:

HIS LAST GREAT CONTRIBUTION TO PSYCHOLOGY IS THE ‘FORGETTING CURVE’. Using the measurements developed in previous experiments, Ebbinghaus started measuring the number of repetitions needed to restore a list versus the amount of time since the list was memorized. He found that after just one hour,  $1/2$  of the original work was required to refresh the list. But after 8 hours, it was only  $2/3$ rds, not the whole amount. He also discovered that individual items in the list are retained differently according to their serial position. He summarized his findings as:

The strength of the connection, and therefore the amount of work which is eventually saved, is a decreasing function of the time or of the number of intervening members which separated the syllables in question from one another in the original series. It is a maximum for immediately successive members. The precise character of the function is unknown except that it decreases at first quickly and then gradually very slowly with the increasing distance of the terms. Ebbinghaus 1885, p. 107

While the list of psychological principles attributed to Ebbinghaus is long, it is absolutely true that he noted what is now called the “magic number 7”—that the longest list of random syllables one can remember without practice is 7.<sup>5</sup> Ebbinghaus 1885, p. 47

It’s also true that all of these experiments were preformed on an experimental group of one individual: himself. There was no control group and no random sampling of a population. But it is also noteworthy that he recognized these limitations in his study:

The tests were all made upon myself and have primarily only individual significance. Naturally they will not reflect exclusively mere idiosyncrasies of my mental organisation; if the absolute values found are throughout only individual, yet many a relation of general validity will be found in the relation of these numbers to each other or in the relations of the relations. Ebbinghaus 1885, Author’s preface, p. v

Ebbinghaus’ paradigm is not having a control group, blinding reviewers, or randomizing across a population. Rather, I suspect, Ebbinghaus’ paradigm comes down to two things:

1. Ebbinghaus’ goal throughout these studies was to describe psychological phenomena in the precise language of mathematics. While *Memory* does contain a few formulae, the whole of the book is consumed with the validity of his measurements of the time it takes to memorize and the costs of forgetting.

I. b. Tabelle (Auswahl)		II		III		IV	
X=	Y=	P.E.m=	T=	P.E.m=	D=		
0	1270	7	103	16	12.9		
8	1167	14	192	29	12.0		
16	1079	23	295	19	12.3		
24	975	17	407	17	12.7		
32	863	15	574	14	12.9		
40	767	14	685	11	12.9		
48	685	9	816	13	12.8		
64	454	11			m= 12.7		

Figure 5.8: Screenshot recall table, p. 56  
Ebbinghaus 1885.

<sup>5</sup> George Miller will be presenting his update to this famous result ‘The Magic Number Seven plus or minus 2’ at the first conference.

2. Ebbinghaus set a standard for transparency of data and thoroughness in controlling potential confounding variables. He addresses every potential confound as it arises and redesigns his protocol to control, or measure that confound. And those he cannot, he labels and presents to the reader. The passage quoted above demonstrates his laudable self-reflection, precisely specifying the weakness in his experiment that he could not control.

Indeed, in reading *Memory*, one cannot help but be impressed by Ebbinghaus' thoroughness and dedication to the transparency of his research. The book is only 117 pages of text, yet it covers 5 years of experimentation and thousands of trials. This, I suspect, is the true paradigm of Ebbinghaus: that psychological measurement must be carried out extraordinarily carefully, with all due attention to potential confounds.

### *Varieties of Scientific Inquiry*

Most scientific studies seek to establish that two (or more) variables are correlated. To say that two variables are correlated is to say, at first pass, that you can predict the value of one given the value of the other. The degree to which your prediction is reliable is the correlation coefficient: a value of 1 means that you can precisely and accurately predict one of the values from the other.

A value of 0 means that any prediction you make would be random in nature. A positive correlation means that as one variable increases, so does the other, and a negative correlation means that as one variable increases, the other decreases.

There are two basic studies that seek to establish a correlation:

- Non-Intervention, i.e. 'Observational studies'
- Intervention, i.e. 'Experimentation'

Another important aspect of scientific inquiry is modeling, where a scientist seeks to *explain* a correlation by positing a mechanism that behaves in the same way in the same conditions. To understand the importance of—and the limitations to—modeling, we'll need to first understand the logic of scientific inquiry as well as the potential and limitations of both observational and experimental research.

**Thesis 5.1 (Correlation)** *Two variables are correlated if you can predict the value of one given the value of the other.*

### The Logic of evidence

*The hypothetico-deductive method* Some have characterized the testing of hypotheses in science as a two-step process. The first step of the argument involves the deduction of a prediction from the hypothesis

to be tested. Then, after we see whether the prediction turns out to be true, we can draw conclusions about the truth of the hypothesis. If the prediction turns out to be true, the hypothesis has been confirmed. The argument might run roughly as follows:

If Hypothesis, then Prediction.
The Prediction is true.
Therefore the hypothesis is true.

Table 5.3: Affirming the consequent

If the prediction turns out to be false, the hypothesis has been falsified. The argument might be put roughly as follows:

If Hypothesis, then Prediction.
The Prediction is not true.
Therefore, the Hypothesis is not true.

Table 5.4: Modus Tollens / Denying the consequent

Anyone who has taken Logic or Critical Thinking will notice an important difference between these two arguments.

The first argument is invalid and the second is valid.

In the first case, it is possible for the both of the premises<sup>6</sup> to be true and for the conclusion to nonetheless be false. For example, I could argue ‘If you are not over 21, you cannot drink beer. I am not drinking beer, therefore, I am not over 21.’ Both premises are true, but the conclusion is false. I am both over 21 and drinking coffee. The argument, therefore, does not guarantee the truth of the conclusion, and therefore is not valid.

Let us take an example from the history of science: the positions of the planets can very easily be predicted with Ptolemy’s 2nd Century geocentric model of the solar system, with Kepler’s heliocentric geometrical model, or with Newton’s gravitational theory. We now know that none of these are technically true descriptions of planetary motion (they all have well-known exceptions or make positively false claims); still each makes a number of true predictions. Each of them can make produce premises like ‘If my theory is true, then Venus will rise in the morning and in the evening’, and ‘Venus rises in the morning and in the evening’, but the joining these true premises into an argument can not ensure that the theory is true. In fact, none of them

<sup>6</sup> A ‘premise’ is a part of an argument that is asserted as reasoning for drawing the conclusion. In these two cases, there are two premises and one conclusion, which is separated by a single line. A *valid* argument is one where it is impossible for the premises to be true and the conclusion false. In other words, a valid argument is one where if you agree with the premises, you *must* agree with the conclusions.

are.

The first argument is a fallacy<sup>7</sup> known as the “affirming the consequent”. The second premise (the prediction) is the second term, or consequent, of the first premise (If hypothesis, then prediction). The argument states the first premise (If hypothesis then prediction) and then affirms its consequent (prediction), in order to conclude that the hypothesis is correct.

Although arguments of this sort superficially resemble truth-preserving arguments like the second argument above, we have seen that it fails to ensure a true conclusion when the premises are true. We will call these arguments - arguments that superficially resemble deductive arguments but are not truth-preserving - fallacies.

Not so for the second argument. If the hypothesis deductively entails an prediction and that prediction turns out to be false, then something **must** be wrong with the hypothesis.

THE ARGUMENTS ABOVE EMBODY what is known as the “hypothetico-deductive” model of scientific reasoning. The hypothesis entails, deductively, a prediction and the prediction is then checked against the world. If the prediction turns out to be true, the hypothesis is confirmed (though not with certainty). If it turns out to be false, the hypothesis is falsified with certainty.

THIS FACT OF LOGIC, that if the conclusion of a valid argument is false, at least one of its premises *must* be, lead Philosopher Karl Popper to propose a definition of scientific methodology we call “falsificationism.” According to Popper, as the hypothetical-deductive’ model of science can never *prove* anything, it is science’s responsibility to propose bold predictions that can be *falsified*. Scientists seek to disprove theories, not to prove them. And a theory is well-supported when it cannot be—or has not been yet—falsified. Popper’s view is still widely held by scientists.

THERE IS ONE MORE COMPLEXITY to the simple hypothetico-deductive method that ought to be mentioned explicitly. Typically, the hypothesis and observed data require additional auxiliary hypotheses to entail the prediction. Suppose that we wanted to test the hypothesis about conservation of momentum. And suppose that we started balls of known momenta at known velocities and then measured their velocities after the collision. In order to know what to predict, we would have to trust our methods for moving the balls at the said velocity, and we would have to trust our techniques for measuring their velocities after the collisions. Our prediction might fail because our instruments aren’t working rather than because the hypothesis is wrong. So we

<sup>7</sup> ‘Fallacy’ is a word philosophers use for commonly-used arguments that do not guarantee truth. There is a long history of cataloguing fallacies, and many lists can be found online. Knowing the name of a fallacy is less important than understanding *why* they are fallacious: one could agree with all the premises, yet still disagree with the conclusion.

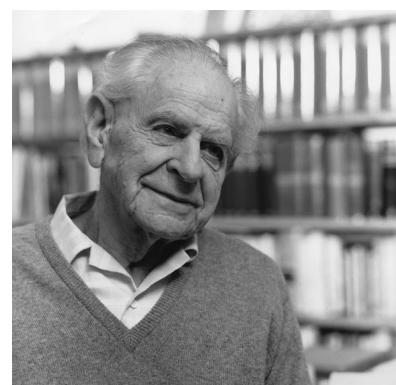


Figure 5.9: Karl Popper, 1990, By Lucinda Douglas-Menzies link [No restrictions], via Wikimedia Commons

need to add explicitly some assumptions about the techniques used to measure a phenomenon.

These assumptions — for example, that our techniques for measuring velocity are accurate — comprise the *auxiliary hypotheses* that inform our prediction. There are always a number of auxiliary hypotheses informing every prediction. In some ways, a given prediction is just one part of a web of hypotheses that come into play in a given theory.

### Observational research

We acquire knowledge of the world primarily through our senses. As humans, we rely most heavily, but clearly not exclusively, on vision. Seeing the world seems very straight-forward. We open our eyes and the world impresses itself upon our consciousness.

Take a look at the image to the right. Which head goes with which cheetah? Can you flip your interpretation to see it the ‘other way’? There are *tons* of created images like this, from the Necker cube to Salvador Dali paintings, the way you see the image can change dramatically, depending on the environmental conditions or what you had experienced just before seeing the image.

Our ability to see is, in part, learned. One aspect of ‘successful’ seeing is the ability to recognize things when one encounters them again. Recognition requires the ability to categorize. Seeing, in this robust sense, also implies the ability to organize the categories into a taxonomy or classification system.

Although much scientific research goes beyond mere observation to posit causal processes and mechanisms behind what is observed, observational research plays a vital role in the development of scientific knowledge— both in delineating the phenomenon of study and in validating hypothesis and predictions. When conducting observational research, the question of how we organize observations into categories, as well as how we organize categories into taxonomies, plays a central role. In addition, we must pay careful attention to the notion of a ‘variable’, and how we measure and estimate the values of variables.

Observational research is an important part of the scientific toolkit. Here we’ll present two paradigmatic observational studies that were hugely influential in the 1970s.

*Margaret Mead* Margaret Mead was an extraordinarily talented student at Barnard college, completing her Bachelors in 1924. She earned her Masters’ under the supervision of the famous Anthropologist Franz Boas a year later in 1925. In 1926, at the age of 23, she set off

### Thesis 5.2 (Auxiliary Hypothesis)

*An auxiliary hypothesis is a hypothesis about the methods, techniques, materials, or instruments used in an experiment that ensures the formulation of a prediction from a hypothesis.*

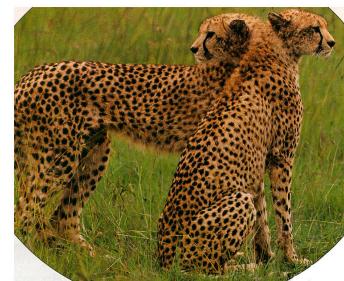


Figure 5.10: Ambiguous Cheetahs, from Pitts, Nerger, and Davis 2007

for nine months on the Manu'an Islands of American Samoa.

She was inspired in the trip by Boas, and his concern that problems in the mental life of adolescents, was the result of western culture—specifically our prohibitions on sex—not any individual dysfunction.

But how can one test such a hypothesis? One cannot, because of basic human ethics, separate a bunch of children at birth to raise them outside of western culture. Nor would it be helpful to find groups of children in western culture and follow them, because there are too many variables at play to isolate the influence of sexual repression on mental health. As she argues:

The only method is that of the anthropologist, to go to a different civilization and make a study of human beings under different cultural conditions in some other part of the world. For such studies the anthropologist chooses quite simple peoples, primitive peoples, whose society has never attained the complexity of our own.

This last point is important: the anthropologist has to become 'embedded' int the culture to understand it enough to communicate with its people on their terms. Western societies, even those sometimes found on the outskirts, are simply too complex to allow a quick study. Their language alone would take years to master, and their social structures too complex to understand quickly.<sup>8</sup> As "she could hope for great intimacy in working with girls rather than with boys", Mead 1928, p. 9 she choose to study adolescent girls in Samoa.

As her professor Boas writes in the preface to *Coming of Age in Samoa*,

In our own civilization, the individual is beset with difficulties which we are likely to ascribe to fundamental human traits. When we speak about the difficulties of childhood and of adolescence, we are thinking of them as unavoidable periods of adjustment through which everyone has to pass. The whole psycho-analytic approach is largely based on this supposition. The anthropologist doubts the correctness of these views, but up to this time hardly any one has taken pains to identify himself sufficiently with a primitive population to obtain an insight into these problems. We fell, therefore, grateful to Miss Mead for having undertaken to identify herself so completely with Samoan youth that she gives us a lucid and clear picture of the joys and difficulties encountered by the young individual in a culture so entirely different from our own.  
Mead 1928

Mead describes society which has very different sexual mores:

"Masturbation is an all but universal hair, beginning at the age of six or seven. There were only three little girls in my group ho did not masturbate... Boys masturbate in groups but among little girls it is a more individualistic, secretive practice." Mead 1928, p. 136

<sup>8</sup> I hope the reader recognizes that I am speaking here as Mead did, and as one would in the 1970s'. I don't believe a word of this, as you might expect. To contemporary thinking, Mead's presumption of simplicity of the Somoan culture and language is the core failing of her study.

The girls, she writes "deter marriage through as many years of casual love-making as possible" Mead 1928, p. 195

And as a result, there are few conflicts or troubles in the mental life of adolescent girls. Thus, adolescence is not a difficult time period for *all* girls. As it is a major problem in the west, it must then follow that the 'storm and stress' of girls' adolescence is due to the culture they inhabit, not their biology or process of maturation.

*Roger Brown* Roger Brown and his research team at Harvard University in the 1960s visited the homes of "Adam," "Eve," and "Sarah" every two weeks during the period they were first acquiring English. The team audiotaped and transcribed everything the children and their mothers said, resulting in three corpora of such high quality that they are still in use. (Although teenagers talk somewhat differently today than in the 1960s, 2-year-olds then and now talk about juice, dogs, hats, more, allgone, etc.)

Especially in the earliest stages, children omit a lot and parents sometimes fill in what is missing. Here is one of Brown's examples:

Child- Throw Daddy Mother- Throw it to Daddy
---

Table 5.5: Brown's first example

The grammars that Brown's group wrote to account for such simplified language were far more complex than you might imagine. Even more intriguing, though, were child utterances that had to be changed, not just expanded, to get an adult utterance. For example:

Child- What John will read? Mother- What will John read?
---

Table 5.6: Brown's second example

Brown 1968

Notice that there is *no* attempt by the researchers to intervene in these situations. Parents are not coached to speak to their children in a certain way, nor were they asked to fill in the sentences or avoid making corrections. There is no 'control' group, no independent variables, no dependent variables. Brown and his colleagues are simply

observing speech of children as it occurs.

An understanding of how children acquire language begins with extensive observation and careful records, focused especially on ages 1–3 years. The key product is a child language corpus, which is a written transcription of all utterances by a particular child and, usually, at least one adult who is present and interacting with the child during one or more periods of observation. As technology has progressed, researchers have gained choices. In the earliest studies (and still occasionally by choice today) observations were recorded in handwritten diaries (motion picture film and soundtracks existed but were not practical in this context). By the 1960s, audio recordings were made at the time of observation — sometimes supplemented by handwritten notes — and then transcribed into written form.

So what are we observing here? At first pass, it may appear that the child just mixed up the word order a bit, and was corrected by a parent. Brown's group proposed a much deeper analysis in terms of what would become known as a “generative grammar.”

THE EARLIEST VERSIONS OF GENERATIVE GRAMMAR emphasized the idea (adapted from Chomsky's mentor, Zellig Harris) that a sentence should be viewed as the product of a series of transformations. Consider the following sentences:

John will read what? BASE QUESTION (atypical word order for a question)
What John will read? PREPOSING TRANSFORMATION: moves wh-word (what) to the front.
What will John read? TRANSPOSING TRANSFORMATION: reverses the subject ( <i>John</i> ) and the auxiliary verb ( <i>will</i> ).

Table 5.7: Generative Grammar

The final form in the sequence is what an adult would typically say. The transformations and the intermediate form are not directly observed, but Chomsky claimed that they can be inferred and are part of the speaker's linguistic competence.

BROWN AND HIS COLLEAGUES SUGGESTED that the child was in the process of acquiring transformations, and at this point (about 3 years of age) had acquired preposing but not transposing. As a result, the “hypothetical intermediate” became an actual, observed form. Not only did this give a neat explanation of what the child said, but in the other direction it lent support to Chomsky's theory. Brown 1972

Chomsky 1965

*What all observational research has in common*

- Observational researchers always observe some type of phenomena. (obviously)
- Observational researchers make some sort of record and analyze data obtained from it.
- Observational researchers do not manipulate variables. Reasons to do observational research
- Description (atheoretical research): To obtain a general characterization of the behavior of a particular individual or group in a specified domain and setting.
- Exploratory research (pretheoretical research): To develop hypotheses and/or tentative theories. The researcher obtains a characterization of behavior, but with the goal not only of description but also of explanation.
- Confirmation or falsification (theoretical research): To test hypotheses — which may come directly from exploratory research or have a more complex history. For example, a tested hypothesis may be obtained by revising a hypothesis that was suggested by exploratory research but failed to be confirmed. (Note: If the hypothesis concerns a causal claim, observation alone will not provide strong test; if possible, an experiment should be done.) Two types of observational research
- Naturalistic observation: unobtrusive, passive observation in a natural environment. It is important to minimize any impact of observer bias. For examples, the observers may be research assistants who are blind to the goals of the study.
- Participant observation: the observer interacts with those being observed, typically within a natural environment or context. It is important to minimize reactivity — that is, the influence of the observer's presence on the behavior of those being observed. For example, a participant observer can seek to achieve some degree of unobtrusiveness and passivity by avoiding leadership roles and making written records when out of sight.

TWO OF THE MAJOR RISKS of observational research are *observer bias* and *reactivity*.

As we noted earlier, when an individual expects something to happen, he or she is more likely to notice it. This gives rise to what is

known as *observer bias*. A classic example is provided by a study of college students observing flatworm behavior by Cordaro and Ison 2016. Student observers were to record how many head turns and body contractions were made by two groups of flatworms.

Although there were no differences between the two groups, the observers were led to believe group A would have higher rates of both turning over and contracting than group B. The observers ended up recording twice as many head turns and three times as many body contractions for group A. Since there was no reason to expect a large difference in the actual behaviors, the results appear to be due to the expectations of the observers. Such biasing is typically not deliberate — the observers may be trying to honestly report what they observe, but processes unknown to them are influencing their behavior.

Although observer bias cannot typically be eliminated, it can be moderated. One strategy is to use observers who have not been influenced by the expectation. Such observers are characterized as blind. Observers are said to be blind when they do not know why the observations are being performed or any hypotheses being entertained.

A second strategy is to employ multiple observers and evaluating the agreement between them. This is known as 'inter-observer reliability', and is measured by Cohen's Kappa. If observers are influenced by expectations to see more examples of particular behaviors in one group than in another, they are nonetheless likely to differ in which additional cases they detect or which they miss.

### Testing causal claims experimentally

In the ideal experiment, the only plausible explanation the two variable changing together is that they are causally connected. All other possible explanations—those based on the effects of other untested variables—have been ruled out by 'controlling' them. The simplest form of an experiment has:

- an independent variable—the suspected cause—is manipulated.
- a dependent variable—the suspected effect—is carefully measured.
- extraneous variables are controlled

If the independent variable is *in fact* causally related to the dependent variable, then altering the value of the independent variable will produce changes in the value of the dependent variable. Moreover, these changes would not be found if the independent variable were not changed.

We will begin with the simplest case, one in which the causal relations are deterministic (that is, a change in the independent variable

#### **Thesis 5.3 (Independent variable)**

*Independent variable (manipulated): a variable of interest that is suspected to have a causal impact on the dependent variable, and is manipulated in an experiment to put this to the test.*

*The 'independent variable' is sometimes called the suspected cause, the IV-manipulated or manipulated IV, or just 'IV', if context makes clear that this is a manipulated IV, not a measured IV.*

#### **Thesis 5.4 (Dependent variable)**

*Dependent variable: a variable of interest that is suspected to be affected by the independent variable, and is measured in experimental or correlational tests of this hypothesis.*

*The 'dependent variable' is also sometimes called the 'DV', the suspected effect.*

always produces the same change in the dependent variable). In such cases we sidestep the additional concerns with statistical analysis. But in later parts of this module we will consider such statistical relations as other factors that affect to validity of experimental demonstrations of causation.

THE CORE IDEA OF AN EXPERIMENT is that the researcher *manipulates* the suspected cause and *measures* the suspected effect. By contrast, a study in which the researcher *measures* both the suspected cause and the suspected effect we call a “correlational study.”

If this manipulation produces an change in the value of the variable suspected of depending on the causal variable, we have the strongest evidence we can get that the suspected relation is genuinely causal. If it does not produce the expected changes, any correlation previously noted between the variables may be due to the fact that they are both caused by a third variable. To determine the real cause, we would then need to figure which other variable is the best candidate and manipulate it in a new experiment — perhaps repeating this cycle more than once until we hit the right variable. Recall that we already have some useful terminology to use when causal hypotheses get put to the test in a research study. The suspected effect is the *dependent variable*. The suspected cause is the *independent variable*, which can be further specified as manipulated (if the study is an experiment), or measured (if the study is correlational, in the broad sense of that term that can include comparing group means as well as computing correlation coefficients). Since we are focusing on experiments in this module, the following are definitions of independent variable (manipulated) and dependent variable given in the margin at the right.

Whenever you see the term independent variable used by itself, one must determine whether it is manipulated or measured. This will be important when you evaluate the outcome of the study and ask how well it supports the suspected causal connection.

The most basic experiments manipulate only one independent variable and are limited to two values of that variable. That is, the independent variable is treated as the simplest kind of categorical variable—a binary variable—even if it is based on a score variable. Dependent variables usually are score variables, but need not be; methods of analysis are available for DVs at any level of measurement, all the way down to binary.

MORE COMPLICATED EXPERIMENTS may investigate multiple factors at the same time as well as multiple levels of the same factor. For example, if we were designing an experiment to examine the

effects of both *diet* and *exercise* on *weight-loss*. This would be a two-factor study. And rather than just using two levels, we might use four levels of the exercise factor—none, light, moderate, and heavy—and three levels of the diet factor—high-protein, high-carbohydrate, and balanced. Exercise is a rank variable here and diet is categorical. Usually the statistical analysis will treat both as categorical, which is fine. However, even if the result were statistically significant, it would be hard to interpret results for exercise in which none and moderate led to weight loss and light and heavy did not.

In choosing the levels of a factor, sometimes experience or common sense are very helpful in avoiding results that are inadequate for your purpose or difficult to interpret. For example, if your hypothesis is that eating oatmeal affects cholesterol levels, manipulating diet such that one group gets one teaspoon per month more oatmeal than the other group is unlikely to produce an effect. At the other extreme, manipulating diet such that one group gets no oatmeal and the other must eat 50 cups a day would make the second group overweight and unhealthy. It would be more reasonable to contrast no oatmeal to an easily sustainable amount of oatmeal (perhaps two servings per week of  $\frac{3}{4}$ -cup of oatmeal) to a larger, but not ridiculous, amount of oatmeal (perhaps one cup per day).

SOME PREDICTIONS CAN BE TESTED by manipulating an independent variable once. What is required is that the relation between the independent and dependent variable be *deterministic*. That is, each time the independent variable takes a particular value, its effect on the dependent variable should be the same. For example, replacing water with mercury in 100 vacuum tubes in a given place and time should have the same effect (a reduction in height from 34 feet for water to  $2\frac{1}{2}$  feet for mercury). Research in the physical sciences is often of this type. A few replications may be included, but only as a precaution: the first case basically tells scientists whether or not a prediction is true.

When we study human minds, or any other complex systems, variability is unavoidable. Two individuals of the same species may respond differently to the same chemical, the same psychological stimulus, or the same social situation. So might the same individual at different times. In this situation, causal relations are nondeterministic and hence a single response by a single individual is just one bit of data. To test a hypothesis, many such bits of data must be obtained and, most often, will be averaged together to get an overall value of the dependent variable for each tested value of the independent variable.

Consider the hypothesis that oatmeal consumption is causally con-

nected to the level of cholesterol in the blood, as indicated by the *black arrow* in the causal diagram below. Specifically, we predict that if people eat oatmeal their cholesterol will be lower than if they do not eat oatmeal. The *question mark* over the black arrow indicates that the causal relationship is merely hypothesized and awaits confirmation (or disconfirmation). The labeled *red arrow* indicates that we will test the hypothesis by manipulating (not just measuring) whether oatmeal is eaten.

This causal graph shows a simple experiment with two variables:

Type of Variable	Variable	Values
Independent variable — manipulated	Eat oatmeal	no, yes
Dependent variable	Cholesterol level	0-500 mg/dl

Table 5.8: Variables in sample experimental design

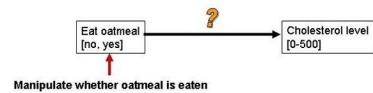


Figure 5.11: Hypothetical experimental design—hypothesis only.

Thus, researchers begin with a random (or representative) sample from the actual population, and divide that group into sub-samples. In one of the simplest experimental designs, the independent variable has one value that is thought to affect the dependent variable (often called the *treatment condition*) and a neutral value that is thought to have no effect (often called the *control condition*). The experimental manipulation involves delivering the value that is thought to affect the DV to one sample, known as the *experimental* or *treatment group*, and the neutral value to the other sample, known as the *control group*.

- The *experimental group* receives the experimental treatment. It functions as a sample of the hypothetical population in which everyone received the experimental treatment
- The *control group* acts as if it were a sample of the hypothetical population in which no one received the experimental treatment

To determine whether eating oatmeal affects cholesterol levels, we will focus on the difference between the means for the variable cholesterol level for both the experimental and control group and determine whether the difference is statistically significant. If it is, we conclude that eating oatmeal ¾ cup of oatmeal per day does cause lower cholesterol. If, on the other hand, there is no difference or the difference is too small to be statistically significant, we conclude that this study failed to provide evidence of a causal connection.

GENERALLY ONLY ONE OR A FEW VARIABLES are used to differentiate the experimental from the control group. But there are many other

variables on which individuals may vary. For example, if you were a subject in the cholesterol study, other factors in your life may have changed during the period you were eating cholesterol every day.

Maybe you took up ultimate frisbee during this time, and the vigorous exercise was responsible. Or you were taking a very difficult course, and studying hard made the difference. Thus, from your results alone we cannot distinguish between Testing causal claims experimentally Figure 5.12 on p. 172.

These additional variables are known as *extraneous variables*. In many instances we can be pretty confident that these additional variables will not affect the outcome of the study. For example, deciding to dye your hair or acquiring a cat is not likely to affect your cholesterol levels. But in some cases the variable just might be a causal factor for the dependent variable under investigation. If it does influence the outcome of the study, it is known as a *confounding variable*.

**CONFOUNDING VARIABLES CAN ARISE** at many different points in the experiment. There may be differences between the subjects comprising the experimental and control group. If some other variable is inequality distributed across the two experimental groups, it could be the cause of the difference observed in the DV.

If the difference is between subjects, the variables are known as *subject variables*.

If the difference is between the procedures followed for the two groups, the variables are known as *procedural variables*.

IT OFTEN TAKES REAL DETECTIVE WORK to identify confounds in an experiment. Take the case of Wilhelm von Osten, who in 1900 purchased an arab stallion from Russia named Hans. Convinced that animals were more intelligent than usually thought, von Osten set out to teach Hans simple arithmetic. Von Osten presented arithmetic problems to Hans on a chalkboard, and Hans responded by tapping his foot the appropriate number of times. Hans seemed to be able to solve even fairly complicated problems including the taking of square roots. Although many were skeptical, numerous mathematicians were brought in to test the horse, and some even concluded that his mathematical abilities equaled those of 14 year old school children.

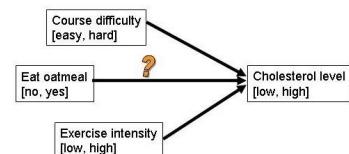


Figure 5.12: Hypothetical experimental design with auxiliary hypotheses.

### Thesis 5.5 (Confounding Variables)

*Confounding variable: an extraneous variable that co-varies in the experiment with the IV or DV; if it happens to be causally related to the IV or DV, the internal validity of the experiment (the ability of the experiment to test what it tries to test) is compromised.*

*A confounding variable is frequently simply called a 'confound.'*



To answer skeptics, von Osten brought together a group of two zoologists, a psychologist, a horse trainer, and a circus manager to study Hans over several weeks. Hans performed brilliantly until the psychologist, Oskar Pfungst, varied the experimental setup to conceal the problem from all the humans in the room. The person who wrote the problem on the board was required to leave before the horse entered.

Under these conditions, Hans dropped from scoring 9 out of 10 to 1 out of 10. This suggested that Hans was picking up a subtle, inadvertent cue from one of the humans and using that to decide when to stop tapping his foot.

Once it became clear that there was some other cue Hans was using, interest in him diminished. But if you were interested in discovering just what cue Hans was responding to, more experiments would be needed.

THERE ARE SEVERAL WAYS POSSIBLE confounding variables can be dealt with in a study. Consider the following example:

Research at the University of Pennsylvania and the Children's Hospital of Philadelphia indicates that children who sleep in a dimly lighted room until age two may be up to five times more likely to develop myopia (nearsightedness) when they grow up. The researchers asked the parents of children who had been patients at the researcher's eye clinic to recall the lighting conditions in the children's bedroom from birth through age two. Of a total of 172 children who slept in darkness, 10 percent were nearsighted. Of a total of 232 children who slept with a night light, 34 percent were nearsighted. Of a total of 75 who slept with a lamp on, 55 percent were nearsighted. The lead ophthalmologist, D. Graham E. Quinn, said that, "just as the body needs to rest, this suggests that the eyes need a period of darkness."

Table 5.9: Nightlights and myopia

Figure 5.13: Clever Hans—By Karl Krall (Karl Krall, Denkende Tiere, Leipzig 1912, Tafel 2) Public domain, via

#### HORSE SENSE, THAT'S ALL.

Is it a fancy, theory or fact that man's ability to control the horse is due to the construction of the animal's eye, by which it magnifies objects and thus sees its master as a huge creature whom it cannot but regard with awe? If the notion had even the standing of a theory it might be strengthened by the feats of "Clever Hans," a horse who has attracted wide interest in Germany, where he has performed, and who has been the subject of much discussion in this country. The relentless method of the German scientist has robbed of its plausibility the claim that the horse possesses intelligence of the type of man's; but it has shown him to have remarkable powers of perception. "Der Kluge Hans" must continue to eat hay and oats, with an occasional dessert of bread and carrots; but he may be excused for arching his fine neck and swelling his sleek flanks, for, unlike some of his superiors, investigation has left him a prince among his fellows.

Clever Hans is a Russian stallion, whom his master has given, ostensibly, a course of instruction such as a child receives in the Prussian primary schools, and who, as well as words, tells the time, distinguishes musical notes, etc., by stamping with his hoof. He has been even a greater wonder

Figure 5.14: Article reporting on Clever Hans from the Strong Democrat and Chronicle, Rochester NY published Aug 5, 1906.

Dr. Quinn is claiming that there is a relationship between the amount of darkness experienced by children and the rate of myopia in those children when they are older. In short, that lack of exposure to darkness may cause nearsightedness.

We have to be careful to consider the amount of light and

In this case, the researchers define two variables, as diagrammed in Testing causal claims experimentally Figure 5.15 on p. 174



Figure 5.15: First representation of the experiment, with both variables defined

**CONFOUNDING VARIABLES** In the University of Pennsylvania study, the first variable is measured by memory—the researchers “asked the parents to recall the lighting conditions.” Individual memories are not the most reliable measurement.

This would only be a problem *if* there was reason to think that the group of parents would systematically skew their memories in some way. To put it another way: if the rate of mis-remembering was constant across all the parents surveyed, then the effect of mis-remembering would be equal in the IV groups. Any difference in the DV would be due to the *differences* between the IV groups, and hence, cannot be the result of the equalized mis-remembering. Therefore, there is no reason to think that inaccurate remembering would change the results of the study significantly.

So what we have to ask, to assess whether or not this experiment is valid, is if there is a way in which the memories of the parents would be systematically skewed according to their grouping.

We need to figure out if, perhaps, we have a situation like in diagram Testing causal claims experimentally Figure 5.16 on p. 175:

That there is some unknown third variable that increases the chances of *both* myopia in children and the use of nightlights.

What about ‘vision problems in the parents’? It would stand to reason that parents with vision problems are more likely to have children with vision problems. And it is certainly possible that parents with vision problems would be more likely to use nightlights, so they could enter the child’s room without tripping over anything left laying about.

‘Vision problems in the parents’ is a ‘confounding’ variable—and an corrected study would ‘control’ the confound by ensuring that families participating in the study did not have vision problems of their own, or that for every family with vision problems in the ‘light

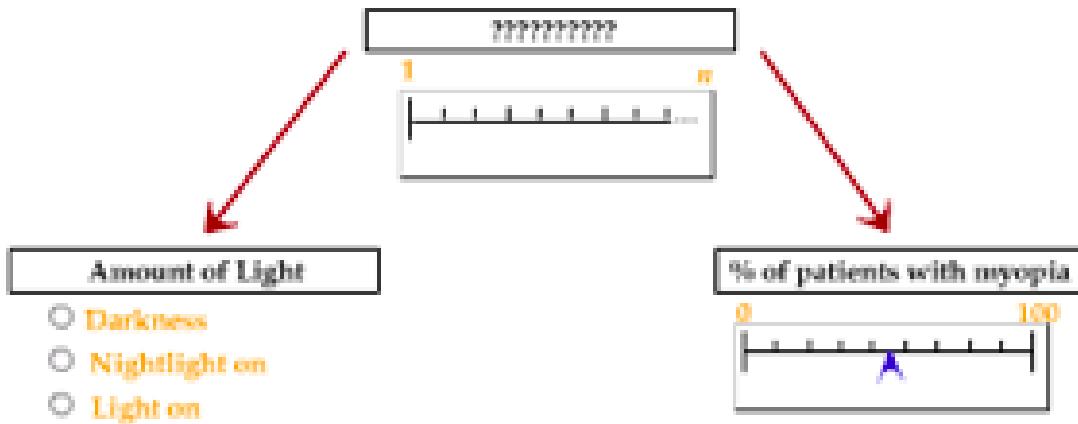


Figure 5.16: Second representation of the experiment, possible confound included

on' group, there is a family with similar problems in each of the other two groups.

**THIS STUDY LACKS INTERNAL VALIDITY..** Internal validity looks inside the experiment to its design. The central question of internal validity is: Was the experiment designed so as to determine what was really happening?

Second, notice that the families in this study were recruited from patients of the eye clinic doing the study. Eye clinics, even in famous hospitals, serve the resident population. The University of Pennsylvania Hospital likely treats families who live in and around Philadelphia. That means that this population is systematically skewed towards an urban population.

I have no idea if that means that mis-remembering could be higher than normal. But I do know, having lived in Philadelphia for graduate school—near the University of Pennsylvania—that there is a great deal of light pollution. Thus, even if the study were internally valid, it would not be applicable to families living in a rural environment, where complete darkness is possible at night, unlike in an urban environment.

This lack of generalizability is called ‘external validity’. It is defined in the margin to the right. External validity, looks outside the experiment itself to what conclusions can be drawn from the resulting data.

*Assessing Validity* Let's consider another example:

**Thesis 5.6 (Internal validity)** *The extent to which a study's design ensures that its result will be in accordance with reality. That is, if the suspected cause really is a cause, the predicted effect on the DV is confirmed; if not, the predicted effect on the DV is not confirmed. To ensure this, other possible causes must be well-controlled.*

**Thesis 5.7 (External validity)** *the extent to which a study's results can be generalized. (Relevant questions include: were the participants sampled from a broad population or narrow one? Were they selected in a way that assured they were representative of the population? How well can we describe the population they were sampled from?)*

*It is also called 'Generalizability'*

New studies reported in the Journal of the American Medical Association indicate that vasectomy is safe. A group headed by Frank Massey of UCLA paired 10,500 vasectomized men with a like number of men who had not had the operation. The average follow-up time was 7.9 years, and 2,300 pairs were followed for more than a decade. The researchers reported that, aside from inflammation of the testes, the incidence of diseases for vasectomized men was similar to that in their paired controls. A second study done under federal sponsorship at the Battelle Human Affairs Research Centers in Seattle compared heart disease in 1,400 vasectomized men and 3,600 men who had not had the operation. Over an average follow-up time of fifteen years, the incidence of heart diseases was the same among men in both groups.

Table 5.10: Vasectomy Study

The study has well defined variables, and standard measurements. That's good. But why are they pairing men who had a vasectomy with men who did not? We've diagrammed the study's logic in figure Assessing Validity Figure 5.17 on p. 176.

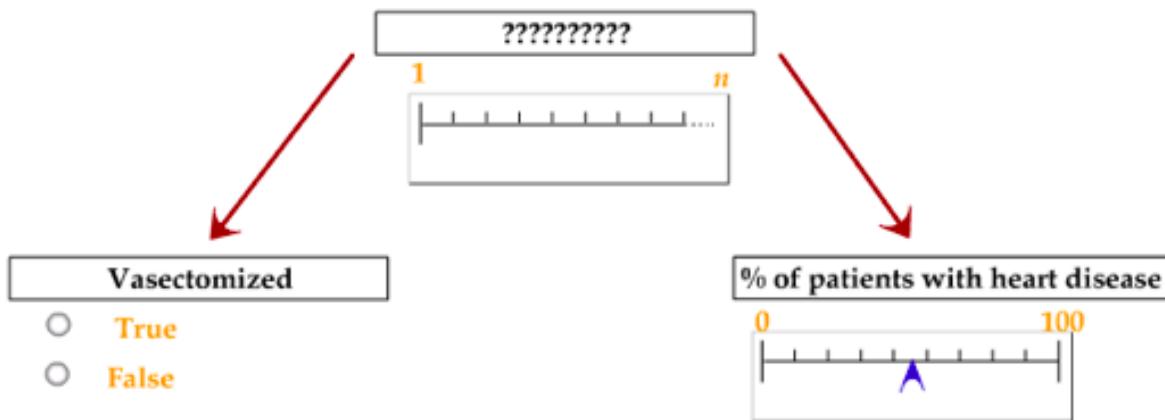


Figure 5.17: Diagram of Vasectomy study

There might be some third cause that affects whether or not men get vasectomies that *also* affects their rate of heart disease. This is not too hard to imagine: what kind of men get vasectomies? Well, heterosexual men in long-term, probably married, relationships. And it is likely that these men have healthier lifestyles and diets than their non-married counterparts.

It is very difficult, if not impossible to control for all the factors that make up 'lifestyle.' But with a large enough sample, that matched individuals with and without a vasectomy according to 'lifestyle', all

those differences would drop out of the statistics as irrelevant. This is diagrammed in Assessing Validity Figure 5.18 on p. 177.

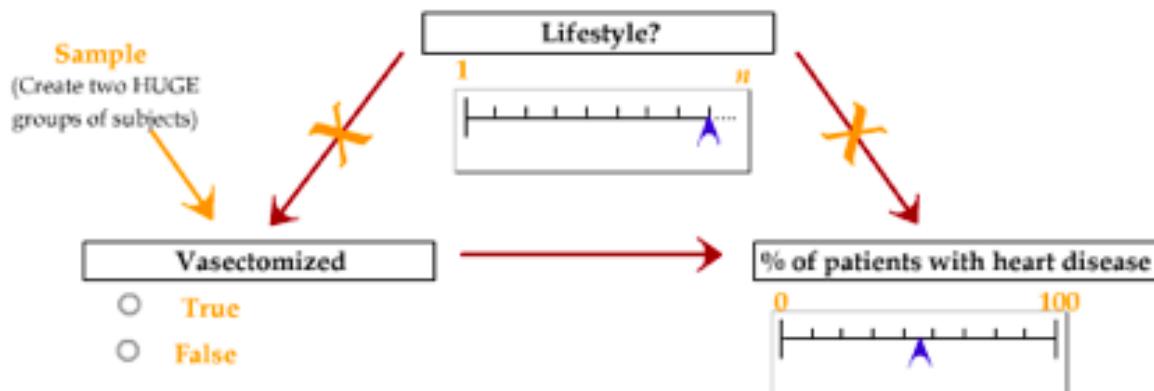


Figure 5.18: Diagram of vasectomy study with controls in place.

ANY FACTOR OTHER THAN THE INDEPENDENT VARIABLE that alters the dependent variable can affect the internal validity of an experiment.

Randomizing the assignment of subjects to the experimental and control conditions overcomes many of the potential dangers to internal validity. If randomization is effective, all other pre-existing subject variables that may affect the dependent variable appear in the two groups at equal rates, leaving only the independent variable as the source of difference between the groups. With small samples, however, even randomization can result in other factors being unequally distributed between the experimental and control groups.

Even if the randomization does equalize all pre-existing factors that might affect the dependent variable, other conditions might arise during the experiment that have an effect. For example, perhaps the experimental and control groups are sent to different rooms, and the rooms are of different temperatures. If you were measuring impatience or irritation, there could be large effects in your dependent variable based on the temperature of the room.

Another set of internal validity concerns arise from two sources of bias. Both experimenter bias and subject reactivity can compromise an experiment. Often, though not always, participants can be kept "blind" as to what condition they are in or what the experimenter expects. If the experimenter also is "blind" as to which participants are in which conditions, it is a "double-blind" experiment. The most familiar example is drug studies, in which neither the participants nor the experimenter know who is getting the investigational drug and who is getting a placebo.

FOR A STUDY TO HAVE EXTERNAL VALIDITY, its results must be generalizable to the intended target population. But often researchers only study a small part of the target population, or even another population altogether. For example, in both biological and biomedical research, studies are conducted on other species, but the conclusions are applied to humans. Before testing a new drug on humans, for example, it is first tested on mice or rats or other creatures. In psychological research, college undergraduates are often used as subjects, but inferences are made about humans in general. External validity is the extent to which results can be generalized to the population as a whole.

The very fact of an experiment can, with humans, produce results that would not happen otherwise. Imagine that you are walking across campus and a total stranger who looks like a fellow student walks up to you and asks you to turn around and walk backwards for 20 feet. Will you do it? Now imagine that the stranger prefacing her request with “I am conducting an experiment for my psychology class” and then proceeds with the same request. Are you more likely to comply? If so, then compliance in an experiment may be a product of the experiment and not indicative of behavior outside of that situation.

*What all experimental design has in common*

- Intervene in some way to change the value of the IV, measurement of the DV.
- Efforts are made to control extraneous variables.

*Common threats to internal validity*

- No Control Group
- Nonequivalent Control Groups
- No adequate measurement of DV or using an unverified measures
- Pre-Test Post-Test Pitfalls:
  - Maturation—if there is a great deal of time between the pre- and post-test, it is possible than any possible result comes from the maturation of the participants, not the intervention.
  - Testing fatigue—as with standardized testing in high school, participants may become annoyed or bored with the testing, and hence produce poor results.
  - Instrument Decay—if the instrument ‘drifts’ or changes over time, internal validity would suffer. This is particularly a problem when the measurement is based on coding or classification.

- Regression to the mean—with repeated measures, results tend towards the mean. An initially promising result may just be an outlier, which would prove to be insignificant with repeated measures.
- P-value hacking—Statistical significance is usually measured with  $p < 0.05$ . 0.05% is one in twenty, which is to say that if a ‘statistically significant’ result has a 1 in 20 chance of having been random noise, rather than an actual effect. Given powerful statistical software we have now, an unscrupulous research could just run his or her data 20 times, or until a statistically significant result appears.

#### *Common experimental designs* Two Groups, Post-Test ONLY

- Subjects assigned to control or experimental group randomly, Dependent variable is tested after the independent variable is introduced.

#### Two Groups, Pre-Test and Post-Test

- Same as above, except that a pre-test is given to ensure the equivalence of the two groups.

#### SIMPLE RANDOM ASSIGNMENT

- Just what it sounds like: randomly assign each subject to one of the groups (a coin flip is sufficient for two groups).

#### MATCHED PAIRS ASSIGNMENT

- First match subjects into pairs based on some characteristic related to the IV. Then randomly assign the members of each pair to one of the two experimental groups.
- The same individuals participate in both experimental conditions, after which the dependent variable is measured.
- Advantages: Fewer individuals are required.
- If training (or acclimatizing) is required, this design can save valuable resources.
- As the individuals in the experimental conditions are identical, more confounds are controlled.

## Models in Science

One way to explain why something happens is to demonstrate a cause for it. But causes typically do not operate in isolation. Encountering a virus may explain why you developed the flu, but the condition of having the flu only arises when a number of other things happen. In particular, a virus must invade a particular cell (flu viruses invade cells lining a person's respiratory or digestive track).

Except for the fact that some viruses break out of their generous hosts by breaking the host cell open and killing it, this all sounds harmless enough. But the consequences are what debilitate you:

- When the cells lining the respiratory track are killed, fluid can flow into your nasal passages; this is what you experience as a runny nose.
- This nasal fluid contains more viruses and as they drip down your throat they attack the cells lining it. You experience this as a sore throat.
- The virus particles that get into your bloodstream attack muscle cells, which you experience as muscle ache.
- Finally, your body is designed to resist this assault. One thing it does is produce pyrogens, chemicals that cause your body temperature to increase. The higher temperature reduces the capacity of cells to carry out their operations, including hosting the creation of new viruses.

Although it was the virus that caused the flu, a lot of other operations were going on. The virus had to rely on a complex bit of machinery to carry out its task of reproducing itself, and in the process laying you low with the flu.

The explanatory scenario just outlined, in which we invoke a mechanism to explain a causal effect, is extremely common in science.

- To explain the reproduction of cells, scientists describe the *mechanism* of cell reproduction.
- To explain how blood carries nutrients to tissues in the body, they describe the *mechanism* of circulation of the blood.
- To explain how people can remember events in their lives and new factual information, they describe the mechanisms of memory encoding, storage, and retrieval.

Explaining the occurrence of a phenomenon by identifying the mechanism that produces it is perhaps the most common explanatory strategy in science. Accordingly, we need to consider in detail

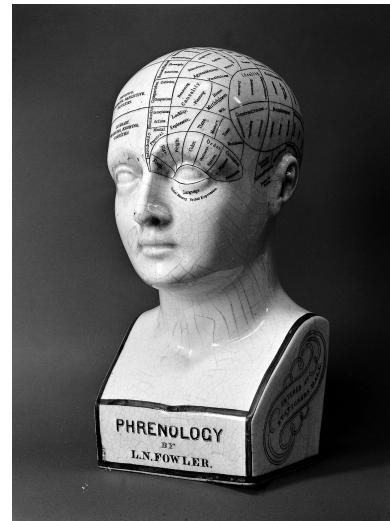


Figure 5.19: Mechanistic explanation is not new to science. In the 19th century, Franz Joseph Gall suggested phrenology, which sought to identify particular mechanisms of intelligence with particular bumps on the skull. The mechanism posited held that personality traits were localized in the brain, and the brain would be enlarged in specific areas for those traits. The enlargements could then be detected by the structure of the skull. We still accept the idea of localization, but unlike muscles, excess activity does not make the brain enlarge. Image from Wikimedia Commons

### Thesis 5.8 (Mechanism definition)

*Mechanism: entities and activities organized so that a phenomenon occurs or entities and activities organized in such a way as to realize a function.*

- what a mechanism is
- how mechanisms are described
- how mechanisms are discovered
- how mechanisms are modeled
- how accounts of mechanism are tested.

When scientists use the word ‘mechanism’, they are talking about an explanation that decomposes into other entities, and explains behavior in terms of the interactions of those entities’ behaviors. They are discovered with three basic techniques<sup>9</sup>:

**RECORDING ACTIVITY.** The simplest intervention on a mechanism is to record the activity of the underlying entities. Consider by analog a steam-engine. If one wanted to figure out how it worked, one would have to turn it on, and record the activity of its parts: the boiler does such and such, the pistons move... etc.

**STIMULATING COMPONENTS.** If components of a mechanism are distinct, they should be able to be stimulated directly. The Penfield Homunculus for example, was created by direct stimulation of a patient’s brain, and recording which parts of his body reacted.

**INHIBITING COMPONENTS.** Some times called ‘lesioning’, this strategy is simply to block the activity of a component of a mechanism, and see record the activity of the whole, or the activity of the other components in the absence of the component of interest. We know, for example, that the hippocampus plays a significant role in personal memory because we have observed a patient (HM), who has his hippocampus removed surgically. Scoville and Milner 1957

A posited mechanism must allow for at least these three methods of investigation to be considered scientific. Mechanistic explanations that do not allow for recording of the activity, stimulating, or inhibiting of components can’t be considered a scientific explanation.

#### What all mechanistic explanation has in common

- Posits entities and activities that are arranged in such a way that their interaction produces the phenomenon in question.
- Entities and activities must be, in principle:
  - Measurable
  - Stimulatable
  - Inhibitable

<sup>9</sup> This section is based on the work of my collaborators, William Bechtel (“Discovering Complexity” 2010 and Bechtel 2006) and Carl Craver (Craver 2006).

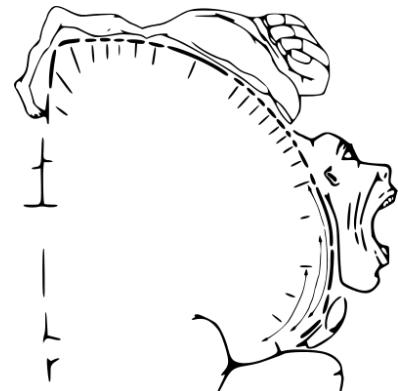


Figure 5.20: Penfield Homunculus, from wikiimages

## 5.2 *Ethics of human research*

Ethical codes of research have generally followed the discovery or publication of horrifically unethical experiments. The most famous of these is probably the Nuremberg Code, adopted by the international medical community after the discovery of the Nazi 'experiments' performed on Jews, Homosexuals and Gypsies during the Holocaust. The Nuremberg code is available online, and should be reviewed by anyone proposing an experiment or sitting on the Research Committee.

### **The Nuremberg Code**

The Nuremberg code (The National Institutes of Heath 2009) lays out ten simple principles for design experiments on humans. They are:

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#### **The Nuremberg Code**

1. The voluntary consent of the human subject is absolutely essential. This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, overreaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonably to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment.

The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs, or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity.

1. The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods of means of study, and not random and unnecessary in nature.
2. The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment.

3. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.
  4. No experiment should be conducted where there is an a priori reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects.
  5. The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.
  6. Proper preparations should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability or death.
  7. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required though all stages of the experiment of those who conduct or engage in the experiment.
  8. During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.
  9. During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill and careful judgment required of him that a continuation of the experiment is likely to result in injury, disability or death to the experimental subject.
- 

### The Declaration of Helsinki

In 1964, the medical community through the World Medical Association adopted the 'Declaration of Helsinki', which replaced the Nuremberg code as the standard for ethical experimentation on humans by the medical community. ( Association, World Medical 1975) The World Medical Association still maintains the Declaration, adopting the most recent revisions in 2004. Current versions are available online.

Psychiatrists, as practicing medical doctors, are bound by the Declaration of Helsinki. While it is far more complete than the Nuremberg code, the same basic ideas appear:

**The Declaration of Helsinki****I. Basic Principles**

1. Biomedical research involving human subjects must conform to generally accepted scientific principles and should be based on adequately performed laboratory and animal experimentation and on a thorough knowledge of the scientific literature.
2. The design and performance of each experimental procedure involving human subjects should be clearly formulated in an experimental protocol which should be transmitted to a specially appointed independent committee for consideration, comment and guidance.
3. Biomedical research involving human subjects should be conducted only by scientifically qualified persons and under the supervision of a clinically competent medical person. The responsibility for the human subject must always rest with a medically qualified person and never rest on the subject of the research, even though the subject has given his or her consent.
4. Biomedical research involving human subjects cannot legitimately be carried out unless the importance of the objective is in proportion to the inherent risk to the subject.
5. Every biomedical research project involving human subjects should be preceded by careful assessment of predictable risks in comparison with foreseeable benefits to the subject or to others. Concern for the interests of the subject must always prevail over the interests of science and society.
6. The right of the research subject to safeguard his or her integrity must always be respected. Every precaution should be taken to respect the privacy of the subject and to minimize the impact of the study on the subject's physical and mental integrity and on the personality of the subject.
7. Physicians should abstain from engaging in research projects involving human subjects unless they are satisfied that the hazards involved are believed to be predictable. Physicians should cease any investigation if the hazards are found to outweigh the potential benefits.
8. In publication of the results of his or her research, the physician is obliged to preserve the accuracy of the results. Reports of experimentation not in accordance with the principles laid down in this Declaration should not be accepted for publication.

9. In any research on human beings, each potential subject must be adequately informed of the aims, methods, anticipated benefits and potential hazards of the study and the discomfort it may entail. He or she should be informed that he or she is at liberty to abstain from participation in the study and that he or she is free to withdraw his or her consent to participation at any time. The physician should then obtain the subject's freely given informed consent, preferably in writing.
10. When obtaining informed consent for the research project the physician should be particularly cautious if the subject is in dependent relationship to him or her or may consent under duress. In that case the informed consent should be obtained by a physician who isn't engaged in the investigation and who is completely independent of this official relationship.
11. In case of legal incompetence, informed consent should be obtained from the legal guardian in accordance with national legislation. Where physical or mental incapacity makes it impossible to obtain informed consent, or when the subject is a minor, permission from the responsible relative replaces that of the subject in accordance with national legislation. Whenever the minor child is in fact able to give a consent, the minor's consent must be obtained in addition to the consent of the minor's legal guardian.
12. The research protocol should always contain a statement of the ethical considerations involved and should indicate that the principles enunciated in the present declaration are complied with.

## II. Medical Research Combined with Professional Care (Clinical Research)

1. In the treatment of the sick person, the physician must be free to use a new diagnostic and therapeutic measure, if in his or her judgement it offers hope of saving life, re-establishing health or alleviating suffering.
2. The potential benefits, hazards and discomfort of a new method should be weighed against the advantages of the best current diagnostic and therapeutic methods.
3. In any medical study, every patient- including those of a control group, if any- should be assured of the best proven diagnostic and therapeutic method.
4. The refusal of the patient to participate in a study must never interfere with the physician-patient relationship.

5. If the physician considers it essential not to obtain informed consent, the specific reasons for this proposal should be stated in the experimental protocol for transmission to the independent committee (1, 2).
6. The physician can combine medical research with professional care, the objective being the acquisition of new medical knowledge, only to the extent that medical research is justified by its potential diagnostic or therapeutic value for the patient.

### III. Non-Therapeutic Biomedical Research Involving Human Subjects (Non-Clinical Biomedical Research)

1. In the purely scientific application of medical research carried out on a human being, it is the duty of the physician to remain the protector of the life and health of that person on whom biomedical research is being carried out.
2. The subjects should be volunteers- either healthy persons or patients for whom the experimental design is not related to the patient's illness.
3. The investigator or the investigating team should discontinue the research if in his/her or their judgment it may, if continued, be harmful to the individual.
4. In research on man, the interest of science and society should never take precedence over considerations related to the well-being of the subject.

In the context of psychiatry, of course, the distinction made between therapeutic research and non-therapeutic research is crucially important. If a psychiatric patient were to be deemed incapable of making an informed decision, and there is an experimental therapy that the psychiatrist believes may help, there are few ethical checks and balances to constrain the psychiatrist from performing unwarranted experiments.

#### **The APA Ethical Standards for Psychologists**

The APA Standards were first published in 1953. ( American Psychological Association 1953) They were revised in 1958 ( American Psychological Association 1958), 1963 ( American Psychological Association 1963) and 1968. ( American Psychological Association 1968) The 1968 standards, which should guide the research committee in determining which research programs should be allowed to move

forward, are attached in Appendix APA "Ethical Standards of Psychologists" 1968 section F on p. 446.

Most of the APA standards outline the responsibilities of psychologists who practice counseling and patient care. While those are incredibly important, we're most concerned here with Principle 16: Research Precautions. In 1958, section 16 was titled 'Harmful Aftereffect.' It read:

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\*\*APA Ethical Standards: 1959

**Principle 16. Harmful Aftereffects.** Only when a problem is significant and can be investigated in no other way is the psychologist justified in giving misinformation to research subjects or exposing research subjects to physical or emotional stress.

- a. When the possibility of serious aftereffects exists, research is conducted only when the subjects or the responsible agents are fully informed of this possibility and volunteer nevertheless.
  - b. The psychologist seriously considers the possibility harmful aftereffects and removes them as soon as permitted by the design of the experiment.
  - c. A psychologist using animals in research adheres to the provisions of the Rules Regarding Animals, drawn up by the Committee on Precautions in Animal Experimentation and adopted by the American Psychological Association.
- 

Four years later, in 1963, ( American Psychological Association 1963) the committee responsible for the Ethical guidelines:

- a. Changed the title to 'Research Precautions,' moved the 'preamble' to point (a) and added a new preamble. It also changed the phrase 'is significant' to 'is of scientific significance'; 'can be investigated in no other way' became 'it is not practicable to investigate it in any other way'; 'giving misinformation to research subjects' was dropped; and the phrase 'whether children or adults' added to the new point (a).
  - b. Added the qualification of 'reasonable' to 'possibility'; changed 'harmful' to 'injurious' and 'volunteer' became 'agree to participate'.
  - c. Changed 'removes' to 'avoids or removes'; and
  - d. Unchanged.
- 

**APA Ethical standards 1963**

**Principle 16. Research Precautions.** The psychologist assumes obligations for the welfare of his research subjects, both animal and human.

- a. Only when a problem is of scientific significance and it is not practicable to investigate it in any other way is the psychologist justified in exposing research subjects research subjects, whether children or adults, to physical or emotional stress.
  - b. When the possibility of injurious aftereffects exists, research is conducted only when the subjects or the responsible agents are fully informed of this possibility and agree to participate nevertheless.
  - c. The psychologist seriously considers the possibility harmful aftereffects and avoids or removes them as soon as permitted by the design of the experiment.
  - d. A psychologist using animals in research adheres to the provisions of the Rules Regarding Animals, drawn up by the Committee on Precautions in Animal Experimentation and adopted by the American Psychological Association.}
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These changed little between 1963 and 1968 ( American Psychological Association 1968), except for the addition of the qualifying phrase 'as part of the investigation' to (a) and adding provision (e) governing the use of psychoactive drugs:

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#### **APA Ethical standards 1968**

**Principle 16. Research Precautions.** The psychologist assumes obligations for the welfare of his research subjects, both animal and human.

- a. Only when a problem is of scientific significance and it is not practicable to investigate it in any other way is the psychologist justified in exposing research subjects research subjects, whether children or adults, to physical or emotional stress as part of an investigation.
- b. When the possibility of injurious aftereffects exists, research is conducted only when the subjects or the responsible agents are fully informed of this possibility and agree to participate nevertheless.
- c. The psychologist seriously considers the possibility harmful aftereffects and avoids, or removes them as soon as permitted by the design of the experiment.
- d. A psychologist using animals in research adheres to the provisions of the Rules Regarding Animals, drawn up by the Committee on Precautions in Animal Experimentation and adopted by the American Psychological Association.

e. Investigations of human subjects using experimental drugs (for example, hallucinogenic, psychotomimetic, psychedelic, or similar substances) should be conducted only in such settings as clinics, hospitals, or research facilities maintaining appropriate safeguards for the subjects.

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\*\* References for further study \*\*

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