JoVE: Science Education

The Rouge Test: Searching for a Sense of Self

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Psychology Education Title: The Rouge Test: Searching for a Sense of Self

Overview:

Humans are different from other animals in many ways, but one of the abilities that sets humans apart is their advanced ability to understand other people and simulate their thoughts and feelings, even when the thoughts and feelings do not align with their own. In scientific terms, these abilities are referred to as theory of mind, and this understanding is necessary for activities like giving compliments, working in groups, asking for favors, and telling white lies.

Humans aren't born with theory of mind. An individual's understanding that they are separate from other people and that they have different desires and knowledge, requires an established sense of self. Thus, developing self-recognition and self-awareness are some of the initial steps on the path to developing a mature theory of mind. Studying a child's emerging sense of self is complicated, because children's conceptual development exceeds their mastery of language. To solve this problem, researchers borrowed methods used to detect self-recognition in animals and applied them to young children. Thus, with a mirror and a bit of make-up, the rouge task was born.

This video demonstrates how researchers assess self-awareness in children at different ages.

Procedure:

1. Recruit one group of 8- to 12-month-old infants and one group of 20- to 24-month-old children. For the purposes of this demonstration, only one child is tested. Larger sample sizes are recommended when conducting any experiments.

    1.1. Make sure the participants are healthy, have no history of developmental disorders, and have normal hearing and vision.

    1.2. Because children in these age groups can be uncooperative or fussy (e.g. refuse to watch a demonstration or fall asleep during testing), it's advisable to recruit extra participants in order to obtain sufficient data.

2. Data collection.

    2.1. Prepare the materials.

        2.1.1. Obtain one large mirror and bright, washable, non-toxic paint or cosmetics, such as lipstick, that can be safely applied to a child's skin.

    2.2. Test.

2.2.1. Install the mirror in a testing room, so it is accessible to small children and safe for them to interact with independently.

2.2.2. Set up a video camera at an approximately 45° angle from the mirror, so the child's reflection or face is visible.

2.2.3. Welcome the parents to the experiment and instruct them to encourage their child to look at and interact with the mirror when they enter the testing room.

2.2.4. Covertly apply paint or cosmetics to the child's forehead.

2.2.4.1. It is critical to apply the mark so that the child can see it in their reflection, but otherwise, they can't see or feel it on their body.

2.2.4.2. It may be necessary to recruit parents to assist in this process, if the child is wary of strangers.

2.2.4.3. If the child detects the mark before entering the testing room, abort the experimental session.

2.2.5. Parents enter the testing room and place their child in front of the mirror.

2.2.5.1. Most children interact with the mirror spontaneously, but instruct the parents to engage their child with the mirror, ensuring that they look at their reflection, if the child initially looks elsewhere.

2.2.5.2. If the child crawls away from the mirror, gently return them until they look into the mirror.

2.2.6. Video tape the child's actions.

3. Analysis.

3.1. Two independent coders view the videos.

3.2. Designate children who only look at the mirror or who touch their reflection in the mirror above the marked area as failing the test.

3.3. Designate children who see their reflection and touch the mark on their forehead as passing the test.

3.4. Use statistics to ensure the two coders reliably make the same judgments of children's behaviors.

3.5. Use nonparametric statistics to determine if there are differences in the proportion of children in each age group that touch their forehead.

Representative Results:

In order to have enough power to see significant developmental shifts, researchers would have to test approximately 20 children per age group, not including infants dropped due to fussiness. Children who have a sense of self-recognition and self-awareness usually touch the marker on their foreheads upon seeing it in a reflection. In contrast, children who fail the test usually ignore the mark or try to touch the reflection of the mark in the mirror. Researchers also report that some children who fail the task assume they are looking at another child in the room, and they touch the mirror or look behind it to find their new friend.

Only a small proportion of the 8- to 12-month-old infants usually pass the rouge test. The vast majority of the infants smile and play with the mirror, and many of them try to touch the mark in their reflection. In contrast, most 20- to 24-month-olds see their reflection and reach up to examine the mark on their forehead (**Figure 1**).

Applications:

Most children begin to show the beginnings of self-awareness just before age two. At this time, they also begin to develop a rudimentary theory of mind, including the idea that different people have different preferences and desires. Building upon this basic understanding of others' minds, children develop to represent how other people feel, leading to the development of complex comparative emotions, such as empathy, envy, and embarrassment, and pretend play, which allows them to practice their social skills even when they are alone. Children also learn to represent what other people see and know, and use this information to guide their social interactions, including knowing when and if they should try to help a friend or how to keep a surprise party a secret (**Figure 2**).

Humans are amazing social creatures, but theory of mind is not unique to humans. Apes, elephants, dolphins, dogs, and even some birds have demonstrated the ability to recognize themselves using the rouge test (**Figure 3**). Encouraged by these findings, researchers have hypothesized that self-awareness is an important building block of social connectedness.

Legend:

Figure 1: The proportion of children demonstrating self-awareness increases over time.

Figure 2: Child looking in mirror.

Figure 3: Animal looking in mirror.

References:

Comment [JR1]: Here are some potential photos for the Applications section. If you'd like any of these images downloaded, let us know and we can easily acquire them.

Figure 2: child looking in mirror
http://www.dreamstime.com/stock-photo-beautiful-child-girl-looking-herself-mirror-home-young-brushing-her-hair-image46492456

http://www.shutterstock.com/pic-129088694/stock-photo-ten-month-boy-stands-before-the-mirror.html?src=2mqURShfsmWEgdqqzpfJ0A-1-0&ws=1

Figure 3: animal looking in mirror
http://www.shutterstock.com/pic-32969158/stock-photo-young-chimpanzee-looking-himself-at-the-mirror-in-front-of-a-white-background.html?src=e4YhqVf5Az2O9RO0xRy5sQ-1-7&ws=1

http://www.shutterstock.com/pic-61022845/stock-photo-chihuahua-looking-in-mirror-in-front-of-white-background.html?src=mhLOa7Ub0FEWz-hJMo3sxQ-1-0&ws=1

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