

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

### **05 The Developing Child**

- 1 01:00:19:22 >> ZIMBARDO: How much do we know when we come into the world?
- 2 01:00:24:22 Can we learn to outgrow shyness?
- 3 01:00:29:10 What powers of reasoning does a six-month-old have?
- 4 01:00:34:09 >> Remember, big Snoopy's in the same place where little Snoopy's hiding.
- 5 01:00:38:19 >> ZIMBARDO: Can a two-and-a-half-year-old understand symbols?
- 6 01:00:43:00 "The Developing Child," this time on *Discovering Psychology*.
- 7 01:01:24:04 >> ZIMBARDO: About 200 years ago, the new science of mental medicine, an early version of psychology, captured the fancy of philosophers, educators, and physicians.
- 8 01:01:35:05 They debated about the true essence of human beings and the difference between people and animals.
- 9 01:01:44:00 On one side of the debate was the French philosopher Jean Jacques Rousseau, who believed that people are born with all the skills and qualities that make them who they are.
- 10 01:01:54:08 For Rousseau, it is nature, that which we bring into the world at birth, that most affects our development.
- 11 01:02:01:08 We are born noble savages, only to be corrupted by our experiences in society.
- 12 01:02:08:18 On the other side of the debate was the English philosopher John Locke.
- 13 01:02:13:24 For Locke, a baby is merely a blank tablet, devoid of any knowledge or skills.
- 14 01:02:20:00 It is only experience, that which we learn as we are nurtured by other people and by society, that determines who we become.

- 15 01:02:28:18 And so, in time, the debate became known as nature versus nurture.
- 16 01:02:34:23 In 1800, the debate was sharpened by the discovery of a wild 12-year-old child -- a naked, savage boy who had apparently lived alone in the forest of Aveyron, France.
- 17 01:02:46:17 Here was a child with no experience of human nurturing at all, only of nature.
- 18 01:02:54:06 A young doctor, Jean-Marie Itard, tried to civilize and educate the boy, whom he named Victor.
- 19 01:03:00:29 At first his intensive program seemed to be working.
- 20 01:03:04:13 Victor learned how to avoid danger and how to follow instructions.
- 21 01:03:08:10 But after five years, all progress stalled.
- 22 01:03:12:02 Itard reluctantly called off the training program.
- 23 01:03:15:14 Victor died at the age of 40, still unable to speak and behave like an ordinary man.
- 24 01:03:23:02 For many, the case of the wild boy of Aveyron was proof that nature, more than nurture, affects human development; that the new environment could not overcome Victor's basic imperfections.
- 25 01:03:34:21 But others held that we are more the products of our environment than we are blind followers of our natural genetic inheritance.
- 26 01:03:42:03 But which is true?
- 27 01:03:43:24 What skills and knowledge are we born with?
- 28 01:03:46:08 And what do we have to learn from others?
- 29 01:03:48:20 Today we'll try to find out by exploring how developmental psychologists investigate the contributions of both heredity and environment to the development of a child.
- 30 01:04:00:08 >> Oh!
- 31 01:04:02:07 >> Beautiful job.
- 32 01:04:03:15 >> Ow!

- 33 01:04:05:23 >> ZIMBARDO: Have you ever wondered what a baby sees when it's born?
- 34 01:04:10:27 >> Oh, my baby.
- 35 01:04:12:02 Oh, my sweetheart.
- 36 01:04:13:14 Oh, baby.
- 37 01:04:15:05 Oh, sweetheart.
- 38 01:04:16:16 >> Nice job.
- 39 01:04:18:07 >> ZIMBARDO: How it experiences the world?
- 40 01:04:24:07 What it likes and dislikes?
- 41 01:04:26:28 ( *baby crying* ) How helpless it is?
- 42 01:04:32:04 ( *baby crying* ) For William James, America's foremost psychologist at the turn of the century, an infant was a totally confused and helpless organism.
- 43 01:04:46:18 James believed that babies are assailed on all sides by overwhelming sensations -- in his words, "one great, looming, buzzing confusion" -- in contrast to the tranquillity of life in the womb.
- 44 01:05:01:29 In the late 1920s, John Watson, the founder of behaviorism, described the infant as "a lively, squirming bit of flesh, capable of making a few simple responses."
- 45 01:05:14:15 And as recently as 1964, a medical textbook proclaimed that newborns cannot focus their eyes or respond to sounds, and many doctors still believe that babies cannot feel pain.
- 46 01:05:27:20 But they're all wrong.
- 47 01:05:32:06 For the past 20 years, research has pointed to an opposite conclusion: that babies come into the world ready to perform all sorts of amazing feats.
- 48 01:05:50:06 A few minutes after birth, a newborn's eyes can turn in the direction of a voice, searching for the source of sounds it prefers.
- 49 01:06:00:06 It can reach out a hand and make contact and turn its head to follow a moving face.

- 50 01:06:06:02 ( *baby crying* ) New research is showing that babies are also born with likes and dislikes.
- 51 01:06:15:07 As early as 12 hours of age, they show pleasure at the taste of vanilla, and they smile when they smell bananas.
- 52 01:06:22:02 But they recoil from the taste of shrimp.
- 53 01:06:24:21 And their hearing functions even before birth.
- 54 01:06:27:19 So infants are prepared to respond to certain sounds as soon as they leave the womb.
- 55 01:06:32:10 They prefer female voices.
- 56 01:06:34:02 They're lulled to sleep by the sound of a heartbeat.
- 57 01:06:36:22 They can immediately recognize their mother's speech.
- 58 01:06:45:22 Vision, however, is less well developed.
- 59 01:06:47:17 Babies are born legally blind, with about 20 over 500 vision.
- 60 01:06:53:09 The reason is twofold: newborns don't have enough cone cells functioning in their retinas, nor are there enough connections among the neurons in the visual cortex of the brain.
- 61 01:07:04:11 But both develop very rapidly.
- 62 01:07:07:24 >> Hello there.
- 63 01:07:09:10 Hello there.
- 64 01:07:10:22 >> ZIMBARDO: A one-month-old can detect the contours of a head at close distances.
- 65 01:07:14:28 A seven-week-old smiles as it scans its mother's face.
- 66 01:07:19:00 A two-month-old can distinguish colors.
- 67 01:07:21:29 And a three-month-old can bring distant objects into focus almost as well as an adult.
- 68 01:07:29:23 At three months, a baby can also perceive contrast well enough to detect differences in facial expressions, reacting differently to faces that look happy, surprised, sad, or neutral.

- 69 01:07:43:23 So it seems that human infants are a lot less helpless than previously believed.
- 70 01:07:48:22 In fact, they are well equipped to accomplish the three basic tasks of infancy: getting the sustenance they need, defending against harmful stimulations, and making social contact.
- 71 01:08:03:12 But if babies can't talk to us, you might wonder how we presume to know what they see, think, or feel.
- 72 01:08:10:09 The answer is that developmental researchers know what infants can do.
- 73 01:08:14:02 Then they infer what meaning certain patterns of behavior have for the infant.
- 74 01:08:18:16 For example, babies can move their eyes to look at things, they can reach out to touch objects, and they can suck liquids.
- 75 01:08:25:01 These simple behaviors are then used to index their abilities and their psychological states.
- 76 01:08:33:21 Babies prefer novelty to familiarity.
- 77 01:08:37:08 Too much of the same thing quickly loses its appeal.
- 78 01:08:41:02 This decrease in response to any repeated event is known as habituation.
- 79 01:08:46:18 When the baby responds to another stimulus in a way that shows it perceives that stimulus to be different, the response is known as dishabituation.
- 80 01:08:56:08 Together, habituation and dishabituation are one key to understanding a baby's mental processes.
- 81 01:09:06:07 Researchers use the amount of time a baby spends looking at objects and its heart rate as measures of attention, preferences, or perceptual ability.
- 82 01:09:17:06 Changes in the rate of sucking, smiling, sticking out the tongue, and crying can also be used to measure a response to different events.
- 83 01:09:30:15 In 1958, psychologist Robert Fantz started the tradition of using a baby's preference for looking at something new as a

form of silent speech.

- 84 01:09:41:14 Fantz also observed that babies preferred objects that have contours to those that are plain, complex ones over simple ones, and whole faces over parts of faces that are jumbled up.
- 85 01:09:55:19 But the researcher who most contributed to our understanding of what children know is Swiss psychologist Jean Piaget.
- 86 01:10:12:18 >> ZIMBARDO: Piaget didn't use fancy lab equipment, but rather simple demonstrations that yielded generalizations about the workings of a child's mind.
- 87 01:10:25:10 Consider how a child understands that when the appearance of something changes, it doesn't necessarily mean that the object itself has changed.
- 88 01:10:35:25 In one of Piaget's demonstrations, two of the same size glasses are filled with equal amounts of colored liquid.
- 89 01:10:40:05 The contents of one of the glasses is poured into a tall container.
- 90 01:10:44:14 >> Now would you say that there's the same amount of juice in the two cups?
- 91 01:10:48:07 Or does one have more?
- 92 01:10:49:04 Or does the other have more?
- 93 01:10:50:19 >> This one has more.
- 94 01:10:51:10 >> This one has more?
- 95 01:10:52:03 Why do you say that one has more?
- 96 01:10:53:15 >> Because it's skinnier.
- 97 01:10:56:00 >> ZIMBARDO: Six-year-olds believe that the tall container now has more liquid than the glass.
- 98 01:11:00:27 Seven-year-olds are uncertain.
- 99 01:11:03:00 And eight-year-olds know that despite appearances, nothing has really changed.
- 100 01:11:07:23 >> Because this glass is just taller.

- 101 01:11:10:08 I saw you just took all of this stuff in here and poured it in there.
- 102 01:11:13:23 >> Fine.
- 103 01:11:14:21 >> And that just filled it up, but they're still the same amount.
- 104 01:11:18:06 >> Good.
- 105 01:11:19:03 That's very good thinking.
- 106 01:11:21:03 >> ZIMBARDO: The amount of colored liquid remains the same, no matter what container it's in.
- 107 01:11:26:04 Its volume is conserved.
- 108 01:11:28:14 But for all the value of Piaget's work, he, like many others, underestimated the age at which children develop various skills because he confused their physical ability with their ability to understand.
- 109 01:11:42:01 Often children's mental functioning develops before their ability to make a certain physical response.
- 110 01:11:51:11 At the University of Illinois, a team of researchers is now using ingenious experiments to discover previously unsuspected abilities of newborns and young children.
- 111 01:12:04:15 Professor Renee Baillargeon studies how babies develop the concept of object permanence.
- 112 01:12:10:26 >> By "object permanence" we mean really a set of beliefs about the object.
- 113 01:12:15:28 The first and most fundamental belief is that objects continue to exist when hidden.
- 114 01:12:22:20 The first person to investigate the development of object permanence beliefs in infants was Jean Piaget, the famous Swiss psychologist.
- 115 01:12:30:20 And he claimed that it's not until approximately eight to nine months of age that infants understand that objects continue to exist when hidden.
- 116 01:12:41:06 And that's it's not until approximately 12 months of age that babies begin to understand that objects not only exist but retain their physical and spatial properties when hidden.

- 117 01:12:52:07 What we've done is to devise a series of tasks where the infant simply had to look at possible and impossible events.
- 118 01:13:00:06 >> ZIMBARDO: In this experiment, a six-month-old baby watches a cart rolling down tracks, going behind a screen, and coming out the other side.
- 119 01:13:08:18 The screen is lifted to show a block sitting behind the tracks.
- 120 01:13:15:28 Next the baby sees the block placed on top of the tracks.
- 121 01:13:20:21 The screen comes down, the cart rolls exactly as before.
- 122 01:13:26:23 But in the real world of permanent objects, the block should have stopped the cart.
- 123 01:13:35:04 The baby stares longer at this apparently impossible event.
- 124 01:13:42:25 >> When infants are surprised or puzzled by an event, they tend to look at it longer.
- 125 01:13:48:05 So our prediction is always that if infants perceive the events as we do, then they will look longer at the impossible or magical event than at the possible event.
- 126 01:13:59:00 What we found is that infants as young as three and a half months of age, and perhaps younger, but certainly as young as three and a half months of age, understand that objects continue to exist when hidden.
- 127 01:14:11:28 One contribution of this research is to say that we must really take a very close look at infant's physical knowledge.
- 128 01:14:19:00 It's much richer, much more sophisticated than used to be thought.
- 129 01:14:26:05 >> ZIMBARDO: While Baillargeon works with babies, a colleague at the University of Illinois, Judy DeLoache, focuses on cognitive development in older children, especially how they understand symbols.
- 130 01:14:38:29 >> The symbol is something that stands for something else.
- 131 01:14:42:23 A symbol tells you about something other than itself.
- 132 01:14:48:06 Now, symbolic ability is probably the main characteristic that sets human beings apart from other creatures.
- 133 01:14:55:27 So one of the main developmental tasks for a young child is

- to start acquiring symbol systems.
- 134 01:15:01:12 Children have to learn to speak.
- 135 01:15:03:18 They eventually learn to read, and so forth.
- 136 01:15:06:29 Now, what I'm looking at is the acquisition of a very early kind of symbolic understanding.
- 137 01:15:11:19 And this is the child's understanding of a scale model.
- 138 01:15:15:06 Understanding that this model that I showed the child, which looks like a little playroom, looks like a little doll's house.
- 139 01:15:22:18 What I'm looking at is the child's understanding that this model represents something else, that it represents or stands for or is a symbol for a larger space, a larger room that corresponds to this model.
- 140 01:15:37:04 Okay, Charlotte.
- 141 01:15:38:10 Here's big Snoopy.
- 142 01:15:40:02 Here's little Snoopy.
- 143 01:15:42:05 I'm going to hide little Snoopy here in his little room, okay?
- 144 01:15:46:04 You watch where I hide him.
- 145 01:15:47:21 Now watch.
- 146 01:15:48:21 I'm hiding him right there.
- 147 01:15:51:05 >> ZIMBARDO: The subject here is two-and-a-half-year-old Charlotte.
- 148 01:15:54:21 >> Now, I'm going to go hide big Snoopy in the same place in his big room, okay?
- 149 01:15:59:12 And you wait right here, okay?
- 150 01:16:01:15 You wait right here.
- 151 01:16:02:17 I'm going to go hide big Snoopy.
- 152 01:16:14:21 Okay, Charlotte, can you come find big Snoopy?
- 153 01:16:17:20 Remember, big Snoopy's hiding in the same place in his room where little Snoopy's hiding.

- 154 01:16:27:23 Where is big Snoopy?
- 155 01:16:29:22 No.
- 156 01:16:31:01 Remember, big Snoopy's in the same place where little Snoopy's hiding.
- 157 01:16:35:05 >> Where is him?
- 158 01:16:36:02 >> Yeah, where is he hiding?
- 159 01:16:37:02 Can you find him?
- 160 01:16:38:23 He's in the same place little Snoopy is.
- 161 01:16:42:02 >> I don't know.
- 162 01:16:42:26 >> You know, I think he's back there somewhere.
- 163 01:16:44:18 Why don't you see if you can find him back there?
- 164 01:16:47:28 >> No.
- 165 01:16:48:25 >> Oh, look again.
- 166 01:16:51:14 Did you find him?
- 167 01:16:52:14 Good girl.
- 168 01:16:53:08 There he is.
- 169 01:16:54:02 There's Snoopy.
- 170 01:16:55:23 Okay.
- 171 01:16:56:29 >> ZIMBARDO: Mariel is three years old.
- 172 01:16:59:07 >> Look.
- 173 01:17:00:05 Here's big Snoopy, and here's his friend, little Snoopy.
- 174 01:17:03:27 I'm going to hide little Snoopy here in his little room, okay?
- 175 01:17:07:06 Now you watch while I hide little Snoopy.
- 176 01:17:12:01 And I'm hiding him right there, okay?
- 177 01:17:15:21 He's hiding.
- 178 01:17:16:28 Now I'm going to take big Snoopy, and I'm going to take big

- Snoopy and hide him in the same place in his big room.
- 179 01:17:23:18 Okay?
- 180 01:17:24:16 You wait right here while I go hide big Snoopy.
- 181 01:17:27:00 Okay, here I go.
- 182 01:17:38:12 Okay, Mariel, big Snoopy's hiding.
- 183 01:17:40:20 Remember, he's hiding in the same place in his big room where little Snoopy is.
- 184 01:17:44:12 Can you find him?
- 185 01:17:45:23 Come find big Snoopy.
- 186 01:17:46:29 Let's see where he is.
- 187 01:17:55:06 Good girl.
- 188 01:17:56:03 You found him, didn't you?
- 189 01:17:57:27 He likes that.
- 190 01:17:58:20 He likes for you to find him.
- 191 01:18:00:10 Now can you go find little Snoopy?
- 192 01:18:02:15 Where's little Snoopy?
- 193 01:18:04:05 Let's find him.
- 194 01:18:10:09 Good girl, Mariel.
- 195 01:18:11:16 You knew right where he was.
- 196 01:18:13:13 Good for you.
- 197 01:18:15:18 It's when you see a child going from just really not understanding something, a few weeks later, a few months later, showing almost full comprehension of it, then you're so aware of the developmental process.
- 198 01:18:28:21 And you're aware that children have this enormous amount to learn, and things that we just take for granted, the kid's in there thinking about it, working on it all the time.
- 199 01:18:36:01 Trying to... trying to work these things out.

- 200 01:18:37:23 Trying to figure out how the world operates.
- 201 01:18:41:01 The two-year-old's a very busy person cognitively.
- 202 01:18:44:04 In fact, I think it's probably safe to say that a two-year-old thinks more than you or I think because they have so much more to figure out.
- 203 01:18:53:01 >> ZIMBARDO: Other researchers utilize the visual cliff developed in 1960 by Eleanor Gibson and Richard Walk.
- 204 01:19:00:17 One side of a plexiglas sheet is painted, and the other side is transparent with a painted pattern beneath it, creating the illusion of a drop.
- 205 01:19:09:29 >> Come here, Cameron.
- 206 01:19:12:26 Oh!
- 207 01:19:14:12 Look.
- 208 01:19:15:09 Look.
- 209 01:19:16:00 Come here.
- 210 01:19:17:16 >> ZIMBARDO: This baby, who has just begun to crawl, will cross the drop.
- 211 01:19:23:29 >> Can you get that?
- 212 01:19:25:27 Can you get it?
- 213 01:19:27:11 Oh.
- 214 01:19:29:15 >> What a good job.
- 215 01:19:34:14 >> What a good baby.
- 216 01:19:36:05 >> Katie, what are you doing?
- 217 01:19:37:19 You can crawl.
- 218 01:19:39:02 Come here.
- 219 01:19:40:09 >> ZIMBARDO: This baby, who has been crawling for over a month, will not cross.
- 220 01:19:47:06 The visual cliff is used to study the development of depth perception and the emotion of fear.

- 221 01:19:53:19 From about eight and a half months on, children will not cross the cliff.
- 222 01:19:57:22 This new emotion, fear of heights on the visual cliff, is made possible by the new experience of crawling.
- 223 01:20:04:22 >> Katie, can you come over here?
- 224 01:20:08:12 >> ZIMBARDO: So newborns are not blank slates, and they're not completely helpless.
- 225 01:20:12:25 In fact, they come into the world equipped to learn, think, and solve problems.
- 226 01:20:17:10 And not only that.
- 227 01:20:18:18 They're also equipped to charm their caretakers into relating to them.
- 228 01:20:22:24 Considering how helpless they are and how hard it is to raise children, the human race might have died out a long time ago if babies weren't primed to be so cute.
- 229 01:20:31:23 A baby's smile and coo may be the most effective survival mechanisms of all.
- 230 01:20:37:22 Some babies, of course, smile more than others, which brings us to another critical part of each infant's primal makeup -- one that goes beyond perceptual and cognitive abilities.
- 231 01:20:48:20 And that's his or her temperament.
- 232 01:20:51:09 Some babies are excitable and active, while others are calm and passive.
- 233 01:20:55:22 This is true regardless of the culture.
- 234 01:20:58:21 Such temperaments exhibited at birth are biologically based.
- 235 01:21:02:28 There are constitutional tendencies that can affect a child's personality.
- 236 01:21:12:21 Harvard psychologist Jerome Kagan has been studying inherited behavioral differences between timid and bold children.
- 237 01:21:19:19 Kagan and his colleagues observe the children on closed-circuit television.

- 238 01:21:24:01 >> My general view is this: that a small proportion of children, we think maybe ten to 15 percent, but no more, are born with a slight push from nature to be either very outgoing -- the way that child with the drum is -- or with a slight bias to be fearful, vigilant, apprehensive, cautious.
- 239 01:21:49:09 Although there are other temperamental variables, it might be that this is the most salient temperamental quality in mammals.
- 240 01:21:58:22 That's just a possibility.
- 241 01:22:03:01 So there's no fundamental difference in intellectual ability or abilities between the two groups.
- 242 01:22:10:07 None of us believes parents should be fatalists; that is to say, we have many cases of parents who nature gave them a cautious child and through gentle handling, introduction of their child to other peers, a gentle persuasion of the child to try to conquer their apprehensions, we have seen these children change.
- 243 01:22:30:07 And therefore there's no need to say there's nothing I can do just because their child happened to begin life with a slight push in this direction.
- 244 01:22:40:02 >> ZIMBARDO: So biology is not destiny.
- 245 01:22:42:22 Born shy doesn't necessarily mean a lifetime of shyness.
- 246 01:22:46:25 Later experiences can enable some to overcome their shyness while creating shyness in others.
- 247 01:22:52:26 In addition to shyness, the personality trait that shows the most genetic influence is activity level.
- 248 01:22:59:05 But once again, though biologically based, this trait can be modified by learning, training, and experience.
- 249 01:23:08:17 Research with animals tells us more about these traits.
- 250 01:23:12:09 Here at the National Institutes of Mental Health Animal Center, Steven Suomi has been studying the behavior of genetically shy monkeys.
- 251 01:23:21:03 >> It appears that shyness is inherited; that is, genetic differences between individuals largely determine which individual will be shy.

- 252 01:23:30:15 And those individuals that have this characteristic start showing it very early in life.
- 253 01:23:34:16 Within the first two or three weeks of life, for example, we can begin to see differences between the shy monkeys and those that are not because those that are not begin to leave their mother to explore, but the shy ones stay back and seek their mother's contact for protection.
- 254 01:23:49:21 We've been able to change the behavior of some of our shy monkeys by rearing them with unusually nurturant foster mothers, mothers who are supportive and protective at all times.
- 255 01:23:59:27 And with these mothers giving these monkeys a good, firm basis of support network, they show good outgoing behavior, they interact readily with their peers, and in some cases they may turn out to be the dominant members of their social group.
- 256 01:24:12:15 But if you take away the support network of these individuals, they revert right back to their shy behavior.
- 257 01:24:17:18 It's almost as if you were turning a switch on and off.
- 258 01:24:19:19 It looks like the basis for this shyness in monkeys is very similar, if not identical, to the basis for shyness in humans.
- 259 01:24:26:15 We know this in terms of the types of behavior that are shown and at what points in development where there are strong parallels.
- 260 01:24:32:20 We know it in terms of the underlying physiological systems where the same characteristics physiologically that identify our shy monkeys also can be found in shy humans.
- 261 01:24:42:19 And we also believe that the connection is there because just like you can modify shy behavior in humans, you can also modify it in monkeys through certain types of experience.
- 262 01:24:55:16 >> ZIMBARDO: There's also clear evidence that genetic influences are significant for some cognitive abilities, such as verbal skills, and for some kinds of psychopathology that surface later in life.
- 263 01:25:13:17 It is also clear that environmental factors play an important role in any complex behavior or ability.

- 264 01:25:21:04 Family experiences make us different and so do our cultural backgrounds.
- 265 01:25:25:25 While biological inheritance provides the potentials for development, environment determines if these potentials are realized.
- 266 01:25:33:28 Thus, nature and nurture interact to mold all behavior.
- 267 01:25:40:24 In our next program, we're going to explore one of the most remarkable accomplishments of the human species.
- 268 01:25:46:24 It first occurs between the tender ages of one and two years old.
- 269 01:25:50:05 But most of us don't stop for the rest of our lives.
- 270 01:25:53:03 I'm talking about talking.
- 271 01:25:55:12 How children acquire the miracle of language, next time.
- 272 01:25:59:22 I'm Philip Zimbardo.
- 273 01:26:05:07 [Captioned by The Caption Center WGBH Educational Foundation]
- 274 01:27:08:11 >> *Funding for this program is provided by Annenberg/CPB to advance excellent teaching .*
- 275 01:27:19:15 >> *For information about this and other Annenberg/CPB programs, call 1-800-LEARNER and visit us at [www.learner.org](http://www.learner.org) .*