Born free?

Children's intuitions about choice

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Certain intuitions about human agency are universal and foundational. There are clashing views over whether free will exists, or whether determinism is compatible with moral responsibility—but nobody doubts that some of our actions are the product of choice and others are accidents. We draw upon this distinction when we assess whether somebody is guilty of a wrongdoing, deserves praise for an accomplishment, or is acting rationally. Our concept of choice figures in more banal aspects of our life as well, as when we reason about our own behaviors. It is hard to imagine what life would be like being unable to tell if our own actions were done on purpose or by accident—unable to appreciate the difference, say, between calling the person you wanted to speak to versus dialing a wrong number.

We explore here the development of this understanding, focusing specifically on the question of whether our understanding of choice is rooted in a first-person experience of agency, or whether it is product of a folk theory of mental life. To explore this, we first review studies that explore children's concepts of choice in other individuals, and then we discuss research that tests children's ability to introspect on their own subjective experience, distinguishing between actions that are chosen versus those that are not. Based on our review, we tentatively conclude that the foundations of our understanding emerge from, or at least are substantially influenced by, a developing folk theory. Phenomenological experience plays less of a role than many would believe.

Children's intuitions about the choice of others

Young children have some understanding of choice. Nichols (2004) presented children aged 3 to 7 with a number of simple scenarios and asked them about whether an agent or object made a choice or could have done otherwise in these various situations. For example, children were shown a box, which the experimenter slid open. In one condition, the experimenter touched the bottom of the box and asked the child, "After the lid was open, did I have to touch the bottom, or could I have done something else instead?" In the other condition, a ball dropped to the bottom of the box when the lid was slid open, and the child was asked whether the ball had to touch the bottom, or whether it could have done something else instead. The children answered just as adults would, indicating that the agent could have decided not to touch the bottom of the box, but that the ball had to touch the bottom of the box.

Children also understand that choice is limited by physical constraints. In a study by Kushnir et al. (2009), 4-year-old participants were read stories about an agent who desired something that is either physically possible or physically impossible. In one scenario, the actor Mary wanted to either step off a stool and go to the ground or step off the stool and "float in the air and never come down". The children agreed that Mary could go to the ground, but said that she could not float in the air. In another study, children were asked to draw on a piece of paper either a dot or a line. In the condition in which they were asked to draw a line, the experimenter held the children's hand and prevented them from drawing the line, forcing them to draw a dot instead. Children in this condition correctly stated that they could not have drawn a line instead of a dot, whereas those in the unconstrained condition in which they were simply asked to draw a dot correctly agreed that they could have drawn a line instead. Hence, children seem to have a basic understanding of how the laws of physics limit choice for both objects and agents.

Further studies find a more subtle appreciation. If 4-year-olds are told that a certain drawing makes a puppet unhappy, they tend to deny that they could have made that drawing. Likewise, if they are told that everyone else before them has drawn a line, children tend to deny that they could have drawn something else (Chernyak, Kushnir, and Wellman, 2010).

These findings are intriguing. On the one hand, they suggest that children have a subtle understanding of how morality and convention constrain choice. On the other hand, these answers are not the same as those that adults would give, suggesting a real developmental difference. That is, adults say that one *can* commit immoral or unconventional acts, though, usually, one *shouldn't*. So why do young children say otherwise?

One interpretation of these results is linguistic. All of the studies above test children's intuitions by asking them questions with the English modal auxiliaries "can" and "could". The

problem here is that these linguistic constructions can be used to indicate that some action is not physically possible (e.g., "You can't fly."), but also that some action 'should not' be done (e.g., "You can't hit your sister.") And so when children respond to certain questions by saying that one *can't* do a certain things, they might be construing the question as being about morality, not possibility. This would suggest that they might have a fully mature understanding of choice, appreciating that one can choose to do immoral and unconventional acts, but that they differ from adults in their interpretation of questions.

In support of this account, children do seem to understand how these various constraints differ from each other. Kalish (1998) presented 3- to 4-year-old children with stories describing physical and social violations. For example, one physical violation involved a boy wanting to become a fish, and a social violation involved a boy wanting to play in the snow with no clothes on. Although these children tended to say that an agent could not perform either type of violation, they gave different types of justifications for why they thought that this was the case. For physical violations, the children correctly made reference to physical limitations that made these actions impossible. In contrast, for social violations, the children gave "reason" justifications, referencing the violation of social rules and the likely negative consequences that would result from these transgressions. These results suggest that, even though children say that agents "cannot" perform certain actions that violate social norms, they may, in fact, actually understand that these behaviors are in some sense possible to perform, but just unwise or immoral. In other words, children may use the modal language of "can" and "cannot" slightly differently from the way adults use it, but nevertheless understand at a conceptual level the differences between physical and social violations.

At the same time, though, other findings by Phillips and Bloom (under review) suggest that children really do have a different understanding of choice than adults. In one study, 4- to 7-year-olds and adults were told about impossible acts, such as a boy throwing his hat into the air and the hat transforming into a candy car; immoral acts, such as a boy stealing a candy car; and ordinary acts, such as a boy waiting to get home to eat his favorite snack. The question that the subjects were asked didn't involve "can" or "could"—it was whether the acts were "possible" or "impossible".

Adults, not surprisingly, said that the physically impossible scenarios were "Impossible" but that the immoral acts were "possible". The youngest children tested, however, made no distinction between the two; they were both impossible. (They agreed, however, that the ordinary acts were possible, showing that they understood the question.) A second study asked children and adults for their judgments as to which acts were "magical". The finding replicated; once again, the younger children did not distinguish immoral acts from physically impossible acts—both were described as being magical.

These results support the conclusion that young children really do represent immoral choices as impossible. This finding is particularly striking given that children are likely to have not only witnessed but probably actually performed many of the immoral actions they judged to be impossible (e.g., taking another child's toy, lying to one's parent, being mean to another child).

In sum, young children have a relatively sophisticated understanding of other individual's choices. Not only do they make important distinctions between agents' and objects' capacity to do otherwise, but they appreciate that people's choices are constrained by physical law, and can

distinguish between different kinds of constrained and unconstrained actions. At the same time, though, there are interesting developmental differences—children seem to have difficulty appreciating that immoral actions are possible choices, even though they have observed such actions and have engaged in them themselves.

Children's intuitions about their own choices

Imagine that as you are walking down the street, someone bumps into you, knocking you over. The woman who did this immediately apologies; she wasn't looking where she was going, and hadn't meant to collide into you. How can you know if she is telling the truth? To know for sure you would have to somehow look into her mind at the time of the incident and examine whether, when she hit you, she had a certain kind of conscious experience of agency. Though this experience is hard to pin down, we know that we have it all the time in our day-to-day lives when we choose to move our limbs, type on a keyboard, or engage in conversation with someone. And, when it is missing in cases in which it would normally be present—for example, when our knee moves unexpectedly—we can be sure that we did not intend to do this thing.[1]

This experience of intentionality plays a crucial role in how we, as adults, conceptualize our own choices. But how does it figure in to children's understanding of their mentally guided action? In the theory of mind literature more broadly, researchers have debated this issue for a

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[1] Two qualifications: First, there are situations in which we ascribe an intention or choice to some action even if there is no accompanying phenomenology. This typically applies to more global kinds of intentions (e.g., intentionally attending college). See Pacherie (2008) for an extended discussion of the different kinds of intention and their relationship to phenomenology. And second, there are some philosophers who are skeptical to varying degrees about the existence of any sort of phenomenology. We are not, but this issue takes us far outside the scope of this chapter; the discussion here is unchanged if one replaces phrases like "the experience of making a choice" with "access to a certain sorts of past mental event".

long time. One camp holds that children's understanding of intention (among other mental states) is primarily theory driven and that the child's own experiences play only a subsidiary role in developing a concept of choice (Gopnik & Wellman, 1992; Saxe, 2005). Others contend that first-person experience of one's own mind is the main source by which children reason about other minds (Goldman, 1989; Harris, 1992).

In order to help settle this debate in the context of children's understanding of intention and choice, we need to examine the extent to which children incorporate their first-person experience of intentionality into their third-person theory-of-mind judgments. But it is first worth noting that, in other related domains, children have demonstrated marked failures to introspect on and make careful discriminations in their phenomenology. In one classic study, children are presented with a candy box and asked what's in it; they usually say "candy". Then they are shown that it contains pencils. Interestingly, they then claim that they believed that the box had pencils in it all along (Gopnik & Astington, 1988; Perner, Leekam, & Wimmer, 1987), suggesting that they are not accessing a previous experience of having believed that there was candy in the box just moments before. Other research finds that children do not seem to comprehend that they are thinking most of the time that they are awake, and they often fail to recall what they were thinking about in the recent past, even when the answer is straightforward (J. H. Flavell, Green, Flavell, & Harris, 1995). These findings not only suggest that a third-person folk theory of mind develops prior to first-person introspection, but may even suggest that young children understand their *own* minds via a third-person theory (see Carruthers, 2009).

What about the specific case of children's phenomenology of intentionality? In the earliest study on this topic, Schultz, Wells, and Sarda (1980) asked 3- to 7-year-olds to perform a number of tasks that were intentional or unintentional. For instance, children had to select a

shiny penny on a table that also had a dull penny on it. In the "intentional" version, the children picked it up normally. In the "accidental" version, the children wore distorting glasses that made the shiny penny look as if it were in the location of the dull penny, leading them to pick up the dull penny by mistake. The children were then asked if they meant to perform the action. They did just as well as when they were asked to make judgments about another person's actions, suggesting that, at this age, first-person phenomenology did not provide any advantage over third-person observation for this simple task that required distinguishing intentional and unintentional action.

Of course, phenomenology may not have been helpful in this case simply because judging intentionality was easy enough to do without the help of conscious experience. However, in a clever follow-up, Schultz and colleagues (1980) tested how children would fare in making these judgments in cases in which phenomenology plays a more central role. For example, in one case, children were asked to either intentionally move their leg or intentionally try *not* to move their leg as the experimenter induced a femoral (knee-jerk) reflex in them, which they could not prevent from causing their knee to move. Afterwards, children were asked whether they moved their leg on purpose. Surprisingly, the 3- to 4-year-olds were no more likely to answer "no" when they tried to prevent their leg from moving than when they moved their leg intentionally. Similarly, Lang and Perner (2002) induced a knee-jerk reflex in 3- to 5-year-old American children and found that two-thirds of these children incorrectly judged that they "meant to" move their leg when, in fact, this movement was clearly elicited by the experimenter. Thus, children at this age seem to struggle to incorporate their experience of intentionality (or lack thereof) into their concept of choice.

In another set of studies, Montgomery and Lightner (2004) measured 3- to 4-year-olds' ability to distinguish intentional from involuntary movements by asking them whether they "tried to" draw various pictures. In some cases, drawing was self-guided by the child, while in other cases, an experimenter moved the children's arm as their eyes were closed and drew something completely unexpected. Even when children were asked a forced-choice question about which of the two drawings they tried to draw, they were no more likely to pick the self-initiated drawing than the one that was both passively guided by the experimenter and whose contents were surprising. In conjunction with the knee-jerk findings described above, these results provide compelling evidence that phenomenology does not fully figure in to young children's concept of intention..[2]

It may be the case that young children just, by default, think that most or all of what they do is intentional until they develop a more sophisticated concept of intention that takes their phenomenology into account. It may also be the case that children are actively confusing intention and the related concept of desire. Specifically, they may erroneously think that whenever a desired outcome is achieved, that outcome must have been intended.

This is not a bad heuristic—most of the time, desires and intentions coincide. If you are thirsty and want some water, and you find yourself drinking water, it's an excellent bet that you intended to drink water. But desire and intention are different in a number of respects. You might desire something and yet not form an intention to act upon that desire—one might desire to kiss

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[2] It is worth noting that young children's struggles to distinguish intentional and involuntary action are not unique to first-person cases. For example, when shown movies of actions that were either intentional or unintentional, 4-year-olds were inclined to judge the unintentional actions as intentional ((Smith, 1978)). Children's failures in these third-person cases may be the result of the first-person failures of introspection that we have discussed, or they may reflect more theoretical failures in understanding the folk concept of intention (see (Rosset & Rottman, 2014) for extended discussion).

someone, say, but not intend to kiss that person. And sometimes intentions fail to achieve desires. Consider a baseball player who sees a fastball coming towards home plate and forms an intention to hit the ball and swings his bat—but misses and strikes out. Obviously, the player did not desire this bad outcome even though he intended to swing his bat.

Schult (2002) examined this latter kind of disconnect between intention and desire in 3- to 5-year-olds. Children played a game in which, on several trials, they had to aim and throw a beanbag at one of three buckets. There was a prize in only one randomly selected bucket, and the children did not know ahead of time which of the buckets had the prize. At the beginning of each trial, the children were asked to announce which bucket they would try to hit, and once the beanbag landed in one of the buckets, the experimenter then revealed whether or not the bucket that was hit contained a prize. As a result, there were four possible kinds of trials: the children could (1) hit their intended target, which contained a prize; (2) hit their intended target, which did not contain a prize; (3) hit a non-intended target, which contained a prize; or (4) hit a non-intended target, which did not contain a prize. If children think that achieving a desired outcome implies that they intended that outcome, as Schult (2002) predicted, then they should make systematic errors in situation (3). This is precisely what was found for the 3-year-olds: even though the children in this condition had declared, just moments before, the bucket that they were aiming for and trying to hit, they nevertheless later claimed that they were aiming for a different bucket if it contained a prize.

This task bears certain similarities to the candy-box task discussed earlier, in which children claim to have believed that there were pencils in the candy box all along even though they had actually at first believed that the box contained candy (Gopnik & Astington, 1988; Perner et al., 1987). But in this candy task, it is difficult to assess whether children's judgments

reflect something interesting about how they represent beliefs over time or whether the effects

are simply due to lapses in memory. In contrast, memory is unlikely to play an important role in

the beanbag task. Whereas young children in this task frequently mistook their intentions if their

missed throw happened to yield a prize, they did not, for the most part, answer incorrectly in

cases in which they missed their intended target and did not get a prize, suggesting that it is

really something about achieving a desired outcome that leads to errors in attributing intention.

We have now reviewed a number of studies suggesting that children do not successfully

incorporate a phenomenology of intentionality into their third-person intentionality judgments.

But there is a further question left unanswered concerning the nature of children's

phenomenology itself: Do children simply have trouble integrating this experience into their

intentionality judgments, or is their experience itself different from that of adults?

Little work has explored this question, though one study might be relevant. Metcalfe et al.

(2010) had 8- to 10-year-olds and adults played a computer game in which X's and O's fell from

the top of a screen. Participants were tasked with moving the cursor to touch the X's while

avoiding contact with the O's, and these shapes would disappear as soon as they were touched.

On some iterations of the game, however, "magic" was introduced into the game, which made

the X's disappear even when the cursor was close but not directly touching these shapes. In other

words, participants gained an undeserved advantage in the game whenever magic was in play.

After every 15-second block of this game, participants were asked how "in control" they felt

when playing the game. Whereas adults decreased their ratings of control considerably when

magic was introduced into the game, the children did not acknowledge any apparent loss of

control. While it's hard to draw a strong conclusion from children's failure to notice a

manipulation, it might be that this developmental difference exists because—in line with

Schult's (2002) findings—even older children might be more prone to *experience* a desired result (in this case, making the X's disappear) as if they intentionally produced it even when they did not.

In our lab, we have begun to explore questions about children's introspective access to their phenomenology. In a set of 40 trials, five circles are presented on a screen in random positions. Five- to 7-year-old participants are asked to choose one of these circles in their head as quickly as they can, and then after either half a second, a second, two seconds, or three seconds, one of these circles, which the computer selects randomly, turns red. The children are first asked whether they had time to make a choice before one of the circles turned red and then, if they say yes, whether the circle that turned red was the one that they chose in their head. If the children are accurately reporting what was taking place in their mind, they should answer "yes" on approximately 20 percent of the trials in which they indicate that they had time to make a guess before one of the circles turned red since there is a one in five probability that a given circle that was chosen will turn red. In contrast, if they are misrepresenting their mental activities, children may deviate from these chance levels. For example, if they are confusing the circle they actually chose with a desire they have to choose the circle that turns red—as the beanbag study (Schult, 2002) might suggest—we should expect the children to be statistically above chance levels at saying they chose the red circle.

Indeed, this is what we find. In particular, there is a strong age effect, with 5-year-olds claiming that they chose the red circle almost all of the time, 6-year-olds saying "yes" less than the 5-year-olds do but still well above chance, and 7-year-olds answering closest to chance levels.

Conclusion

In this chapter, we have explored two facets of children's developing understanding of choice and intention. We have seen that even from a young age, children appear to have a quite sophisticated ability to distinguish constrained from unconstrained actions and delineate various kinds of constraint. But we have seen as well that children differ from adults in certain deep ways, including, perhaps, having a more constrained notion of choice, in which immoral or unconventional choices cannot be done—they are impossible, they are magic. We have seen as well that children struggle to perform seemingly easy tasks that require them to introspect on their phenomenology in order to judge whether they tried to perform some behavior.

In light of these two pieces of evidence, it may be that the adult concept of choice is not primarily derived from first-person experience, but is instead the product of a third-person theory, and it is only later in development that consciousness begins to influence these folk judgments. Nevertheless, much more work is needed to clarify this relationship between phenomenology and third-person theorizing—perhaps explaining how the former becomes integrated into the latter and why an experience of choice is important to our survival at all.

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