Differentiating *Could* from *Should*: The Development of Modal Cognition

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Introduction

Young children have difficulty distinguishing events that violate physical laws (impossible events) from those that violate mere physical regularities (improbable events). They judge both to be "impossible" (e.g., Shtulman & Carey, 2007).

They also have difficulty distinguishing events that violate moral laws (immoral events) from events that violate mere social regularities (unconventional events). They judge both to be "wrong" (e.g., Tisak & Turiel, 1988).

We propose that this parallel is not a coincidence but rather is a general feature of children's modal cognition—that children first come to understand whether or not an event can occur without representing the particular constraints that preclude particular events from occurring.

Only later do they develop the ability to differentiate the reasons why such events cannot (or do not) occur, allowing them to distinguish between improbable and impossible events and between unconventional and immoral events.

To test this proposal, we asked children to make two types of modal judgments (judgments of possibility and judgments of permissibility) for five types of events (impossible, improbable, unconventional, immoral, and ordinary).

Our prediction was that young children would not only have difficulty differentiating law-violating events from regularity-violating events *within* a domain, but would also have difficulty differentiating events *across* domains, judging impossible and improbable events to be morally wrong and judging immoral and unconventional events to be impossible.

Method

Participants were presented with eight vignettes consisting of a problem followed by five types of resolutions: ordinary, impossible, improbable, unconventional, or immoral.

Participants in Study 1 judged whether each resolution was possible or permissible, and participants in Study 2 judged whether each required magic or required punishment.

Participants in Study 1 were 47 preschoolers (ages 3.5-5.8), 33 elementary schoolers (ages 6.4-10.5), and 101 adults; participants in Study 2 were 28 preschoolers (ages 3.5-5.9), 46 elementary schoolers (ages 6.0-10.1), and 78 adults.

Coding for Study 1:

0 = Could occur in real life	0 = Okay to do in real life
1 = Sorta impossible	1 = Sorta wrong
2 = Very impossible	2 = Very wrong

Coding for Study 2:

0 = No magic required	0 = No punishment required
1 = A little magic	1 = A little punishment
2 = A lot of magic	2 = A lot of punishment

Sample Vignette

This is Melissa. Melissa doesn't want to go to school because she doesn't want to leave her mother. She always misses her mother a lot when she goes to school.

Ordinary: Melissa and her mother agree to do something special after school and that makes Melissa feel happy.

Impossible: Melissa snaps her fingers and suddenly it's Saturday so she doesn't have to go to school.

Improbable: Melissa asks her mother to go to school with her, and her mother agrees and goes to all her classes.

Unconventional: Melissa decides to wear her pajamas to school because wearing pajamas make her feel happy.

Immoral: Melissa lies to her mother and tells her that school is closed today so that she doesn't have to go.

Study 1: Between Domains

Mean difference between possibility scores and permissibility scores for impossible events and immoral events by age.
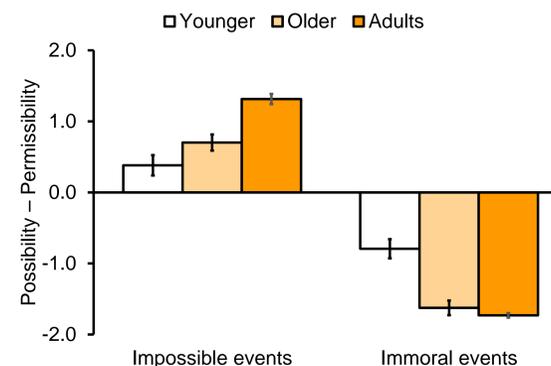
Study 2: Between Domains

Mean difference between magic scores and punishment scores for impossible events and immoral events by age.
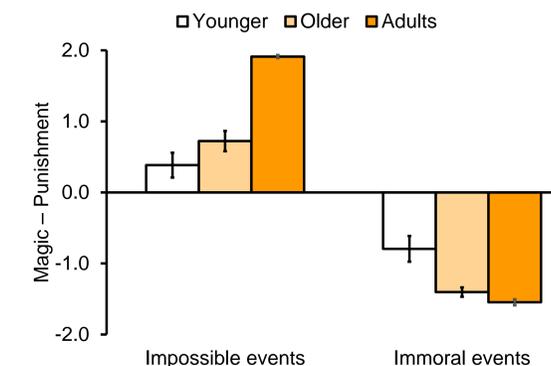
Study 1: Within Domains

Mean difference in **possibility scores** between the impossible events and all other events by age group.
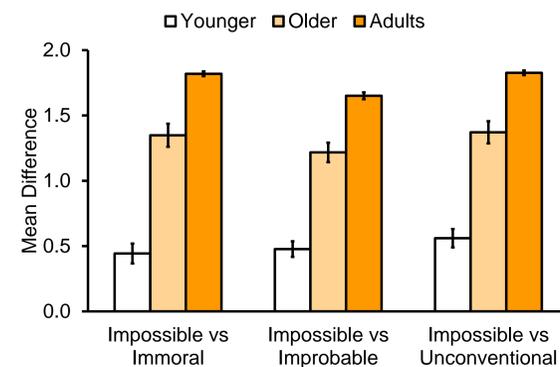
Mean difference in **permissibility scores** between the immoral events and all other events by age group.
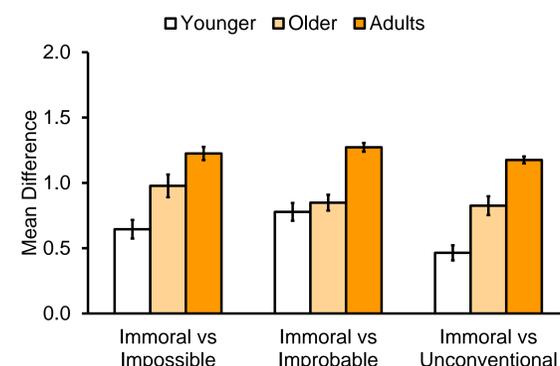
Study 2: Within Domains

Mean difference in **magic scores** between the impossible events and all other events by age group.
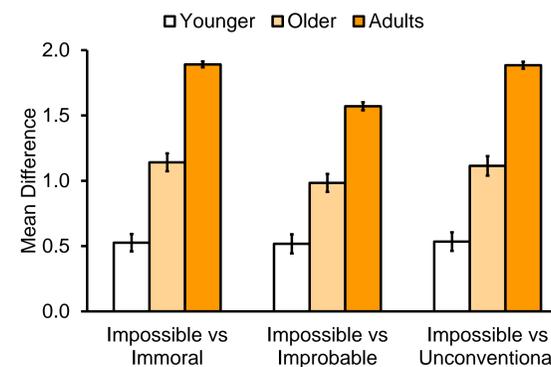
Mean difference in **punishment scores** between the immoral events and all other events by age group.
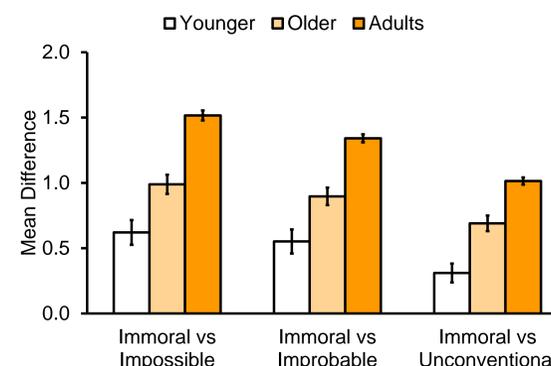
Discussion

The ability to differentiate what *could* occur from what *should* occur develops gradually over the first decade of life.

Young children know that it is wrong to violate moral laws and impossible to violate physical laws, but they also think it is impossible to violate moral laws and wrong to violate physical laws.

To differentiate events that cannot happen physically from those should not happen socially, children must learn to tag events not only as unexpected but as precluded by specific principles that impose specific constraints.

This picture of modal cognition aligns closely with the capacity posited by researchers working on high-level judgment in adults, including causal judgment, moral judgment, and judgments of freedom (see Phillips & Knobe, 2017).

In making such judgments, adults must represent alternative possibilities but tend not to represent possibilities that are improbable, impossible, unconventional, or immoral.

Future research should continue to explore the centrality of modal cognition to higher-order cognition and the developmental constraints on this relationship.

Acknowledgments