BEHAVIOR

Kramer and Kramer

Child custody decisions have historically been a matter of legal custom. The overwhelming twentieth century preference for maternal custody often overshadows the fact that, during the Victorian era, children customarily went to the father following divorce. Only recently have the courts shown an inclination to consider a third option: joint custody. Although joint custody is still awarded in only a small minority of cases nationwide, at least two states have declared it the arrangement of choice; and if the courts have yet to embrace the idea enthusiastically, it may be at least in part because social scientists continue to debate the effects of different custody arrangements on children.

New evidence drawn from a two-year study of more than 400 custody cases in Los Angeles suggests that in at least one sense the sharing of custody may be psychologically more healthy for children of divorce. Writing in the January issue of THE AMERICAN JOURNAL OF PSYCHIATRY, Frederic W. Ilfeld Jr. and Holly Zingale Ilfeld of the University of California at Davis School of Medicine and John R. Alexander of the West District of the California Superior Court for Los Angeles County report that parents sharing custody returned to court with custody disputes only half as much as parents involved in exclusive custody arrangements. This indicates, the authors say, that joint custody leads to less parental conflict and less distress for children. Even when parents do not initially agree to share custody, such an arrangement seems to work when ordered by the court, the researchers found. Parents involved in such disputed custody cases were embroiled in subsequent court battles no more often than were parents with exclusive custody, indicating that it is the custody arrangement itself, rather than the divorcing parents' personal relationship, that diminishes conflict over such issues as finances and visitation rights.

Rhyme or reason?

Because almost every adult is able to recall the nursery rhymes learned in childhood, and often with amazing accuracy, it has been assumed by social scientists and educators that phonetic rhyme enhances learning in children. Rhymes are commonly used in the classroom and in television programing as an educational strategy — a strategy that, recent research indicates, merits reconsideration.

In a series of experiments reported in the January DEVELOPMENTAL PSYCHOLOGY, researchers Donald S. Hayes, Bruce E. Chemelski and Melvin Palmer from the University of Maine at Orono found that rhymes not only do not enhance but actually seem to retard preschoolers' ability to retain information. Compared to children who listened to prose narratives, children who heard rhymes embodying the identical content consistently remembered less of the story content, suggesting that rhymes may actually distract children's attention from the information in a passage.

The traditional argument for teaching with rhyme has been that children enjoy rhyme more than they do prose and therefore pay more attention to rhymes. Although the researchers found that preschool children do indeed like rhymes more than prose, what the children attend to in rhymes is the similarity in sound rather than the semantic content. Though they may appear to a teacher to be more attentive, the children may be going through a more superficial form of mental processing.

It is not surprising that adult common sense says to teach with rhymes. When the researchers conducted the same experiment on college students, they discovered, in contrast, that rhyme did significantly enhance learning. Adults, they suggest, have learned to use rhyme as a mnemonic device — a tactic that young children have apparently not yet mastered.

CHEMISTRY

Healing by the skin of one's seeds

The Massachusetts researchers who developed an artificial skin for burn victims (SN: 1/3/81, p. 4; 5/2/81, p. 285) recently reported two new developments in their work. First, more burned patients have been treated with the skin — which is composed of the polysaccharide GAG from shark cartilage, the fiber collagen from cowhide and silicone plastic — bringing the total to 30. Second, a new version of that skin, called Stage 2 membrane, has been developed and tested on guinea pigs. Described in the Jan. 8 SCIENCE by I.V. Yannas and colleagues of Massachusetts Institute of Technology in Cambridge and J.F. Burke of Massachusetts General Hospital in Boston, Stage 2 skin differs from the first version in that it will use a few cells from the patient to "seed" growth of a new epidermis.

Both the first, or Stage 1, and Stage 2 skins are composed of two layers: a silicone top layer and a protein fiber bottom layer. When Stage 1 skin is applied to a patient, cells at the base of the wound regenerate a new underlying dermis that replaces the fiber layer. However, the epidermis does not regenerate, so surgeons later must graft epidermal tissue from elsewhere on the patient's body onto the wound. This is the step that may be eliminated by the Stage 2 membrane.

In preparing a test version of this newer artificial skin, Yannas and colleagues removed a few basal cells — which are located below the skin's epidermal and dermal layers — from the skin of a guinea pig. These cells then were used to seed the collagen-GAG membrane. In one procedure, the basal cells were inoculated into the membrane with a hypodermic syringe; in another method, the cells were driven into the bilayer by mild centrifugation. In either case, when the Stage 2 membrane was applied to the animal, the basal cells formed sheets of epidermis. "New and apparently functional skin (was) generated in less than 4 weeks," Yannas and co-workers report. Moreover, the researchers were able to graft Stage 2 skin onto guinea pigs less than 4 hours after harvesting the basal cells from the animals. "Promptness of wound closure following injury, an essential component of our design, is thereby achieved," Yannas and associates report.

A swift closure of burn wounds is necessary to prevent the massive infection that threatens the life of a burn victim. Prompt closure cannot be achieved, say Yannas and colleagues, when using the lab-grown skin methods reported last year by two independent research groups (SN: 3/14/81, p. 167). In both methods, scientists take skin cells from the intended recipient, grow them in the laboratory to make a skin-like tissue and then graft the tissue onto the recipient. These two techniques, report Yannas and co-workers, require two to five weeks of skin culturing before the tissue can be grafted.

Other methods of treating burn victims also have drawbacks, the researchers report. While the patient's own skin still is the best covering, it often is in short supply. Likewise, homografts — obtained from cadavers — also are in short supply. Finally, heterografts, obtained from animals such as pigs, usually must be removed between the third and ninth day following application. "Stage 2 grafts," Yannas concludes, "provide a means for closing the largest full-thickness skin wounds without delay and without requiring autologous epidermal grafts."

IBM boots machines' TNF-bearing parts

Last month, IBM Corp. officials began replacing in the Copiers I and II, laser printer 3800 and tape-to-document converter 3896 machine parts that use the printing chemical trinitrofluorenone (TNF). In 1980, IBM had reported to the U.S. Environmental Protection Agency that TNF causes gene mutations in bacterial and mammalian cell assays (SN: 11/8/80, p. 294). Based on those assays, TNF is a suspect carcinogen in living organisms.