

## ***Discovering Psychology: Updated Edition***

### **14 The Mind hidden and Divided**

- 1    01:29:31:21    >> ZIMBARDO: Is it possible to relive an operation in your subconscious?
- 2    01:29:38:08    Just try to keep it in as long as you can.
- 3    01:29:40:27    Can your mind shut out the pain of extreme cold?
- 4    01:29:47:27    >> Fixate.
- 5    01:29:48:29    >> ZIMBARDO: How does the right eye trick the left hand?
- 6    01:29:53:19    "The Mind Hidden and Divided," this time on *Discovering Psychology* .
- 7    01:30:31:24    >> ZIMBARDO: Consider an ordinary operation under anesthesia.
- 8    01:30:35:08    The patient is unconscious.
- 9    01:30:37:00    All indicators are normal.
- 10   01:30:40:14    But then the surgeon finds a growth that could be malignant.
- 11   01:30:44:06    He says out loud that the patient may have cancer.
- 12   01:30:48:00    Fortunately, it's a false alarm; the growth is benign.
- 13   01:30:52:14    The operation is successful, and the prognosis is excellent.
- 14   01:30:56:19    The patient should feel fine in a few days, but for some reason she doesn't.
- 15   01:31:02:13    The patient became listless and moody after the operation.
- 16   01:31:05:27    No one could understand why, least of all her.
- 17   01:31:08:25    Finally, as her depression deepened, she sought help from a therapist, who decided to use hypnosis to explore the cause of her problem.
- 18   01:31:17:02    As the patient relived the operation in her mind, the truth came out: even though she had been unconscious, she had heard the surgeon say that she might have cancer.

- 19 01:31:28:17 This news was so traumatic that it plunged her into depression, even though it turned out to be false.
- 20 01:31:34:21 The surgeon's comment had been buried in her subconscious mind, normally unavailable to our conscious awareness unless retrieved by special methods such as hypnosis.
- 21 01:31:47:26 In experiments following this case, both negative and positive messages were given by anesthesiologists to different surgery patients while they were under anesthesia.
- 22 01:32:00:07 None of the patients reported any awareness of what happened during the operation.
- 23 01:32:04:23 However, under hypnosis, some of those exposed to negative messages gave an almost verbatim account of the anesthesiologist's comments, while others showed extreme anxiety.
- 24 01:32:17:23 Another group of patients who were exposed to positive comments during their operations needed smaller amounts of painkillers after surgery and were discharged earlier than those in groups who heard only silence or music during their operations.
- 25 01:32:32:24 We should note, however, that subconscious processing during anesthesia is complex and difficult to demonstrate reliably.
- 26 01:32:40:26 This phenomenon of subconscious awareness raises some profound questions about the nature of the human mind and how it functions to tune us into, or out of, the world around us.
- 27 01:32:53:24 Can events and experiences taking place below the level of consciousness really alter our moods, bias our actions, and even change our health?
- 28 01:33:03:21 And why are we unaware of what this hidden consciousness knows?
- 29 01:33:10:08 In Western civilization, it has been traditionally held that reason, free choice, and carefully-weighted decisions guide our actions.
- 30 01:33:19:20 We assume that we have ready access to our most significant thoughts, feelings, and memories; that it is truly

possible to know thyself.

- 31 01:33:29:09 At the same time, the brain has been seen as a monolithic command center that can know everything because it is master of all it surveys.
- 32 01:33:39:10 But recent experiments in neuroscience suggest an alternative conception.
- 33 01:33:44:15 It seems that our brains are organized into many separate mini-brains or cognitive modules.
- 34 01:33:50:06 Each of these is designed to do a specific job, such as speaking or reading or drawing.
- 35 01:33:57:28 Moreover, our minds are devoted to concealing some truths we would rather not face, either unpleasant memories or even current experiences.
- 36 01:34:09:13 And so to know thyself, one needs to explore the murky realm of the unconscious and the subconscious, where consciousness can take on various disguises.
- 37 01:34:27:26 Throughout history, people have been fascinated and frightened by the idea of a sudden transformation of identity from our conscious selves to something beyond our control, as shown here in an early film version of *Dr. Jekyll and Mr .*
- 38 01:34:42:07 *Hyde .*
- 39 01:34:47:10 We see this notion in tales of witches' potions...
- 40 01:34:53:02 and voodoo possession; in stories of the devil, who takes over and directs the souls of his victims.
- 41 01:35:01:14 And we see it in the carvings of the Northwest Indians, which represent animals who have turned into humans.
- 42 01:35:11:24 And although we know of no confirmed sightings of animal-humans or witches or devils, we do know that certain chemical substances can dramatically change how the mind functions and even how personality is expressed.
- 43 01:35:27:23 Our consciousness can be profoundly altered by psychoactive drugs called hallucinogens, most notably LSD, psilocybin, and mescaline, and more commonly, marijuana.
- 44 01:35:47:00 A survey of nearly 500 societies around the world reveals

that 90% of them practice some culturally-patterned form of consciousness alteration, sometimes with the assistance of drugs... and sometimes by meditation or fasting.

- 45 01:36:09:27 Experiencing traumatic events, even those deep in one's past, can also alter consciousness.
- 46 01:36:16:11 At the University of Pittsburgh, Psychologist Jonathan Schooler looks at the controversial phenomenon of recovered or discovered memory.
- 47 01:36:25:28 >> Recovered memories are situations in which individuals believe they have remembered long-forgotten incidences of abuse.
- 48 01:36:32:11 Many researchers in the field believe that these recovered memories are largely the product of therapists' suggestion; that is that they actually didn't happen.
- 49 01:36:40:23 Others believe that these are generally true and are actually the product of long-forgotten, repressed memories.
- 50 01:36:47:23 What I've been doing is to investigate these cases...
- 51 01:36:50:02 Hi, I'm Jonathan Schooler.
- 52 01:36:51:01 It's nice to see you.
- 53 01:36:51:23 >> Good to meet you.
- 54 01:36:52:17 >> Right this way.
- 55 01:36:53:13 ...And try to find evidence that sometimes, at least, these memories can correspond to actual incidents of abuse.
- 56 01:36:59:24 >> ZIMBARDO: Schooler's research led him to the case of JR, whose recollection of having been molested as a child didn't surface until he was an adult.
- 57 01:37:09:00 Schooler was interested not only in how the memory finally emerged, but in determining if it was true.
- 58 01:37:16:20 >> We went to a movie called *Nuts* with Barbra Streisand.
- 59 01:37:21:19 We picked it, you know, fairly randomly, pretty much on the spur of the moment.
- 60 01:37:25:24 We didn't have any clue what it was about.

- 61 01:37:28:10 During the course of the movie, it becomes clear that this female character was abused as a kid.
- 62 01:37:35:06 Afterwards, we went out to dinner, and I felt very, sort of, agitated, kind of distracted that night.
- 63 01:37:41:08 We laid down in bed, and Laura knew something was up.
- 64 01:37:46:27 And that's when the first memory came to me.
- 65 01:37:49:21 And I turned to her at one point and said, you know, "What happened to that little girl happened to me."
- 66 01:37:59:01 >> ZIMBARDO: One of the most important aspects in determining the credibility of a discovered memory is to obtain confirmatory evidence.
- 67 01:38:06:24 >> Can you tell me about any efforts that you've made to corroborate the abuse that you've described?
- 68 01:38:11:21 >> I've talked to four or five people who were also abused by the same person, including some in my family; one of whom was a total stranger who came forward and contacted me after I filed my lawsuit and after he'd seen some other publicity.
- 69 01:38:26:18 >> Mm-hmm.
- 70 01:38:27:13 >> I confronted the perpetrator.
- 71 01:38:28:21 He acknowledged...
- 72 01:38:30:13 >> It's very difficult to understand how individuals could forget something as traumatic as being molested or raped or seeing a death.
- 73 01:38:38:07 And I think that's one of the reasons why many researchers have had trouble believing this phenomenon.
- 74 01:38:43:12 I think that the mind is a very mysterious process still, and there are many things that we don't understand.
- 75 01:38:50:29 >> ZIMBARDO: Although controversial, confirmed cases of discovered memory show us just how powerful the conscious and the unconscious domains of the human psyche can be.
- 76 01:39:02:27 It was Sigmund Freud, remember, who pioneered

exploration of the unconscious.

- 77 01:39:07:20 It was there, he believed, that primal sexual desires, aggressive urges, and painful memories are exiled.
- 78 01:39:15:29 According to Freud, these traumatic thoughts and feelings, which threaten to overwhelm the individual if let loose, are forcibly removed from our conscious awareness by the process of repression.
- 79 01:39:30:15 But over time, the binds that keep them imprisoned in the unconscious begin to loosen until an alarm goes off.
- 80 01:39:38:04 The alarm is acute anxiety, which signals that an escape to conscious awareness is imminent.
- 81 01:39:44:29 In order to prevent that escape, new defenses are called upon, ego-defensive mechanisms which act to restrain the imprisoned thoughts and feelings at all costs.
- 82 01:39:56:06 But the more heavy-handed the defenses are, the greater the pressure for escape, and the less energy the person has to deal with reality... until the entire system begins to crack under the strain and mental illness results.
- 83 01:40:12:04 For Freud, this dynamic of the human unconscious influences all our choices, decisions, memories, and dreams.
- 84 01:40:21:28 It's even behind those slips of the tongues we call Freudian slips, such as greeting a guest with "I'm so sad you're here" instead of "I'm so glad you're here."
- 85 01:40:32:06 Errors like that, Freud tells us, are windows into our unconscious feelings which otherwise might have remained hidden.
- 86 01:40:39:25 But contemporary researchers are showing that the unconscious is much more than the storehouse of the unpleasant and the forbidden; it represents a basic process we all use regularly.
- 87 01:40:51:25 The unconscious operates whenever we feel or act without being aware of what's influencing us, whether it's a stimulus from the current situation or from our past.
- 88 01:41:03:04 Gently moving your hand down...
- 89 01:41:05:04 Hypnosis is another, often dramatic window on the different

levels of consciousness.

- 90 01:41:10:28 People who have the special ability to be hypnotized or hypnotize themselves can experience remarkable changes in perception, memory, emotions, behavior, and bodily function.
- 91 01:41:26:08 The hypnotist is merely a coach facilitating the optimal performance of the subject.
- 92 01:41:32:10 Michael, because you're highly hypnotizable, we can begin our hypnosis session today without any elaborate induction.
- 93 01:41:39:17 In fact, all we have to do is have you concentrate on the target, which is your thumb.
- 94 01:41:46:08 As I move your hand down, just allow a state of deep relaxation to enter your body.
- 95 01:41:53:11 And you feel very comfortably relaxed, and just let yourself go into a very deep, full, comfortable state of hypnosis.
- 96 01:42:03:15 Get into a very deep, comfortable state of relaxation.
- 97 01:42:07:13 ( *Michael breathing deeply* ) And you know that under hypnosis, you're able to change certain aspects of reality; to visualize things and have those images influence how you think, feel, and act.
- 98 01:42:35:23 Now, what I'd like to do is a consumer survey.
- 99 01:42:41:25 I have here two colognes.
- 100 01:42:44:28 A French cologne, which is described as flowery.
- 101 01:42:49:07 And I'd like you to smell that, and then I'd like you to compare it with a second cologne.
- 102 01:42:54:23 I'd like you to take a deep smell of this, Michael.
- 103 01:42:56:29 ( *Michael inhaling cologne* ) How would you describe that?
- 104 01:43:03:15 >> It's pleasant.
- 105 01:43:07:04 It's kind of flowery.
- 106 01:43:10:18 >> ZIMBARDO: Do you think it's something you might wear?
- 107 01:43:13:14 >> Ah, no.

108 01:43:15:24 >> ZIMBARDO: Why?

109 01:43:16:22 >> It's okay, but it's a bit sweet.

110 01:43:22:03 But it's nice.

111 01:43:24:23 >> ZIMBARDO: Michael, I'd like you now to sample the second cologne.

112 01:43:27:15 This is a California cologne described as musky.

113 01:43:30:20 I'd like you to take a deep whiff of this one.

114 01:43:34:20 ( *Michael inhaling ammonia* ) >> It's more musky.

115 01:43:41:25 I think it's a bit more masculine.

116 01:43:46:15 >> ZIMBARDO: Which of the two do you like better?

117 01:43:49:27 >> I would probably wear the second one.

118 01:43:53:19 >> ZIMBARDO: Want to take another smell of it?

119 01:43:55:17 >> Yes, please.

120 01:44:00:17 >> ZIMBARDO: Okay, I'm going to tap you on your shoulder.

121 01:44:02:09 And when I do, you're going to be alert and refreshed, because I'd like you to sample the colognes again.

122 01:44:10:10 Okay?

123 01:44:11:20 >> Okay.

124 01:44:12:26 >> ZIMBARDO: All right.

125 01:44:14:10 Here's the first one, the French cologne.

126 01:44:16:08 Tell me what you think of it now.

127 01:44:20:02 >> It's nice.

128 01:44:21:16 It smells a little different than when I was hypnotized.

129 01:44:25:03 It smelled a little sweeter then, but it's okay.

130 01:44:28:20 It's nice.

131 01:44:29:13 >> ZIMBARDO: Would you wear it?



- 132 01:44:30:20 >> Ah, maybe, but it's a little light for me.
- 133 01:44:33:06 >> ZIMBARDO: Okay, and here's the second one, the California cologne.
- 134 01:44:37:00 Tell me what you think of it now.
- 135 01:44:39:26 >> Oh, no, no!
- 136 01:44:41:14 ( *laughs* ) No, no, no, that's awful.
- 137 01:44:48:03 >> ZIMBARDO: See what it is?
- 138 01:44:48:27 >> Ammonia.
- 139 01:44:51:08 Ooh, no, I think that's something I wouldn't wear.
- 140 01:44:54:22 >> ZIMBARDO: But you just said that you prefer this, that it smelled musky and masculine.
- 141 01:45:01:15 >> It smelled a little better under hypnosis.
- 142 01:45:05:14 >> ZIMBARDO: Psychologists generally believe that hypnosis is a special form of dissociated consciousness.
- 143 01:45:11:10 Mike's expectation that he will smell two colognes blocks the usual sensory response to the ammonia.
- 144 01:45:17:25 >> You said that it was a cologne and that it smelled nice.
- 145 01:45:20:12 And when I concentrated on that fact, it really did smell okay.
- 146 01:45:24:02 It really worked.
- 147 01:45:25:10 I thought it smelled great.
- 148 01:45:28:03 >> ZIMBARDO: After hypnosis, the subject may follow a post- hypnotic suggestion and may have a thought or feeling without conscious knowledge of its hypnotically-suggested source, or experience post-hypnotic amnesia, forgetting selected events by suggestion.
- 149 01:45:44:10 Hypnosis can also affect biological functioning.
- 150 01:45:48:11 One of the most important practical applications of hypnosis is in pain control, used in surgery, dentistry, and childbirth.
- 151 01:45:55:28 We'd like to demonstrate the power of hypnosis to alter consciousness and pain control.

- 152 01:46:02:01 Laura's entering a deep state of hypnosis.
- 153 01:46:05:13 And as she does, she's generating an image which dissociates her consciousness from the immediate environment.
- 154 01:46:11:24 Mark, who's not going to be hypnotized, is going to be the control.
- 155 01:46:16:01 I'm going to put both of their hands in this ice water, and as I do, they're going to give me a rating from zero to ten indicating how distressful it feels.
- 156 01:46:30:16 Zero is nothing, five is moderate pain, and ten is the limit of your pain tolerance, at which point I'd like you to take your hand out.
- 157 01:46:39:07 So let's time it.
- 158 01:46:40:06 I'm going to start the clock now.
- 159 01:46:42:07 ( *clock ticking* ) Mark, what is your rating?
- 160 01:46:46:19 >> Two.
- 161 01:46:47:26 >> ZIMBARDO: Laura?
- 162 01:46:49:02 >> One.
- 163 01:46:51:26 >> Three >> ZIMBARDO: Laura?
- 164 01:46:54:29 >> One.
- 165 01:47:00:26 >> Four.
- 166 01:47:02:16 >> ZIMBARDO: Laura?
- 167 01:47:04:18 >> One.
- 168 01:47:08:23 >> Five.
- 169 01:47:10:24 >> ZIMBARDO: Laura?
- 170 01:47:12:23 >> One.
- 171 01:47:15:22 >> Seven.
- 172 01:47:18:03 >> ZIMBARDO: Laura?

- 173 01:47:19:28 >> One.
- 174 01:47:24:03 >> Nine.
- 175 01:47:26:07 >> ZIMBARDO: Laura?
- 176 01:47:27:16 >> One.
- 177 01:47:29:29 >> ZIMBARDO: Just try to keep it in as long as you can.
- 178 01:47:33:21 >> Nine.
- 179 01:47:35:04 >> ZIMBARDO: Good.
- 180 01:47:35:27 Laura?
- 181 01:47:37:05 >> One.
- 182 01:47:43:12 >> Nine.
- 183 01:47:44:14 >> ZIMBARDO: Good.
- 184 01:47:45:20 Laura?
- 185 01:47:46:22 >> One.
- 186 01:47:49:05 >> Ten.
- 187 01:47:49:27 ( *water splashing* ) >> ZIMBARDO: Laura?
- 188 01:47:53:16 >> One.
- 189 01:47:58:24 >> ZIMBARDO: Despite the evidence, it's still hard for most of us to accept the notion that the human mind can act in ways that are contrary to the individual's best interest...
- 190 01:48:10:03 or that so much can be swept under the rug of consciousness, with so many important ideas and feelings kept out of sight.
- 191 01:48:16:24 But suppose we could illustrate that parts of the mind can actually be separated and can function independently from each other; that the mind can be a double agent -- spy and counterspy at the same time -- revealing and concealing, knowing and not knowing, aware and confused.
- 192 01:48:36:18 How?
- 193 01:48:37:29 By cutting the brain in two and seeing what happens.

- 194 01:48:43:16 Patients suffering from otherwise incurable and incapacitating epileptic seizures are often helped if the connection between the two cerebral hemispheres is cut.
- 195 01:48:55:15 The two halves of the brain are mirror images of each other, connected by the corpus callosum, a bundle of about 200 million nerve fibers carrying information to and from each side of the brain.
- 196 01:49:10:26 When it's severed, the brain's electrical impulses that cause epileptic seizures are blocked from spreading.
- 197 01:49:18:26 In a sense, the brain is divided already.
- 198 01:49:22:17 The nervous system is wired so that incoming sensory impulses from our vision or our sense of touch are routed to the opposite side of the brain, so what's seen by the right eye or touched by the right hand is routed to the left hemisphere of the brain, while the right hemisphere picks up signals from the left eye and left hand.
- 199 01:49:44:06 Normally, this information is then shared by both sides of the brain via the corpus callosum.
- 200 01:49:50:16 But when it's cut, all that changes.
- 201 01:49:54:15 >> Fixate on the dot, and you respond with your left hand.
- 202 01:49:58:05 >> ZIMBARDO: This demonstration shows the effect of such surgery on epileptic patients.
- 203 01:50:03:17 The subject fixes her eyes on the dot at the center of the screen.
- 204 01:50:07:13 The right brain sees only the left visual field, and the left brain sees only the right visual field.
- 205 01:50:14:03 >> Fixate.
- 206 01:50:15:04 >> ZIMBARDO: When a shape is flashed in either the right or the left visual field, the subject is asked to match that shape to one of the two shapes appearing in the bottom of the screen.
- 207 01:50:26:18 Sometimes, she is asked to point to the shape with her right hand, which the left brain controls, and sometimes with her left hand, which her right brain controls.

- 208 01:50:37:24 When the subject has to use her left hand to match a shape that appeared in the right visual field, she makes more mistakes than when she uses her right hand and vice versa.
- 209 01:50:50:25 >> Fixate.
- 210 01:50:54:28 >> ZIMBARDO: The sensory messages from the right hand and left visual field, and the left hand and right visual field, go to opposite sides of the brain.
- 211 01:51:03:19 This information cannot be shared, because the connection between the two sides has been cut.
- 212 01:51:12:22 A further complication of the split-brain phenomenon is the fact that each side of the brain is better at some tasks.
- 213 01:51:21:09 The right side of the brain is thought to be better at perceptual problems, pattern recognition, and spatial relationships, while the left side seems to be better at language, analysis, and creating explanations.
- 214 01:51:37:14 Michael Gazzaniga is conducting research at the Dartmouth Medical School, where he specializes in the psychological study of split-brain patients.
- 215 01:51:46:14 >> What we've learned in looking at these patients is that there needs to be a final, common path; a cognitive system that unites and pulls together all the behaviors that come pouring out of us, whether they're actually behaviors or whether they're changes in our moods and what have you.
- 216 01:52:03:17 We need a system that allows for integrating this and interpreting it into some kind of a continuous story about who we are and what we are and where we're going and where we've been.
- 217 01:52:14:07 And studying the neuropsychological patient -- the "broken brain," as it were, as we say -- allows you this insight.
- 218 01:52:21:22 It shows you that the brain is organized in terms of many modules, many subprocesses.
- 219 01:52:26:19 These separate modules can all create real behaviors.
- 220 01:52:30:02 They can create changes in mood.
- 221 01:52:31:24 But you certainly don't want a system that has all these modules running off behaviors with no integration.

- 222 01:52:37:13 There's got to be something that pulls all of this together into a theory, a theory of who we are and where we are in relationship to the world.
- 223 01:52:43:28 And the neuropsychological data from both split-brain patients and other focal-disease patients suggest there's something in the left hemisphere that we've called the interpreter that performs this integration, this crucial link for human consciousness.
- 224 01:53:00:27 The notion here is that the interpreter turns out to be the essential feature of the human brain that allows for this individual stamp, as it were, on our lives, because it is pulling together our own personal events, our own personal responses to the environment and giving them an interpretation.
- 225 01:53:19:04 And that is going to be the system that's going to be responsible for our unique view and our unique sense of self that we all think we possess.
- 226 01:53:33:18 >> ZIMBARDO: Some neuroscientists and cognitive psychologists believe that if the brain is, in fact, a confederacy of modules, it might work like this: one module might deal only with recognizing faces, another with mathematical calculations, a third with perceiving angles and so on.
- 227 01:53:55:18 These highly-specialized multi- minds are then moved into consciousness temporarily and then moved out when no longer needed.
- 228 01:54:04:21 But when the wrong mind-module is moved in or isn't moved out fast enough, we're in trouble.
- 229 01:54:12:12 The result is an error of judgment.
- 230 01:54:18:01 So where does this leave us?
- 231 01:54:20:21 With a mind that hides what it doesn't want to accept?
- 232 01:54:23:29 A consciousness that doesn't know the whole plot?
- 233 01:54:26:17 A cast of character-actors ready to improvise new roles, and a brain brimming with scriptwriters who don't always know what the others are up to or what they want.
- 234 01:54:36:11 It's an awesome task to bring them all together, to create

one integrated self, as we'll see next time.

235 01:54:44:26 Until then, I'm Philip Zimbardo.

236 01:54:49:04 [Captioned by The Caption Center WGBH Educational Foundation]

237 01:55:24:17 >> *Funding for this program is provided by Annenberg/CPB to advance excellent teaching .*