

Discovering Psychology: Updated Edition

02 Understanding Research

- 1 01:28:41:11 >> ZIMBARDO: What methods do psychologists use to probe human nature?
- 2 01:28:45:26 >> No.
- 3 01:28:47:24 >> ZIMBARDO: How can we tell if this magician really has psychic powers?
- 4 01:28:52:21 What is the placebo effect and why is it important?
- 5 01:28:57:00 >> Do you have any money with you right now that you have taken from the desk?
- 6 01:29:00:06 >> No.
- 7 01:29:01:11 >> ZIMBARDO: Can we trust the results of a lie detector?
- 8 01:29:06:15 "Understanding Research" this time on *Discovering Psychology* .
- 9 01:29:44:06 >> ZIMBARDO: Psychologists face a difficult task when they set out to understand the nature of behavior and the workings of the brain and mind.
- 10 01:29:52:06 This researcher is trying to draw an accurate picture of the brain's electrical activity associated with different mental illnesses.
- 11 01:30:01:16 But he and his colleagues have one strong ally that makes success possible: the scientific method -- a set of general procedures for gathering and interpreting data.
- 12 01:30:12:15 >> Keep your eyes closed and keep your mouth slightly open.
- 13 01:30:15:10 >> ZIMBARDO: To be accurate, data must be collected from carefully controlled observations and measurements.
- 14 01:30:21:14 And other researchers working independently must be able to obtain the same results using the same methods.
- 15 01:30:29:23 >> What kinds of places do you usually go to when you want to meet somebody either that you want to have a

relationship with...

- 16 01:30:36:21 >> ZIMBARDO: Interviews, surveys, questionnaires, and psychological tests are some of the methods psychologists use to explore our personalities, values, talents, and the effects of our environment.
- 17 01:30:51:03 Take, for example, the work of psychologist Christina Maslach of the University of California at Berkeley.
- 18 01:30:57:24 She applies research methods to study job burnout where stress, lack of support, and negative self-evaluation impair job performance and personal well-being.
- 19 01:31:09:16 Dr. Maslach uses psychometric research -- a system of developing a standardized method for collecting data and assessing psychological phenomena.
- 20 01:31:19:24 >> This is research that started in the real world, but what it meant was that we were doing interviews, we were doing surveys, we were going out into the workplace trying to understand what it was that people were experiencing.
- 21 01:31:33:26 We would then develop new versions of the surveys or interview questions and eventually began to develop a standardized measure of the phenomenon that we were getting.
- 22 01:31:44:18 And so there was a whole period of psychometric research.
- 23 01:31:48:09 We got terrific results in terms of...
- 24 01:31:51:00 >> ZIMBARDO: By refining her methodology, Dr. Maslach has developed a scale to measure job burnout.
- 25 01:31:56:07 The scale is a practical implementation of her research that she brings into the workplace to assist others in making their work environments more effective.
- 26 01:32:05:28 >> What I have done is begun to move towards an applied research with organizations rather than just with individuals where we provide them with the tools to do an organizational self-assessment on the health of the workplace.
- 27 01:32:22:08 One of the exciting things about going out and working in these different organizations or doing the interviews is that I always come back with some new insights or new questions and that kind of fuels the research.

- 28 01:32:33:07 It's exciting to be able to see this process, this partnership go back and forth so that you think, "We're making progress; we're actually learning something that is making a difference for people."
- 29 01:32:43:05 >> ZIMBARDO: By adapting her research to address the concerns of our workplace environments, Dr. Maslach demonstrates that real life is one kind of laboratory where both the subjects and the researcher reap the benefits.
- 30 01:32:58:16 Some psychologists conduct experiments in laboratories like this one designed for carefully controlling conditions and measuring behavior.
- 31 01:33:08:00 The laboratory is one place where scientists test hypotheses -- that is, predictions of how two or more factors are likely to be related.
- 32 01:33:17:16 To test a hypothesis researchers randomly assign some subjects to an experimental group which receives the treatment.
- 33 01:33:26:09 Other subjects are assigned to the control group that does not receive the treatment.
- 34 01:33:31:03 The results are then compared.
- 35 01:33:34:28 Other research is carried out in the field, where naturally occurring, ongoing behavior can be observed.
- 36 01:33:43:26 This researcher is studying how the social behavior of baboons affects their health.
- 37 01:33:53:19 >> It looks like a... looks like an F... FB-111.
- 38 01:33:57:18 >> ZIMBARDO: Psychological research is also conducted in locations as unusual as this Air Force flight simulator.
- 39 01:34:04:08 >> One of the most important tasks you can be asked to perform as a fighter pilot is to visually identify features and markings on another airplane.
- 40 01:34:13:08 If you'd look at the aircraft, cover your left eye, and read what you see, please.
- 41 01:34:17:29 >> All right.
- 42 01:34:19:20 "F, D, T, L, T..."

- 43 01:34:27:25 >> ZIMBARDO: Wherever it happens and whatever methods are used, basic psychological research carried out scientifically gives us a good shot at the truth.
- 44 01:34:38:29 And if we understand how these researchers separate fact from fiction, perhaps we, too, can avoid some of the pitfalls of faulty reasoning and unwarranted conclusions in our everyday lives.
- 45 01:34:54:03 The point here is not to make you all practicing psychologists, but to make you better consumers of would-be facts and theories, especially those you take for granted.
- 46 01:35:04:10 One of the most remarkable things about us humans is how many of our beliefs we accept without question.
- 47 01:35:10:22 These beliefs form a subjective reality that can influence how we perceive the world.
- 48 01:35:16:11 They can affect our everyday plans, whom we choose to associate with and trust, and even our health.
- 49 01:35:22:16 >> § Here we all are again... § >> ZIMBARDO: Some of our beliefs come from our culture -- for example, what it teaches us about male and female roles, beauty, and courage.
- 50 01:35:38:09 >> § We still see eye to eye with love... § >> *Viens ici, on va emmener .*
- 51 01:35:44:13 (*whistles*) >> ZIMBARDO: And each culture has its own belief systems and sense of humor.
- 52 01:35:56:02 >> *Lactel... les mamelles de la France .*
- 53 01:35:59:12 >> § Happy birthday... § >> ZIMBARDO: Other powerful beliefs come from each individual's experiences and motivations developed through personal interaction with the world.
- 54 01:36:09:15 >> Yay!
- 55 01:36:10:03 >> Yay!
- 56 01:36:12:10 >> ZIMBARDO: Our individual experience may also include the learning of critical thinking skills so that we can test our beliefs against scientific understanding.
- 57 01:36:21:21 >> What did you decide were the main ideas from what you

read?

- 58 01:36:23:28 >> They danced around the fire louder and louder and faster and faster.
- 59 01:36:28:02 >> ZIMBARDO: If we don't learn how to think critically, we may believe in the unproven and the unexplained, or become willing recruits in a never-ending stream of religious, social, and political cults -- true believers who blindly accept authority rather than think for themselves.
- 60 01:36:55:18 Research reveals that for many of the 25 million Americans without high-school diplomas, the world can be a confusing and threatening place.
- 61 01:37:04:26 These people often feel that they are controlled by fate and can do little to control their own lives.
- 62 01:37:13:04 Many of them are also inclined to believe in psychic predictions, mystical forces, and cosmic signs, as do some better-educated people.
- 63 01:37:23:01 In fact, belief in mystical forces, such as Haitian voodoo, can be so potent that it can transform psychological and biological reality for better or for worse.
- 64 01:37:34:17 It can sometimes cure the sick or kill the healthy.
- 65 01:37:39:25 At the Johns Hopkins University, common features shared by miracle cures, faith healing, political and religious conversions, and psychotherapy are studied by research psychiatrist Jerome Frank.
- 66 01:37:54:17 >> All forms of psychological healing -- that is, trying to influence people through words -- share certain common healing features.
- 67 01:38:03:08 I guess the first of those is a kind of relationship with a healer, a person who inspires confidence in the patient, makes him feel he can trust him, inspires the patient's hopes -- that's a very important ingredient -- and then there's always a healing setting of some kind -- almost always -- a shrine, let us say, or a doctor's office, or a clinic even.
- 68 01:38:23:27 >> My feet were sort of cemented down to the floor.
- 69 01:38:30:10 >> Inaction, frozen.

- 70 01:38:33:12 >> There is a theory that I guess they have in common and that's they increase a patient's sense of mastery, of control over what's happening.
- 71 01:38:40:11 See, the thing that human beings can least stand is chaos.
- 72 01:38:43:18 That's the most frightening experience there is.
- 73 01:38:45:25 And anything that gives people a sense that they're in control again is a very important boost to their morale.
- 74 01:38:52:07 And mentioning that one brings up a common feature of all these procedures, and that is, if they work at all, they do it through arousing the person emotionally.
- 75 01:39:02:03 He feels things as a result: happy or sad or frightened or angry; mainly, I would say, relief; sometimes anxiety, because you get into areas that make him more anxious, make him or her more anxious than before.
- 76 01:39:14:06 Belief is really crucial to all the... to a healing process of any sort because without the belief, the person does not participate in any sense of...
- 77 01:39:21:20 in any real way.
- 78 01:39:23:05 They may go through the motions, they may listen politely, as many patients do, but nothing happens to them unless they really believe that this can help them.
- 79 01:39:32:12 >> ZIMBARDO: Sometimes it is the power of this belief that a treatment will work that results in the cure and not any special power of the supposed treatment itself.
- 80 01:39:42:00 The scientific term for this phenomenon is the placebo effect.
- 81 01:39:46:07 In medicine, a placebo is a substance, such as a sugar pill, that has no direct pharmacological effect, but which can have a therapeutic effect on pain and sickness in people who believe it will work.
- 82 01:40:00:29 History suggests that placebos have been responsible for much of the therapeutic success of treatments throughout the centuries.
- 83 01:40:10:02 In ancient Egypt, patients were often treated with lizards' blood and crocodile dung.

- 84 01:40:16:08 Later, physicians used leeches to suck the blood of patients or made their patients vomit or froze them or overheated them.
- 85 01:40:25:13 Many of these patients died, but those who survived often swore by their treatment.
- 86 01:40:31:21 Just think of how many more testimonials there might have been if these physicians had been content to use just sugar pills.
- 87 01:40:39:12 Placebos can be so effective that virtually any credible, socially sanctioned treatment administered in an appropriate context can have a moderate success.
- 88 01:40:49:09 >> I didn't even feel that.
- 89 01:40:50:07 >> Rays come out from your body, from that center.
- 90 01:40:52:25 >> ZIMBARDO: Even the mere believable suggestion that a treatment will work is sufficient to make about one- third of sick people feel better according to recent studies.
- 91 01:41:02:12 You can imagine, though, how the placebo effect complicates the job of a researcher.
- 92 01:41:07:11 How do you know whether it's a specific treatment that's working or just the fact of being given any treatment?
- 93 01:41:13:10 One solution is what's known as the double-blind procedure.
- 94 01:41:16:21 You give some subjects the real treatment and others the placebo and don't tell them which is which.
- 95 01:41:24:25 In fact, even the researcher or therapist giving out the treatment can't know so the results won't be biased.
- 96 01:41:34:02 Sometimes, of course, the problem isn't bias, but outright fraud.
- 97 01:41:39:26 Every year, so-called miracle healers deceive thousands of sick people.
- 98 01:41:44:06 These charlatans want to make money, not provide cures.
- 99 01:41:49:01 Unexplained phenomena, especially if you don't look too closely, are the foundation of alleged psychic powers, miracle cures, UFOs, and all sorts of crackpot theories.

- 100 01:42:00:16 But they're also the professional magician's stock and trade.
- 101 01:42:04:14 So for some tips on explaining the unexplainable, we turn to a man who always has something up his sleeve, the amazing Daryl Bem.
- 102 01:42:15:07 >> I would like to present a demonstration of mind reading -- not one in which I read someone else's mind, but one in which Lisa attempts to read my mind.
- 103 01:42:23:19 I have here a set of cards.
- 104 01:42:25:04 >> Mm-hmm.
- 105 01:42:27:12 >> I have one of the cards in mind.
- 106 01:42:29:15 You do not know which one that is.
- 107 01:42:31:13 I want you to concentrate and then touch any particular card that appeals to you.
- 108 01:42:37:01 >> This card.
- 109 01:42:38:14 >> Okay.
- 110 01:42:39:06 Do you care to change your mind?
- 111 01:42:40:04 >> No.
- 112 01:42:41:05 >> You have selected the jack of diamonds.
- 113 01:42:44:19 Believe it or not, you have read my mind and you have read my chest.
- 114 01:42:49:24 >> ZIMBARDO: Can we conclude that a psychic event has taken place?
- 115 01:42:53:13 What would a psychologist say?
- 116 01:42:55:19 Let's ask Daryl Bem.
- 117 01:42:57:29 >> In real life I'm a psychologist, not an illusionist.
- 118 01:43:02:00 And as any psychologist can tell you, the demonstration you've just seen is the worst way to do an experiment.
- 119 01:43:07:04 Nevertheless, it enables me to mention some of the things that a psychologist would use to safeguard the hypothesis that's being tested.

- 120 01:43:15:15 Let us suppose that psychologists did want to test the hypothesis that Lisa and I did have some kind of psychic communication.
- 121 01:43:21:26 Before one could even entertain such a hypothesis, one would first have to rule out two other possibilities.
- 122 01:43:28:21 The first one you rule out is that it was merely chance -- that only chance was operating.
- 123 01:43:34:13 We had six cards in this case.
- 124 01:43:36:21 By pure coincidence, it could have been one out of six.
- 125 01:43:41:18 Would that have convinced you?
- 126 01:43:43:10 It wouldn't have convinced psychologists either.
- 127 01:43:45:16 Let us suppose that the psychologists have now ruled out that the demonstration you saw was just due to chance.
- 128 01:43:50:28 Again we are not ready to conclude that what you have seen is something psychic because there are many alternative possibilities.
- 129 01:43:58:00 If this were to be done as an actual experiment, I would never be permitted to be in the same room with Lisa.
- 130 01:44:04:01 These are called procedural controls and that is the second thing that a psychologist always tries to do: rule out alternative hypotheses.
- 131 01:44:13:05 Another safeguard that we didn't put into place was that I didn't tell you ahead of time what the hypothesis was.
- 132 01:44:19:29 I told you that we had psychic communication, but I didn't tell you which card would constitute evidence for that psychic communication.
- 133 01:44:26:19 Did you notice that it wasn't until she had turned over the jack of diamonds that I announced that that was the correct card and showed you my T-shirt?
- 134 01:44:36:09 Perhaps it occurred to you that I have 52 T-shirts.
- 135 01:44:39:19 Not actually, but I did something quite comparable.
- 136 01:44:42:17 Suppose, for example, that she had not selected the jack of diamonds.

- 137 01:44:45:24 Suppose instead that she had selected a different card -- the five of clubs.
- 138 01:44:51:21 Since she didn't know the plot line ahead of time, I simply would have said, "That's exactly the card I was thinking of, the five of clubs."
- 139 01:45:00:18 And so I would have been correct even if she had selected that one.
- 140 01:45:04:19 Suppose she had selected a different card -- the four of spades.
- 141 01:45:09:16 In that case, I simply would have said, "That's exactly the one I was thinking of."
- 142 01:45:16:07 And so forth.
- 143 01:45:17:13 And so, in fact, there was never any possibility that chance was operating.
- 144 01:45:20:23 I don't leave things to chance.
- 145 01:45:22:27 But a psychologist who'd well designed an experiment would have ruled out all of these things.
- 146 01:45:29:13 >> ZIMBARDO: Here's where experimental research comes in: When a number of factors might be responsible for an observed effect and we want to know which one deserves the credit, then we have to do an experiment.
- 147 01:45:41:08 The essence of an experiment is systematic manipulation or variation of one or more factors while holding constant all the others that might be important.
- 148 01:45:50:12 The effects of these manipulated events on some behavioral reaction are then assessed.
- 149 01:45:55:24 So even when we know a dramatic change has occurred, we can't assume to know why.
- 150 01:46:02:15 >> 20 over 80.
- 151 01:46:04:19 >> ZIMBARDO: And we also have to resist the temptation to conclude that things that are correlated -- that occur together -- are causally related.
- 152 01:46:13:02 Many things that seem to be related as cause and effect

aren't.

- 153 01:46:16:23 Often it's a third factor that's causing the other two.
- 154 01:46:20:17 For instance, when we learn that children's grades on achievement tests go down as the number of hours they spend watching television goes up, we can't conclude that TV causes bad grades or that the key to better grades is parents turning off the TV set.
- 155 01:46:37:02 Instead it could be that less able students watch more television because they don't like school and homework, in which case being less able causes their bad grades.
- 156 01:46:47:10 Good students may also watch a lot of TV.
- 157 01:46:52:05 Another potential problem in analyzing data comes from using small samples to draw significant conclusions.
- 158 01:46:59:16 >> At the moment, just the phenomenon.
- 159 01:47:00:28 >> Just the phenomenon itself, if you can demonstrate it -- and reliably.
- 160 01:47:04:03 >> ZIMBARDO: Psychologists typically measure a few responses of a small number of subjects and experiments and try to infer something important about human or animal behavior in general.
- 161 01:47:15:14 To reduce the possibility of errors, researchers start out with a sample of subjects that is representative of the larger population from which the sample was drawn.
- 162 01:47:25:28 The best way to assure this is to draw randomly, by chance.
- 163 01:47:28:24 Otherwise the research may be seriously flawed.
- 164 01:47:34:03 Consider *Women & Love* -- a controversial study of women's attitudes towards sex and marriage which made headlines across the country.
- 165 01:47:43:00 According to the author of the study, Shere Hite, 98% of married women said they were dissatisfied with some major aspect of their relationship and 75% said they had had extramarital affairs.
- 166 01:47:57:24 But only four percent of the women who received Hite's survey had mailed in their responses and these women may

well have been motivated to reply because they were unhappy, making the sample hopelessly biased.

- 167 01:48:11:19 When the same questions that Shere Hite asked were posed to a sample of women who were randomly selected, the results were very different.
- 168 01:48:19:06 According to a survey by ABC News and the *Washington Post*, 93% said they were satisfied with their relationships and only seven percent reported having affairs.
- 169 01:48:29:16 So beware of science-coated journalism where numbers are used to convey the aura of science, but the methods used to collect them are flawed.
- 170 01:48:39:13 And while we're at it, let's beware of pseudoscientific technology as well.
- 171 01:48:46:01 This is a polygraph test, better known as a lie-detector test.
- 172 01:48:50:25 Every year over two million Americans take one.
- 173 01:48:54:10 But does it work?
- 174 01:48:56:12 Psychologist Leonard Saxe of Boston University is an expert on the use and misuse of polygraphs.
- 175 01:49:03:26 >> Unfortunately hundreds of thousands, millions of people are subjected to these tests.
- 176 01:49:12:00 They... it determines whether they get jobs.
- 177 01:49:14:29 It determines whether they go to jail.
- 178 01:49:17:20 It determines whether they get custody of their children.
- 179 01:49:20:18 It determines whether they can work in the most important positions in our government, in the most sensitive positions in our government.
- 180 01:49:29:09 And the problem is that the test doesn't work.
- 181 01:49:32:04 It's not a valid test.
- 182 01:49:33:22 It can be defeated.
- 183 01:49:35:10 It can be wrong.
- 184 01:49:38:19 >> Is today May 26?

- 185 01:49:41:16 >> Yes.
- 186 01:49:43:00 >> The instrument that's used as a polygraph measures some very simple measures of what's called autonomic arousal: a person's heart rate, a person's sweating, and the rate of breathing.
- 187 01:49:55:02 >> No.
- 188 01:49:56:27 >> ZIMBARDO: The tester asks a number of control questions where the subject is assumed to tell the truth.
- 189 01:50:02:09 The subject's arousal is then compared to his arousal in response to relevant questions where he may be lying.
- 190 01:50:08:29 >> Have you ever taken something that didn't belong to you before?
- 191 01:50:11:17 >> No.
- 192 01:50:14:12 >> People who lie are sometimes nervous and sometimes their heart goes faster and sometimes they sweat more.
- 193 01:50:22:01 But it's also true that people who are just concerned about an issue show the same reactions.
- 194 01:50:28:17 Vice versa, it's also true that people who lie sometimes don't sweat, don't have their heart racing.
- 195 01:50:36:16 And so there's no direct connection and there's no unequivocal connection between lying and these physiological states of arousal.
- 196 01:50:48:07 >> ZIMBARDO: Recently Congress asked Saxe and his colleagues to test the validity of lie detectors.
- 197 01:50:55:04 Saxe set up an experiment where subjects were allowed to take money from a desk drawer.
- 198 01:51:00:28 They were then given a lie- detector test.
- 199 01:51:04:10 If they could pass the test, they could keep the money.
- 200 01:51:07:07 >> No.
- 201 01:51:08:09 >> Do you have any money with you right now that you have taken from the desk?
- 202 01:51:11:16 >> No.

- 203 01:51:12:18 >> ZIMBARDO: Some subjects were told that any lie detector can be deceived.
- 204 01:51:16:14 Others were told that this lie detector was always accurate.
- 205 01:51:21:08 The results were clear.
- 206 01:51:23:03 Those who believed that the polygraph test did not work were able to deceive it.
- 207 01:51:28:01 Those who believed it worked were, for the most part, caught, and some innocent subjects failed the test.
- 208 01:51:34:18 >> No.
- 209 01:51:36:01 >> A polygraph is a prop.
- 210 01:51:38:00 It's a theatrical device, if you will.
- 211 01:51:40:21 If a polygrapher can convince the subject -- and they're very good at convincing people -- if they can convince the subject that the test works, if the subject is guilty, they are going to be nervous.
- 212 01:51:54:08 They're going to think that they can be detected.
- 213 01:51:57:22 If, on the other hand, the subject knows that this is just theater -- that the polygrapher can't really tell what they're thinking -- they're not going to be afraid.
- 214 01:52:09:00 They are not going to be nervous about being caught.
- 215 01:52:13:02 >> ZIMBARDO: Clearly getting at the truth is a difficult proposition, but fortunately there are a few guidelines we can follow to avoid the most common pitfalls.
- 216 01:52:22:26 First find out who the subjects were in any study, how many of them participated, and how they were selected.
- 217 01:52:30:01 Avoid the assumption that two things that go together are cause and effect.
- 218 01:52:34:14 Correlation is not necessarily causation.
- 219 01:52:38:28 Remember that seeing isn't believing if important information might be kept from you.
- 220 01:52:45:06 Question any data that aren't collected using the rigorous procedures of the scientific method.

- 221 01:52:52:08 Any conclusion about human behavior is only as good as the data on which it is based.
- 222 01:52:58:17 Keep in mind the power of placebos to alter reality.
- 223 01:53:04:11 Restrain your enthusiasm for scientific breakthroughs until the results have been replicated by other researchers.
- 224 01:53:12:28 And above all, beware of people claiming absolute truth and simple solutions for the many uncertainties and complexities of human nature.
- 225 01:53:23:15 Scientific conclusions are always tentative, never absolute, and open to change should better data come along.
- 226 01:53:31:08 In our next program, we're going to use our critical thinking to explore the very core of psychology: the brain.
- 227 01:53:38:09 It's the biological base of all our actions, thoughts, and feelings.
- 228 01:53:43:17 It's the hardware that controls the most noble deeds of the most advanced species on Earth and the most primitive instincts of the simplest animals.
- 229 01:53:51:09 The brain and behavior next time on *Discovering Psychology* .
- 230 01:53:55:08 I'm Philip Zimbardo.
- 231 01:53:59:24 [Captioned by The Caption Center WGBH Educational Foundation]
- 232 01:54:35:23 >> *Funding for this program is provided by Annenberg/CPB to advance excellent teaching .*