

THE ROLE OF COGNITIVE DEVELOPMENT IN PEDIATRIC MEDICAL DECISION-MAKING

Susan Zinner
School of Public and Environmental Affairs
Indiana University

Abstract

This article examines the limitations of decision-making skills of children and adolescents in a medical context imposed by cognitive immaturity. The author considers the work of Piaget and other theorists who have addressed when children do and do not possess the requisite maturity to make their own decisions. Finally, the author proposes that providers individually assess the cognitive abilities of children in an attempt to ascertain when the child is able to make his or her own decision, regardless of chronological age.

Introduction

Western medicine, which has traditionally encouraged autonomous decision-making by patients, faces a special challenge when the patient is a minor. The fields of law, medicine and cognitive development may provide guidance in determining when a child is an appropriate decision-maker and when parental involvement is mandated.

The common law has traditionally recognized the Rule of Sevens, which finds that "(1) under seven years of age there is no capacity; (2) between 7 and 14 years of age there is a rebuttable presumption of no capacity; and (3) between 14 and 21 there is a rebuttable presumption of capacity" (*Cardwell v. Bechtol*, 724 S.W.2d 739 (Tenn. 1987, cited in Rozovsky, 1990, p. 264). The law has therefore given its tacit approval of the concept of varying degrees of emotional and mental maturity to exercise judgment. Further, many states (such as Illinois) allow minors as young as 12 or 14 to receive treatment for outpatient mental health treatment, drug or alcohol abuse or for treatment of STDs without parental permission.

The American Academy of Pediatrics' (AAP) Committee on Bioethics developed a policy in 1995 in which they noted that "pediatricians should not necessarily treat children as rational, autonomous decision makers, but they should give serious consideration to each patient's developing capacities for participating in decision-making, including rationality and autonomy" (p. 315). The AAP Committee noted that medical staff should defer treatment to address patient concerns if the minor patient refuses to assent. Further, refusal to assent should "carry considerable weight when the proposed intervention is not essential to his or her welfare and/or can be deferred without substantial risk"(p. 316). Finally, they note "coercion in diagnosis or treatment is a last resort" (Shield & Baum, cited in AAP Committee Report, 1995, p. 315).

Research in Cognitive Development

A classic study (1983) conducted by Lois Weithorn found that subjects aged 9, 14, 18 and 21 presented with complex scenarios in which they had to make medical treatment decisions for others all used similar reasoning processes. In three of the four scenarios, the nine-year-olds did not differ significantly from adults in the options they chose. Interestingly, the single divergence from the other three groups occurred when the nine-year-olds indicated a greater preference for hospitalization than outpatient treatment, evidence of "the notion that "more treatment" is necessarily "better treatment"" (Weithorn, 1983). Further, despite evidence that the nine-year-olds exhibited less understanding about the information provided in the scenarios, they did display "an impressive level of understanding" and used important factors when weighing the different treatment options (Weithorn, 1983). While Weithorn notes that children and young adolescents may be inappropriately motivated by the desire to please others and may be easily influenced by parents, providers and significant others, "minors may be more capable than we expect" (Weithorn, 1983).

It is this knowledge that a minor patient may be capable of the requisite critical thinking that has justified granting them limited autonomy in some cases. Autonomy, which many ethicists consider to be the leading value in medical decision-making in western-influenced cultures, is routinely accorded to the vast majority of adult patients in this country. The same is not true for minors, of course. Therefore, it becomes important to consider the conditions under which autonomy may operate. Faden and Beauchamp assert that intentionality, understanding and noncontrol (i.e., independence) are mandatory (1986, p. 242-61). If a provider finds that the child possesses the cognitive maturity to make his

or her own decisions, then these conditions must also exist for the child to make a fully-autonomous decision.

Another study found that children aged seven to nine did not exhibit the comprehension to allow them to participate in a nutrition study. Researchers found that “all children under nine years of age either could not in any way describe the purpose, or they believed the study was in some way related to checking their own health” (Ondrusek *et al.*, 1998, p. 161).

However, some research confirms that some adults also lack the mental capacity to make a well-informed medical decision. For instance, eight percent of adults in an experiment designed to explore the impact of beta-blocker therapy on MI survivors, appeared to believe that they were receiving therapy instead of participating in a research project (Howard *et al.*, 1981, p. 290). At least one writer, however, notes a crucial distinction between errors made by children and those made by adults. “Adults systematically err in judgment. But many such errors are correctable and explainable to adults because the basic capacity to see the error as error is present in an adult to a higher degree than it is in the adolescent.” (Schoeman, 1982, p. 2).

In a 1979 study designed to consider whether adults tend to use formal operational abilities on practical tasks, two researchers interviewed 50 women in a supermarket and asked them to judge which of two sizes of the same product a better buy was. One was a smaller bottle for a specific amount (the better buy in this case) and one was the same product in a larger, more expensive bottle. The majority of the women subjects did not exhibit formal operational reasoning skills, leading some writers to suggest that this higher level of thinking may not be as typical as Piaget would have us believe (Bjorklund, 1995, p. 87)

Since not all adults reach Piaget’s formal operations stage, one could question the practice of generally requiring parents, regardless of ability, to make decisions for their children while deliberately excluding competent adolescents from making decisions for themselves (Broome & Stieglitz, 1992, p.151). In fact, thirteen-year-olds routinely exercise their judgment skills as they make decisions about sexual activity or whether to use drugs (Broome & Stieglitz, 1992, p. 151-52).

Critical Thinking Affects the Ability to Form Judgments

Now consider what psychology can teach us about two specific elements of children’s decision-making skills, critical thinking and judgment. Critical thinking ordinarily involves

- “1. A knowledge of the field or fields in which the thinking is being done,
2. A general attitude of questioning and suspended judgment; a habit of examining before accepting,
3. Some application of methods of logical analysis or scientific inquiry,
4. Taking action in light of this analysis or reasoning.” (Russell, 1945, p. 82,
cited in *Children’s Thinking* by David Russell, 1956, p. 283).

This involves phases such as problem solving, syllogistic reasoning and propaganda analysis. Children generally need help in developing their critical thinking skills. Some studies (generally older studies as there appears to be less interest now in these sorts of issues) have shown that critical-thinking skills can be improved after instruction. One study indicated that within one semester “there was a definite improvement in the thinking abilities of third-grade children as a result of classroom experiences emphasizing problem solving, planning, criticism and evaluation” (Grener & Raths, 1945, cited in Russell, 1956, p. 292). One researcher found that “intelligent use of data can be tested at grades five and six and that, after three months of instruction, children gain significantly on tests of relevancy and adequacy of data. More specifically, they show gains in detecting bias in a source and in distinguishing among hearsay, single observation and other observations” (Arnold, 1938, cited in Russell, 1956, p. 292).

Keep in mind that critical thinking is most often viewed not as a single ability but as a collection of related abilities.

“One child may be good at locating related objective evidence but not at determining its relevancy or irrelevancy. Another child may be good at comparing two conflicting statements but not at arriving at some conclusion about the opposing points of view. Children may differ in the ease with which they make theoretical analyses and their ability to carry them over into practice. Knowledge and related experiences as background for critical thinking [are often needed]. Consequently, critical thinking is not likely to be measured by tests of intelligence or of problem solving, or by single tests of thinking abilities” (Russell, 1956, p. 302).

Critical thinking necessarily involves the judgment component. However, “in certain types of judgments, and therefore in critical thinking about certain issues, emotional factors may influence decisions. The problem in critical thinking, then, may be not so much to eliminate emotional elements as to give them a suitable place in the total process” (Russell, 1956, p. 286). Two researchers found that the judgment abilities of children tend to include a central tendency, may involve the use of irrelevant information, may focus on general impressions reached by the child and that correct judgments usually take a longer time. (Russell, 1956, p. 286).

Knowledge of the field in which the critical thinking is to be done is necessary if children are to use judgment, for judgment implies comparison to some norm or standard (Russell, 1956, p. 379). The exercise of judgment and critical thinking skills includes the ability to focus on key words and phrases, asking for and analyzing evidence, recognizing and evaluating implicit and explicit assumptions, and evaluating and re-examination of the argument (Russell, 1956, p. 284). While this may appear to be unrealistic, all adults and many children routinely exercise these skills in many ordinary decisions.

Causes for errors in judgment and critical thinking include the following:

1. Incorrect information, (e.g., parents give incorrect information to child or child gets information from an inaccurate source—another child or an out-of-date textbook);
2. Limited experience, (a lack of critical attitude, resulting from limited experience and undeveloped intelligence, the child may associate completely wrong meanings with what s/he observes without realizing that the association is incorrect. For example, lab experiments indicate that children inevitably report that a pound of lead weighs more than a pound of cotton since children generally associate the concepts of size and weight.)
3. Gullibility
4. Faulty reasoning. (Young children don't have the critical thinking skills to enable them to attack a problem in a critical manner. They also have too little information on which to build accurate concepts about objects or

conditions not present at the time. A lack of training or opportunity to use

reasoning skills will render a child less able to make an informed decision.)

5. Vivid imagination. (Imagination of ten outstrips reasoning. Imaginary ideas

from dreams or daydreams may seem so realistic that they are incorporated

into his or her developing notions of concepts.)

6. Unrealistic thinking. (A child may be confused about fantastical stories and

s/he comes to believe that they will happen in his/her own life.)

7. Misunderstanding of words. (Even though a child's comprehension vocabulary at EVERY age is larger than their use vocabulary, there are always gaps as well as errors in his understanding of words.) (Hurlock, 1972, p. 350-51).

In a study in England of children in the foster care system, children said that adults do not listen to them and they were often ignored, interrupted or completely left out of conversations (and not allowed to exercise judgment in decisions affecting their lives in very real ways). When asked to explain this adult behavior, they said that "they think you are too young to express yourself," "you are a child so you don't know nothing," "you are lying," because adults "don't understand the sorts of things that worry children," "don't care," "think they have got more rights," or "think they know better than us and that they can just rule us" (Thomas, 2002, p. 143). "Some children felt that they were able to lead decision-making, at least in certain areas; for others, it was a shared process, while others thought they had little say or that what they said made no difference" (Thomas, 2002, p. 144).

So how can we ensure that children involved in medical decision making are exercising the appropriate reasoning skills? John Flavell has suggested that the presence of these factors indicate this skill:

1. Articulation of a problem and its solution. (As the child matures and

becomes more familiar with a broader array of problems, s/he is able

to specify the solution sought in an increasingly larger number of

situations.)

2. Awareness of the cognitive processes necessary to solve a problem.

(This involves awareness of the factual knowledge and abilities necessary to solve a problem and the ability to adjust cognitive effort to match the difficulty of the problem. For instance, children in kindergarten, third- and sixth-grade were asked to pick words that they believed would be easy to remember. The older, but not the younger, children suggested words that are easy to recall, like rhymes, antonyms or words belonging to the same category e.g., kinds of dogs.)

Also, younger children fail to understand that an investment of attention will aid memory. Four-year-olds who were told that they had to remember a series of photographs for a week did not prolong the amount of time they spent studying the photos, but the eight-year-olds did since they understood that looking at the pictures longer was necessary to hold the information in memory for a period as long as a week.)

3. Activation of cognitive rules and strategies. (If the child is aware of the cognitive units and processes necessary to solve a problem, s/he should activate them. Adults cannot hold more than seven related items of information in working memory without the opportunity to rehearse or organize that information. If a series has a particular pattern, older

children detect the pattern and remember a longer string (of numbers, e.g.) than younger children who don't detect the pattern.)

4. Increased flexibility. (The ability to discard inefficient solutions that are not working and to search systematically for better alternatives increases with age. A three-year-old trying unsuccessfully to fit two pieces of a puzzle that do not belong together will persist and eventually stop. An eight-year-old is better able to recognize a flawed hypothesis (the pieces fit) and will begin to search for a better solution).
5. Control of distraction and anxiety. (This involves keeping attention focused on the problem, resisting distraction and controlling the anxiety that occurs when a problem is difficult.)
6. Monitoring the solution process. (As the child matures, s/he more consistently relates his/her ongoing performance to his/her idea of the correct solution and makes appropriate changes if s/he decides that his or her performance is too slow or unlikely to be successful).
7. Faith in thought. (When one is having difficulty solving a problem, thought may help generate the correct solution. If an initial solution does not work, young children stop trying (perhaps they do not appreciate that mental work can be useful.)
8. Desire for the best solution (The young child seems to lack a generalized standard for the best solution to a variety of problems. A five-year-old will offer an hypothesis quickly because he does not regard an error as a serious violation of a standard of performance. By contrast, ten-year-olds have a general desire to perform with the greatest possible elegance on many tasks.

Cognitive and emotional maturity levels vary. One child may be perfectly capable of making an informed decision that would leave an older child perplexed. Instead of imposing an arbitrary age-based standard to ascertain emotional and cognitive maturity, a sliding scale of competence demonstrates respect for the developing reasoning abilities of each child. This standard acknowledges the value of patient autonomy even when the patient is a child. Failure to recognize this concept endangers patient autonomy in all doctor-patient relationships.

Implementing such an approach accords a greater respect to those minors capable of exercising autonomy. It also, however, places a greater burden on the provider to ascertain the emotional and cognitive maturity levels of minors. Providers may be understandably reluctant to embrace such a concept, yet failure to do so could result in real harm to pediatric patients. At a minimum, a brief discussion of these issues should be sufficient for a provider to ascertain maturity levels. Documentation of such a discussion should reduce malpractice concerns.

Another issue that may arise involves those patients who, by virtue of their immaturity, are deemed incompetent to make decisions while their counterparts, or even those who are younger, are found competent. Again, sophisticated thinking occurs at different rates in individuals and, as indicated previously, these skills can be developed. The pediatric patient who wishes to develop these skills should be encouraged to do so by a sympathetic provider.

This approach challenges our notions about when children may make their own decisions. Cognitive science indicates that this may occur earlier than parents, providers or even the law has traditionally acknowledged. Respect for the fledgling skills of adolescents and children demands that these developing skills be encouraged.

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Biographical Sketch

Susan Zinner, MSJ, MHA, JD, is an Assistant Professor in the School of Public and Environmental Affairs at Indiana University (Northwest Campus), where she has taught health concentration undergraduate and graduate students since 1998. Prior to that, she spent five years as a hospital administrator at Cook County Hospital in Chicago. She has a master's degree in journalism from Northwestern University, a master's degree in health administration from Washington University (St. Louis, MO) and a law degree from Washington University (St. Louis, MO). Address: School of Public and Environmental Affairs, Indiana University (Northwest), 3400 Broadway, Gary, IN 46408.