

Children show goal-oriented behavior by age 3

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Hang on, parents. After the terrible twos come the goal-oriented threes. Kids seem to grow into the ability to act in pursuit of goals outside of what they can immediately sense sometime around that age, according to a new study published in the February issue of the *Journal of Experimental Psychology: General*, published by the American Psychological Association.

Researchers found that by around age 3, children appear to shape their behavior in response to the outcomes they've come to expect. Anticipated outcomes that they value move them to act more than do outcomes that they don't – a hallmark of emerging autonomy.

At the University of Cambridge, a trio of psychologists trained 72 children between 18 months and 4 years old, divided into three 10-month age bands (averaging 1.3 to 2.2 years, 2.3 to 3.075 years, and 3.08 to 4 years) to touch a red or green butterfly icon on a touch-screen display to see different cartoon video clips. The children came to associate one butterfly with one cartoon sequence and the other butterfly with another.

After that, the experimenters devalued one of the outcomes by showing that sequence repeatedly, until the children became bored with it. Thus, the less-viewed cartoon clips became, by contrast, more interesting and valuable. The researchers then re-tested the children, who should now have associated one butterfly with a valued cartoon and the other butterfly with a less-valued cartoon.

Relative to the younger children, those who were 32 months (nearly 3 years) and older touched the butterfly for the less-valued cartoon significantly less often than they touched the butterfly for the more novel cartoon. During that test, the cartoons were not actually presented; the children had to rely on their memories of which butterfly icon produced which cartoon. This test thus showed that the actions of the older children behavior depended on the current values of the outcomes, whereas the actions of the younger children did not.

Co-author Ulrike Klossek, PhD, points out that although all the children were sensitive to changes in outcome value and preferred the less-repeated cartoon, only the older children actually acted in a way that, based on their experience, would get them their favorite cartoon.

The authors said that although adults take goal-directed action for granted, it's not in us from birth but rather emerges in a normal developmental timeline that, according to this and similar studies, appears to emerge roughly between the ages of 2 and 3 years -- hence the "terrible twos."

"One possible interpretation is that the period between 2 and 3 years of age brings about a transition in behavioral control from stimulus-outcome learning to fully intentional goal-directed action," the authors wrote. In other words, by age 3, children can pursue specific goals even if they cannot directly sense those goals, which may now be more abstract. These older toddlers are sensitive to how goals change in value, begin to internalize their relationship to and control over events, and start to act in ways that will help them reach the goals they value most – such as more exciting cartoons.

It's all a part of growing up. As the authors concluded, "This capacity [to internalize one's control over the environment] is an important component of becoming a fully autonomous intentional agent."

Source: American Psychological Association

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