Many faces of mediation

Mediated learning and cognitive modifiability by David Tzuriel. New York: Springer, 2021, xx + 541 pp., hardcover.

David Tzuriel, professor emeritus of the Bar Ilan University in Israel dedicated several decades of his life to exploration of the effects of human mediation on children's learning and problem solving. His previous books included *Interactive Assessment* (Haywood & Tzuriel, 1993) and *Dynamic Assessment of Young Children* (Tzuriel, 2001). The present volume can be viewed from two different perspectives. The first is the perspective of Tzuriel's own research in the area of educational psychology including assessment, intervention, and the interaction between children with their teachers, parents, and siblings. The second perspective is wider and allows us to see the current status of the field united by the same theoretical basis – the concept of mediated learning and cognitive modifiability that originated in the work of Reuven Feuerstein (1921-2014). The present reviewer takes the second perspective thus allowing himself not only to "review" the book in a narrow sense of this word but also to pose some relevant questions regarding the mediated learning theory in general.

Feuerstein et al (1979; 1980) should be credited with advancing several concepts and applied methods that serve as a theoretical framework of Tzuriel's book. Two of the most prominent of them are the notions of the mediated learning experience (MLE) and cognitive modifiability. Cognition is defined in this theory as dynamic and intelligence as modifiable. Cognitive abilities of a person, whatever their current level, are viewed as capable of undergoing radical changes. These changes can be structural in a sense of becoming permanent, self-perpetuating, and systemic, i.e. starting with one cognitive area and spreading to others.

MLE is defined as a quality of interaction between a child, a task, and an adult who mediates the child's experience of tackling the task. Mediating adults select, emphasize, elaborate and interpret the tasks to children and regulate children's handling of the task. MLE is contrasted with direct learning when children approach the task independently or when adults' contribution is informational rather than mediational. Several criteria of mediation were

elaborated in the MLE theory, the most important of them are Intentionality, Reciprocity, Transcendence, and Mediation of Meaning. Only when all of them are present the situation is defined as leading to MLE. The lack of sufficient type or amount of MLE is proposed as a possible cause of the children's future learning difficulties. On the other hand, intensive mediation even at an older age is perceived as an effective remediation strategy. The concepts of cognitive modifiability and MLE served as a basis for developing applied programs of dynamic cognitive assessment and cognitive intervention (Feuerstein et al,1979; 1980).

One of the key innovations brought about by Tzuriel is related to the broadening of the range of participants involved in mediated interactions. In Feuerstein's theory mediation has been defined as originating with adults – parents and teachers. Of course, adult mediators were expected to be sensitive to children's responses (the MLE criterion of Reciprocity) but the initiative was always in the hands of adults. Moreover, children's learning difficulties were associated with the insufficient amount or poor quality of mediation provided by adult mediators. Tzuriel went further and explored the possible impact of mediation provided by children to their siblings and by older children to their younger peers. He also broadened the range of adult mediators and studied the mediated interactions of not only parents but also grandparents.

One of the probably more interesting questions is the possible reciprocal impact of mediated interaction on older children who acted as mediators for younger children (Chapters 11 and 12). Third-grade children (age 9-10) were trained to be "mediating teachers" of the first-grade children. The training included: 1) Learning the basic MLE principles adapted for young children, (2) Watching and discussing a didactic film that introduced the MLE principles, and (3) Practicing the MLE principles with peers by using multimedia programs and conventional learning materials. The quality of their mediation was evaluated with the help of the *Observation of Mediated Interactions* scale. This scale has been previously used in many MLE studies. The mothers of "children-mediators" were also observed while mediating to other children. Thus, it was possible to compare the quality of mediation given by adults who received no MLE training and children who did receive MLE training. In addition, a comparison

group of the third-grade children was given a task to teach their first-grade peers but without receiving MLE-based training.

As expected children who received peer-mediation training demonstrated higher levels of mediation than children in the comparison group. An additional and more interesting result was that children who received peer-mediation training showed higher levels of mediation than their mothers, while in the comparison group the result was opposite – mothers showed better mediation than their children. In other words, adults don't have an inherent advantage over children in what concerns their mediational capacity. Finally, children who received peer-mediated training demonstrated higher cognitive modifiability as evaluated by dynamic cognitive tests. This indicates that the enhancement of one's cognitive modifiability can be achieved not only by receiving mediation not also by providing mediation to others.

A somewhat similar line of research was developed by Tzuriel by comparing the level of spontaneous mediation of parents and siblings in the same family (Chapter 10). Unlike the studies reviewed above in this case neither parents nor older siblings received any MLE training. Families participating in the study had children with typical development and children with intellectual disabilities. The first research question was regarding the prevalence of different criteria of MLE in the mediated interactions between older and younger siblings. It turned out that older siblings demonstrated high sensitivity regarding the abilities of their younger siblings – they used significantly more mediation with their siblings who had intellectual disabilities relative to children with typical development. This finding is particularly interesting when compared to the level of mediation provided by mothers. Mothers showed almost the same level of mediation to children with intellectual disabilities and children with typical development. Moreover, in some of the MLE criteria such as "Mediation of Meaning" and "Feeling of Competence" the effectiveness of mediation of siblings to children with intellectual disabilities was three times higher than that of mothers. Of course, such findings should be further replicated, but they tell us a lot about the level of mediational sensitivity of siblings.

Another interesting dimension of the mediation in the families explored by Tzuriel was the comparison of mediation provided by mothers and grandmothers (Chapter 14). Mother-child and grandmother-child dyads were observed during the free play and structured activity

situations. The type and quality of mediation were evaluated with the help of the *Observation of Mediated Interactions* scale mentioned earlier in this review. Significant differences were observed in such criteria of mediation as Intentionality/Reciprocity, Mediation of Meaning, and Mediation of Transcendence. In all three of these categories, grandmothers provided more mediation than mothers. In what concerns the Feeling of Competence, mothers and grandmothers were on the same level. The only MLE category in which mothers' mediation was stronger was Regulation of Behavior. From these results, one may conclude that mothers perceive themselves as responsible for children's "proper behavior" and feeling of competence, while grandmothers allow themselves to focus more on connecting the here and now situation to other events (Transcendence) or providing the reasons for actions (Mediation of Meaning). At the same time, it should be taken into account that in the absolute terms the only criterion of mediation that was displayed strongly was Intentionality/Reciprocity. For example, grandmothers' Intentionality/Reciprocity score was 23.29 (SD 10.14), while their Transcendence score was only 7.44 (SD 5.55) and Mediation of Meaning score 2.33 (SD 2.28). In other words, it was apparently important for both mothers and grandmothers to demonstrate their positive intentions and sensitivity to children's reactions, but they showed much less attention to such cognitive supports as transcendence or meaning.

The second area in which Tzuriel can be credited with significant innovation is the so-called dynamic assessment. The idea of dynamic assessment, i.e. the assessment that incorporates a learning phase into the assessment procedure is not new. Its theoretical origins can be traced back to Vygotsky's concept of the Zone of Proximal Development and its practical implementation to the dynamic assessment battery developed by Feuerstein in the 1960s (see Kozulin, 2014). The contribution of Tzuriel in this area is mainly in significantly broadening the range of tests that can be used for dynamic assessment, especially with pre-school children. While a significant part of Feuerstein's battery was based on the dynamic versions of such typical intelligence tests as Rey-Osterreich Complex Figure and Raven's Progressive Matrices, Tzuriel created new tests particularly attuned to the needs of younger children. Chapters 6,7, and 8 of his book describe the whole range of these tests focusing on such cognitive processes as analogical reasoning, inferential reasoning, seriation, working memory, and metaphorical reasoning.

As an example, let us consider Tzuriel's study of inferential reasoning in children from different socio-economic status (SES) groups. The assessment materials included four sets of problems for pre-teaching, teaching, post-teaching, and transfer phases. The problems included pictures of familiar objects such as table, hat, carrot, car, etc., and pictures of houses with roofs of different colors. In the beginning, children's familiarity with the depicted objects was established. After that, children were shown the task that had three rows; each row had pictures of the above-mentioned objects on the left and houses with different colored roofs on the right. Children were asked to decide in which one of the houses can be each one of the objects (see Fig.1). The correct solution was based on a systematic exploration of all elements of the problem, comparison of the rows (objects and houses), integration of several sources of information, and finally inferential reasoning.

For example, in the third row, there are two objects, a rectangle and a carrot, and only two "open" houses (with red and black roofs). Let us assume that the rectangle belongs to the house with a black roof. But in the second row, we have a rectangle and a table, and two open houses - with blue and red roofs, while the house with a black roof is closed. So, the rectangle cannot be in the house with black roof and should be in the house with a red roof. But if it is in the house with a red roof, then the carrot should be in the house with a black roof. Let us look at the first row that has three open houses and four objects including the rectangle, the carrot, the table, and the hat. This information confirms that the rectangle should be in the house with a red roof, carrot in the house of the black roof, and a table in the house with a blue roof. The hat has no place in these houses. Each phase of the assessment included 12 problems of increased difficulty and 10 problems in the transfer phase. The transfer problems were based on "negative" information, for example, "carrot, car, and circle cannot be in houses with blue and red roofs.

Two groups of young children from the low- and high-SES families were tested using the inferential reasoning assessment instrument described above. While at the pre-teaching phase the high-SES children outperformed their low-SES peers, the post-teaching phase results demonstrated that the pre to post-change was significantly greater in the low-SES group. Moreover, the difference was more pronounced in the tasks of the higher complexity level. In other words, dynamic assessment of inferential reasoning confirmed the essential difference between children's spontaneous problem-solving ability and their learning potential. While children from the high-SES group apparently had more problem-solving skills that allowed them to show better results at the pre-teaching phase, some of the low-SES children demonstrated superior learning potential that proved itself in significant pre- to post-teaching gains.

These results are emblematic of Tzuriel's dynamic assessment research with different populations of students: new immigrant children from Ethiopia, children with learning disabilities, developmental delay, intellectual disability, ADHD, and language deficits. In practically all of these populations, dynamic assessment procedures were capable of identifying a significant gap between children's performance with static tests and their learning potential revealed by the dynamic assessment. In this respect, Tzuriel's research broadened the scope of cognitive processes and the type of learners' populations that can benefit from the dynamic assessment.

Now it is time to review the limitations of this book. Some of the limitations are technical but nevertheless, they also impact on the readers' understanding of the material. Firstly, in this volume of more than 500 pages, there is no index! It is true that the table of contents is very detailed and is 8 pages long, but still, this is not a substitute for a proper index. The second technical problem that might be problematic for some reader stems from the author's decision to place bibliography after each one of the chapters rather than at the end of the volume as it is usually done. As a result, there is considerable repetition of the same sources that appear after each chapter. A more fundamental question is about the "genre" of the book. On the one hand, because each chapter contains some discussion about relevant mediated learning and dynamic assessment studies conducted by other authors, the reader expects this book to present the state of art in this field as a whole. On the other hand, some sections of the book look like a sequence of reprints of the Tzuriel's previously published articles. This "reprinting" tendency also affects the composition of some chapters. For example, Chapter 7 "Dynamic assessment of culturally different children and children with special needs" contains Tzuriel's research with populations as different as university students from immigrant families on the one hand and preschool children with intellectual disability on the other. There is no logic in placing these studies in the same chapter and there is a feeling that they appeared in the same chapter simply because they author wanted to "reprint" all his previous papers.

These limitations notwithstanding the book is undoubtedly valuable to everyone who would like to inquire into the state of art in the field of mediated learning and dynamic assessment and particularly to see what kind of empirical procedures are available and have been implemented.

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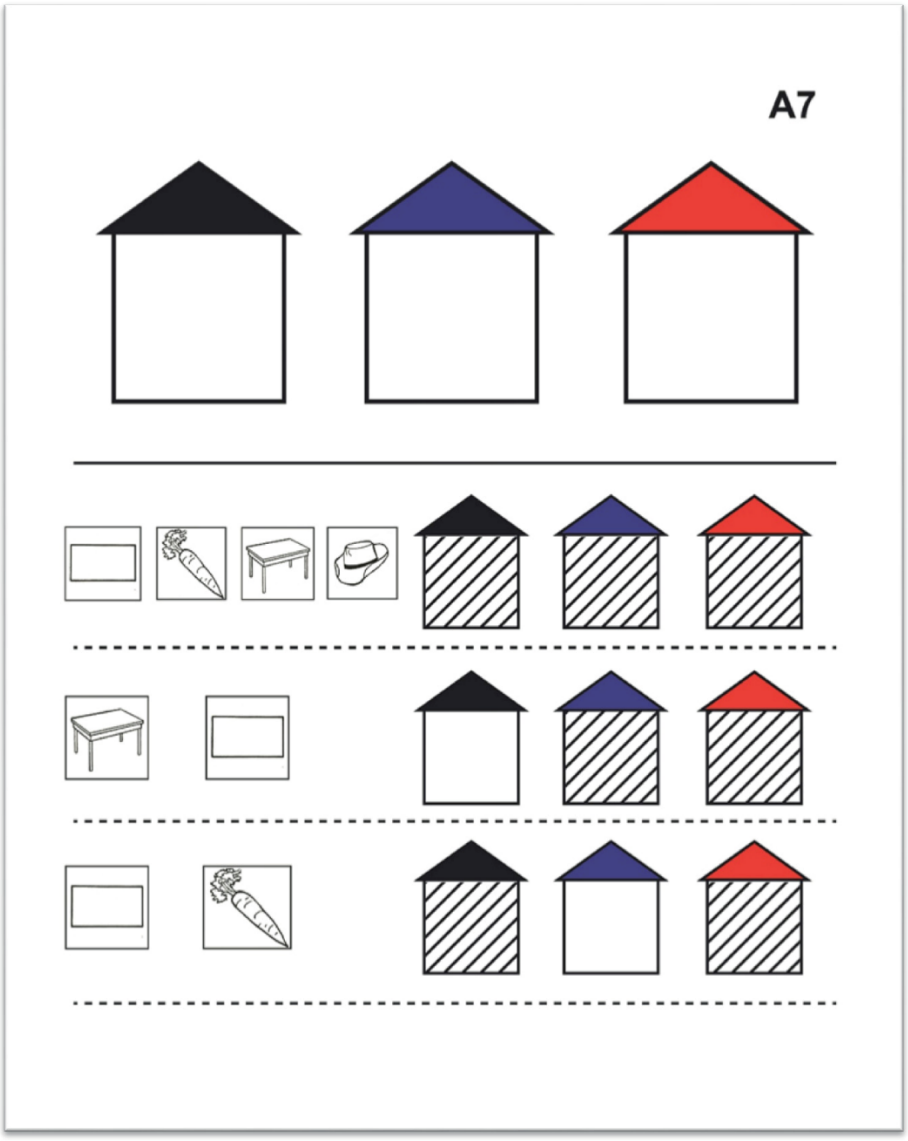

Fig. 1. Tzuriel, D. (2021). *Mediated learning and cognitive modifiability, p.109, Fig. 6.3*