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Media-Based Observational Learning

- Supplantation Effect on Learning

Medial Temporal Lobe

The part of the temporal lobe located closer to the midline of the brain. The medial temporal lobes are considered to be critical for memory formation and maintenance, and contain the hippocampi (plural of hippocampus), among other structures.

Mediated Learning Experience (MLE) and Cognitive Modifiability

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Synonyms

Cognitive Change; Cognitive Plasticity; Mediation

Definition

Mediated Learning Experience (MLE) describes a special quality of interaction between a learner and

a person. *Mediated learning experiences* (MLE, Feuerstein et al. 1979) are considered as the proximal factor that explains cognitive modifiability. MLE interactions are defined as an interactional process in which parents, or substitute adults interpose themselves between a set of stimuli and the human organism and modify the stimuli for the developing child (Tzurriel 1999, 2001). *Cognitive modifiability* is defined as the individuals' propensity to learn from new experiences and learning opportunities and to change one's own cognitive structures. Feuerstein's MLE theory is in some aspects similar to Vygotsky's (1978) concepts of the *zone of proximal development* and *internalization* and the concept of *scaffolding* which have captured the interest of many developmental psychologists and educators (e.g., Rogoff 1990; Wertsch 1985).

Theoretical Foundations

In MLE, the mediator modifies the stimuli by changing their frequency, order, intensity, and context, by arousing in the children curiosity, vigilance, and perceptual acuity, and by trying to improve and/or create in the child the cognitive functions required for temporal, spatial, and cause effect relationships. The MLE processes are gradually internalized by the child and become an integrated mechanism of change within the child. Adequate MLE interactions facilitate the development of various cognitive functions, learning sets, mental operations, strategies, and need systems. The internalized MLE processes allow developing children later on to use them independently, to benefit from learning experiences in diverse contexts, and to modify their cognitive system by means of self-mediation. The more the child experiences MLE interactions, the more he/she is able to learn from direct exposure to formal and informal learning situations, regardless of the richness of stimuli they provide. Lack of MLE may be derived from two broad categories: (a) lack of environmental opportunities for mediation, (b) and inability of the child to benefit from mediational interactions, which are potentially available.

Feuerstein conceived MLE interactions as a *proximal* factor that explains individual differences in learning and cognitive modifiability. Factors such as organic deficit, poverty, socioeconomic status, and emotional disturbance are considered to be distal factors: factors that might correlate with learning ability, but which affect through the proximal factor of MLE.

Feuerstein and Feuerstein (1991) suggest 13 criteria of MLE, but only the first three, are conceived as necessary and sufficient for an interaction to be classified as MLE: *Intentionality and Reciprocity*, *Meaning* and *Transcendence*. These three criteria which are responsible for the individual's cognitive modifiability are considered to be universal and can be found in all races, ethnic groups, and socioeconomic strata. Mediation does not depend on the language modality or content and can be carried out by gestures, mimicry, and verbal interaction, provided that the three major criteria are present. The other ten criteria are task dependent, strongly related to culture, and reflect variations in cognitive styles, motivation, type or content of skills mastered, and the structure of knowledge.

The first five MLE criteria were operationalized and observed in interactions of mother–child (e.g., Klein 1991; Tzuriel 1999), peers assisted learning (e.g., Tzuriel and Shamir 2010), siblings (Klein et al. 2002), and teacher–student instruction (e.g., Tzuriel et al. 1998). The first five MLE criteria that were operationalized for research are as follows:

- (a) *Intentionality and Reciprocity* refers to a mediator's deliberate efforts to change a child's awareness, perception, processing or reaction. Intentionality alone is inadequate without reciprocity. Reciprocity is defined when the child responds vocally, verbally, or nonverbally to the mediator's behavior. For instance, Intentionality and Reciprocity are observed when a caregiver intentionally offers an item to a child or verbally focuses a child's attention and the child undeniably responds. This criterion is considered crucial for the development of feelings of competence and self-determination.
- (b) *Mediation of Meaning* refers to a mediator's response that conveys the affective, motivational, and value-oriented significance possessed by the presented stimuli. This can be expressed verbally by enlightening the present context, relating it to other events, and emphasizing its importance and value, or nonverbally by facial expression, tone of voice, repetitive actions and rituals. According to MLE theory, children who experience mediation of meaning will actively connect future meanings to new information rather than passively wait for meaning to appear.
- (c) *Mediation of Transcendence* refers to interactions in which the mediator provides both the immediate or concrete needs of the children and attempts to reach additional goals that are beyond the specific situation or activity. In mother–child interactions the mother may go beyond the specific experience by teaching strategies, rules, and principles in order to generalize to other situations. For instance, in a play situation, the mother may mediate the rules and principles that direct a game and generalize them to other situations. Mediation for Transcendence depends on the first two criteria, intentionality/reciprocity and meaning, though the combination of all three criteria enhances the development of cognitive modifiability and expands the individual's need system.
- (d) *Mediation of Feelings of Competence* is observed in interactions in which a mediator conveys to a child that he or she is capable of functioning both successfully and independently. The mediator may organize the surroundings in order to supply opportunities for success, interpret them to the child, and reward attempts to master the situation or deal with problems efficiently.
- (e) *Mediation of Control of Behavior* refers to interactions in which a mediator regulates a child's reaction, depending on the child's reactive style and the task demands. The mediator may either reduce impulsivity or accelerate the child's behavior. Control of behavior can be mediated in various ways, such as arousing awareness to task characteristics and suitable responses, analyzing the task components, modeling of self-control, and providing metacognitive strategies.

An integrative component of the MLE approach is related to the conceptualization of the developing individual as an open system that is modified by mediating agents. This component has led to both theoretical elaboration of dynamic assessment (DA) of learning potential and development of an applicative system of measuring cognitive modifiability. The term DA refers to an assessment of thinking, perception, learning, and problem solving by an active teaching process aimed at modifying cognitive functioning.

Important Scientific Research and Open Questions

Most of the research on MLE interactions was carried out with the *Observation of Mediation Instrument*

(OMI, Klein 1996) applied in combination with videotaping of interactions. Cognitive modifiability was measured by DA using change criteria. The conceptualization behind using change criteria as predicted outcome of MLE interaction is that measures of modifiability are more closely related to mediational processes by which the child is taught how to process information, than they are to standardized static measures of intelligence. The mediational strategies used within the DA procedure have more “matching value” to learning processes in other life contexts than do conventional static methods and therefore give better indications about future changes of cognitive structures. Accumulating evidence from educational research provides indications that a score reflecting individual differences in “modifiability” added substantially to the predictive power of learning (Embretson 1992) and future academic success (Tzuriel et al. 1999).

Research findings show that the higher is the criterion score saturated with teaching effects (gain score as compared with pre-teaching score within a DA measure), the higher was the variance contributed by MLE mother–child processes in prediction the cognitive score (Tzuriel and Eran 1990). *Mediation for Transcendence* and mediation of *Regulation of Behavior* were found repeatedly as the strongest predictors of *children’s cognitive modifiability as indicated by post-teaching scores in DA* (Tzuriel 1999). Both MLE criteria reflect a typical mother–child interaction in which the mother is involved in mediating rules and principles (Transcendence) and monitoring (regulating) the flow of the children’s behavior (Tzuriel and Ernst 1990; Tzuriel and Shomron 2009; Tzuriel and Weiss 1998; Tzuriel and Weitz 2007). In several studies, the relative effects of distal and proximal factors (e.g., MLE processes) on cognitive modifiability were investigated. The overall results of the SEM analyses were congruent with the MLE theory according to which proximal factors explain individual differences in children’s cognitive functioning, whereas distal factors (i.e., SES-level, child’s personality, mother’s acceptance–rejection of the child) do not have a direct effect on children’s cognitive factors, though they do explain some of the proximal factors.

Recent research of peer mediation showed that children participating in a *Peer Mediation with Young Children (PMYC)* program improved their MLE strategies (e.g., Shamir and Tzuriel 2004) as well as

enhancing their *cognitive modifiability* (Tzuriel and Shamir 2007, 2010) and math performance (Shamir et al. 2007; Shamir and Tzuriel 2004). Thus, children who learn how to mediate become not only better mediators (tutors) but also better learners, as reflected in their cognitive modifiability scores. In Vygotsky’s (1978) terms, the peer-mediation experience enabled the tutors to advance from a *lower* zone of proximal development (pre-intervention) to an *upper* zone of proximal development (post-intervention).

Cross-References

- ▶ Family Background and Effects on Learning
- ▶ Family Learning
- ▶ Home Schooling and Teaching
- ▶ Learning in the Social Context
- ▶ Mediators of Learning
- ▶ Peer Learning and Assessment
- ▶ Social Learning

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Mediated Signs

- ▶ Affordance and Second Language Learning

Mediation

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Mediators of Learning

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Definition

The term “mediators of learning” refers to agents of learning that use mediated learning experience (MLE) strategies to enhance their learning capacities (see *mediated learning and cognitive modifiability* for definition of MLE strategies). Mediators of learning are typically parents, siblings, teachers, caregivers, peers, and grandparents.

Theoretical Background

Most research on mediators of learning focus on the role of parents and peers with very few studies on the role of sibling, caregivers, teachers, and grandparents.

Parents

Parents mediating interactions with their children's during early childhood provide the first culture of learning (Cole 1990). As children learn to how to solve problem, parents provide support when tasks are too difficult. Parents' support (scaffolding) of their children's problem solving includes providing cognitive support, transferring responsibility when the child is capable of managing the task independently, and motivating the child to complete the task. Many researchers have found that specific activities of parents relate to their children's cognitive development, both concurrently and predictively, and that both the child and the parent influence the child's mental development (Berk and Spuhl 1995; Klein 1996; Tzuriel 1999).

Klein's studies with infants (e.g., Klein 1996) showed the amount of mediation parents gave to