

Parent Beliefs and Child Explanations of the Origin of Species: A Developmental Mismatch?

**Kristin Szymanowski and Peg Hull Smith, University of Toledo,
E. Margaret Evans, University of Michigan**

**Society for Research in Child Development, Atlanta (April 2005)
Supported by the National Science Foundation**

Abstract

Children's explanations of the origin of species seem to follow a distinct developmental pattern from spontaneous generationist and/or creationist to evolutionist and/or creationist, over the course of the elementary school years. Moreover, children's explanations do not appear to reflect those of their religious community until early adolescence (Evans, 2000, 2001). This developmental pattern could be explained by a model of constructive interactionism. Specifically, it is proposed that young children intuitively generate naturalistic and intentional explanations, some of which parents encourage and others of which they inhibit. Eventually this pattern of interaction engenders a uniform belief system, either naturalistic (evolution) or intentional (creationist) (Evans, 2001). In the current study, we focus on the question of whether parental interests and their beliefs independently influence children's explanations of species origins and at what age this influence might be greatest. To address the criticism that children in earlier studies may have been responding to the agent (God) rather than the intentional action (made it), an intelligent design explanation (someone made it) replaced the creationist form (God made it) used earlier. Explanations of species origins were examined in 86 parent-child pairs from theistic evolutionist and Biblical literalist communities. The children were spread evenly over the 6- to 12-year age range. The developmental pattern found earlier was replicated. The intelligent design explanation appeared to be as compelling as the creationist explanation used in earlier research. In addition, the coherence of parental belief system and parent interests, particularly in religion, independently predicted child explanation, but only in the 10- to 12-year-olds; younger children's explanations were predicted by parent religious interests only.

Research Questions

- Are the age-related shifts in children's explanations of the origin of species, found in earlier studies, replicated when an intelligent design explanation (someone made it) replaces the creationist explanation (God made it) used earlier?
- Do parents from theistic evolutionist and Biblical literalist communities differ in the kinds of interests they encourage in their children?
- Is parental interest in children's religious, fossil, nature, and musical activities related to children's explanations of the origin of species?
- At what age do parent beliefs and parent interests independently influence children's explanations of the origin of species?

Methods

Participants

- Children and their parents from different faith traditions from Biblical literalism (God created each natural kind) to theistic evolution (evolution is part of God's plan)
- 86 parent-child pairs, with children ranging from 6- to 12-years
- 26, 6- to 7-year-olds, 26, 8- to 9-year-olds, 34, 10- to 12-year-olds and their parents

Procedure

Children and parents answered open- and closed-ended questions about the origin of different species and artifacts (only the closed-ended questions are reported). While the children were being interviewed in a university laboratory, parents completed a questionnaire that included demographic information.

Measures

- **Origins Measure.** All participants were asked to rate their level of agreement with three origin statements (1-4 scale):
 - *Intelligent Design*: Somebody or something made X and put it on earth. [Who?]
 - *Evolution*: X changed from a different kind of animal that used to live on earth
 - *Spontaneous Generation*: X came out of the ground [not reported]
 - X = 3 humans, 3 mammals, 3 frogs, 3 butterflies, [3 artifacts, not reported]
 - Results for all the animals were combined into one measure for evolution and one for intelligent design
 - Statements and stimuli were randomly ordered.
- **Consistency of Origins Beliefs (Evolution-to-Intelligent Design)** Analyses indicated that few participants endorsed evolution or intelligent design exclusively, most endorsed mixed beliefs. To capture the variety of mixed beliefs in a single variable, a composite variable was constructed (intelligent design scores – evolution scores), which assessed the degree to which participants were “evolutionist” or “creationist”.
- **Interests.** Parents were asked to rate the importance of 25 different child activities and interests (1-5 scale). The interests were combined into four main measures: Religion, Fossils, Nature, and Music Interests

Results

Evolution

Ten to 12-year-olds and adults were most likely to endorse evolutionary explanations for the origin of animals, the younger children rarely did so ($F = 5.0$; $p < .003$).

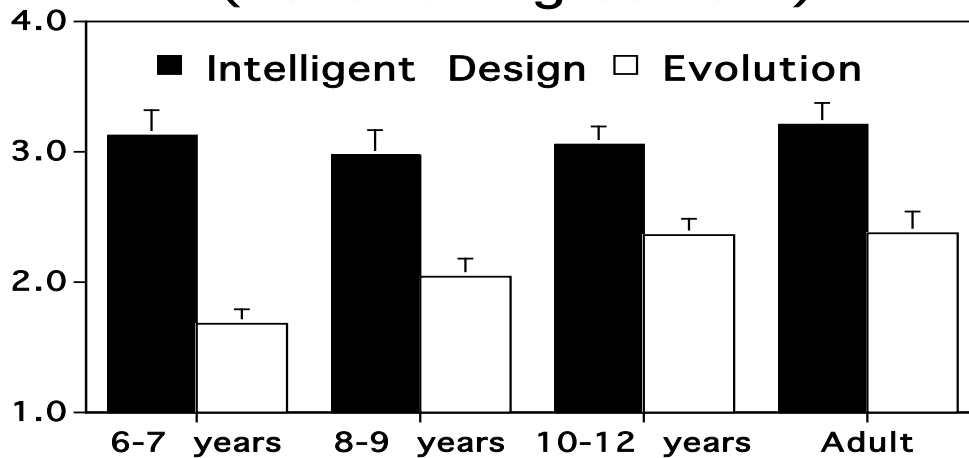
Intelligent Design

There were no significant age differences in the endorsement of intelligent design explanations for the origin of animals.

Evolution versus Intelligent Design

Intelligent design explanations were endorsed at higher levels than evolutionary explanations at all ages ($F = 56.3; p < .0001$). The 10- to 12-year-olds and adults did not differ in their pattern of responses, but both differed from the 6- to 7-year-olds ($F = 5.6; p < .002$)

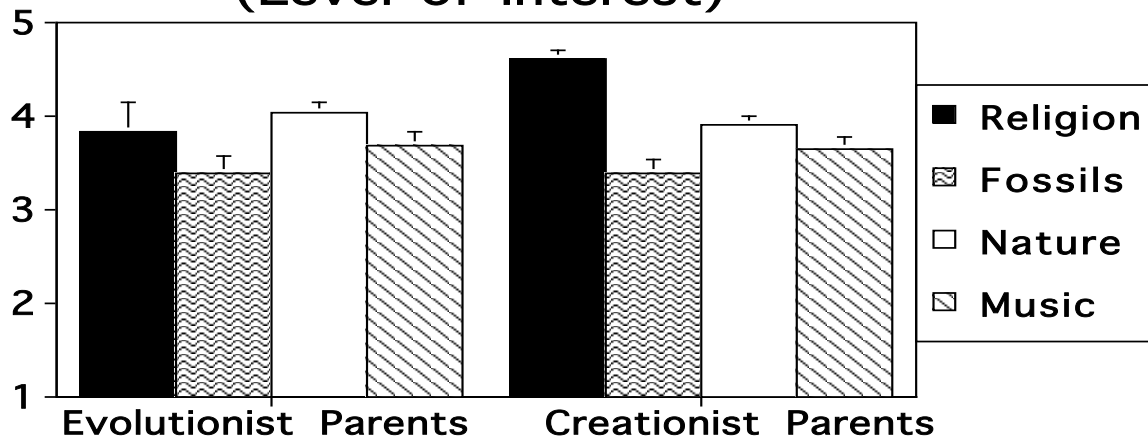
Explaining the Origin of Species Intelligent Design? Evolution? (Level of Agreement)



Interests

- Based on the measure of the consistency of origins beliefs (evolutionist to intelligent design), parents were divided into two groups: Those who were more “evolutionist” and those who were more “creationist”.
- Creationist parents were more likely than evolutionist parents to promote religious interests in their children ($F = 9.36; p < .004$). The two groups did not differ in their endorsement of the other interests: Fossils, Nature, Music.

Which Interests do you Encourage in Your Children? (Level of Interest)



Consistency of Origins Beliefs (Evolution to Intelligent Design) and Parent Interests

- Parent religious interest was positively related to the consistency of child origins beliefs in all age groups (r s from .43 to .51; p s < .03)
- The consistency of parent origins beliefs was significantly related to the consistency of child origins beliefs in the 10- to 12-year-olds only ($r = .39$, $p < .03$). (Mean scores on parent origins belief did not differ between the three age-groups.)
- For 10- to 12-year-olds, the consistency of parent origins beliefs and parent religious interest together explained 35% of the variance in the consistency of child origins beliefs ($R = .59$, $R^2 = .35$; $p < .002$), with religious interest contributing independent variance ($p < .005$).

Conclusions

- When asked to explain the origins of species it is not until 10- to 12-years of age that children are likely to endorse evolutionist and creationist explanations in a pattern that is consistent with that found in their adult community: Theistic evolutionist (evolution is God's plan) to Biblical literalist (God created each species). This pattern was also found in previous research in different Midwestern communities (Evans, 2000, 2001).
- Intelligent design is endorsed at higher levels than evolution by all age-groups. Support for evolution is found mostly in 10- to 12-year-olds and adults. Moreover, the intelligent design explanation (somebody made it) appears to be as compelling (if not more so) than the creationist explanation (God made it) used in earlier research.
- The consistency of parent beliefs regarding species origins predicted the consistency of child origins beliefs among 10- to 12-year-olds only.
- Parent interest in religion, however, positively predicted the consistency of child origins beliefs at all ages. Further, it was endorsed at higher levels by Biblical literalists than by theistic evolutionists.
- For 10- to 12-year-olds, the consistency of parent origins beliefs and parent religious interest together explained 35% of the variance in the consistency of child origins beliefs.
- The results support the position that intelligent design is likely to be compelling because it draws on intuitive intentional and teleological explanations of artifact origins, derived from a naïve psychology (Evans, 2000, 2001; Kelemen, 2004).
- These findings provide further evidence that a theory of mind makes religious cognition possible, and that parental promotion of religious interest in children accentuates children's intuitive tendency to construe the natural world as designed.

References

- Evans, E. M. (2000). The emergence of beliefs about the origins of species in school-age children. *Merrill-Palmer Quarterly*, 46(2), 221- 254.
- Evans, E. M. (2001). Cognitive and contextual factors in the emergence of diverse belief systems: Creation versus evolution. *Cognitive Psychology*, 42, 217-266.
- Kelemen, D. (2004). Are children intuitive theists? Reasoning about purpose and design in nature. *Psychological Science*, 15, 295-301.

Correspondence regarding this poster can be sent to: Kristin Szymanowski, Department of Psychology, The University of Toledo, 2801 W. Bancroft, Toledo, OH 43606; Email: krist506@aol.com; Phone: 419-530-2352