A Behavioral Interpretation of Vygotsky’s Theory of Thought, Language, and Culture

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Since the translation and publication of Vygotsky’s work into the English language in 1962 his work has been widely cited and studied by western-European and American developmental psychologists and educators. This paper provides a description of Vygotsky’s theory of culture and language and highlights the similarities of his views (e.g. scaffolding, assisted learning, private speech) and behavioral principles (e.g. shaping, cueing, chaining, and verbal behavior). While many philosophical differences exist between Vygotsky’s theories and contemporary behavior analysis, identifying the similarities between these two positions may allow for a greater understanding of human development and for an increase in collaborative research between developmental psychologists and behavior analysts.

Vygotsky’s views of development have become increasingly popular since the recent translation and republication of his work into English in 1962. There are similarities between Vygotsky’s theories, of language and culture, and modern behavioral theory. Identifying these similarities may provide behaviorists with an opportunity to bridge with mainstream developmental psychology’s interests and research.

Vygotsky’s theory of thought and language is culturally and environmentally based. He offers a theoretical framework applicable to child development, schools, and applied learning. One of the primary assumptions of Vygotsky’s psychology is that understanding the social relations of an individual is central to understanding the developmental path of that individual (Wertsch, 1985). “The social dimension of consciousness is primary in time and in fact. The individual dimension of consciousness is derivative and secondary” (Vygotsky, 1979 p.30). Vygotsky’s argument is against reductionistic psychology such as methodological behaviorism on the basis that the S-R approach neglects the study of context and culture in which the individual develops. He stresses that the culture changes the private and public behavior of the individual (Wertsch, 1985). That is, human interactions can only be understood by looking at the culture in which the interactions are embedded.

Vygotsky’s philosophy includes an interpersonal psychology that involves learning from other members of society while engaging in social interactions. Anything that is expressed in a child can first be detected in his/her environment: “Any function in the child’s cultural development appears twice, or on two planes. First, it appears on the social plane, and then on the psychological plane.” (Vygotsky, 1983, p. 163). There is a strong relationship between the social and psychological planes, in that the social plane can always influence the intrapsychological plane (Wertsch, 1985). In this way, Vygotsky emphasizes the role of shaping in the learning process especially as it relates to his description of the zone of proximal development.

Zone of Proximal Development and Scaffolding

The zone of proximal development is equivalent to the range of behaviors an organism can produce with the prompting or cues of a more “competent member of the culture, such as another adult or another child” (Novak, 1996, p.127). By this process (exposure to prompting and cues) the independent behavioral repertoire would be increased by scaffolding. Scaffolding is very similar to the behavioral process of shaping. By successively changing the criterion for reinforcement the behavior being shaped more closely resembles the targeted terminal behavior. Both scaffolding and shaping are examples of technologies derived from environmental determinism. That is, consequences of social interactions (behavior) act as determinants of behavior.

The view that the environment influences and changes behavior in different ways based on the historical and present context has also been incorporated into behavioral theory by several developmental behavior analysts (Morris, 1988; Hayes, Hayes, & Reese, 1988; Peláez-Nogueras & Gewirtz, 1997). That the individual’s history with the environment, the current state of the organism, and other environmental influences combined to alter the probability, rate, form, and production of behavior is an overriding theme in Kantor’s (1975) conceptualization of the event field in Interbehaviorism. The idea that a reciprocal interaction occurs between inter and intra personal psychology, that is, public and private behavior, has been emphasized by behavior analysis in the study of verbal behavior. The notion that intrapersonal experiences affect the interpersonal interactions is embedded in the behavioral notion of rule-governed behavior. While Vygotsky analyzed many types of phenomena, here we will examine only two aspects of his theory, language and thinking, pointing out similarities with behavioral models.

Thought, Language, and Culture

In Vygotsky’s philosophy, language plays a central role in the theory of human cognitive development. Language plays multiple roles including culturally shaping the overt behavior.
of individuals as well as influencing their covert behavior, such as thinking. Language has been defined as a psychological tool that shapes other mental functions while at the same time being socially-shaped itself (Kozulin, 1986). Vygotsky believed that language and thought initially have different roots but converge during the course of development and are influenced bi-directionally thereafter (Kozulin, 1986).

To understand Vygotsky's theory of individual consciousness, first we need to conceptualize thought as socially based (Vygotsky, 1979). In his view, higher mental functions are products of psychological tools such as verbal language, sign language, and logic. The use of socially-mediated language allows for interpersonal communication. Pre-intellectual language (e.g. screaming or cooing) and pre-intellectual thought (e.g. wants and needs) may develop concurrently but separately in children. Thought and speech begin as separate functions, with no necessary connection between them, but around age two language and thought come under bi-directional influence, when a child learns to functionally use social tools (such as verbal behavior). Until the child is able to learn or relate his/her actions to the social-environmental contingencies language cannot be acquired. Around this age, a relationship between language and cognition begins to develop. The relationship is more than the formal relation between the sign (or word) and its meaning. Language and other socially learned relations alter thought by setting up formal logical rules (derived relational systems) and methods of problem solving that are entirely verbal in nature (Vygotsky, 1986).

Vygotsky (1986) proposes that the first general concept acquired by verbal children is the understanding that every object should have a name. After the child is able to name objects, he/she can then express thoughts in the form of needs and wants. Once the child is able to name, and express wants, language and thought begin a reciprocal interaction that shape the form of thought and language through environmental experience and inner speech. The social shaping of appropriate vocal noises is dealt with in behavioral theory by differential reinforcement. The parents or caregivers give more attention to a child when they make noises that more closely approximate words. After the child has been able to properly produce the sounds of a word they get social attention that increases the future likelihood of similar responses (Skinner, 1953). After mastering the sounds needed to name an object the child can then use the name of the object first as an echoic (repeating the name after a verbal prompt), then as a tact (naming an object in the presence of the object) and as a mand (a demand or request for nonverbal action on the part of the listener). The child in this manner learns to name the object in the presence of a verbal prompt, learns to name the object in the presence of the object, and learns that by requesting an object in its absence he/she can acquire the object from the listener (Pelaez, 1986). By repeated exposure the person can come under the functional control of the object (Skinner, 1957).

**Inner speech.** Vygotsky (1986) states that inner speech (private verbal behavior) is acquired in the same manner that all other mental operations are learned (including vocal speech). In language acquisition, the child starts forming words and is able to use the correct forms of grammar and structure before he/she has learned the formal rules of grammar. As the child becomes more experienced he/she begins to use external prompts, cues, and verbal behavior in the form of instructions to aid in problem solving. This is the beginning of egocentric speech. **Egocentric speech** is a form of self-talking with the function of inner speech, but an external form (a form of speech that has the function of altering the speakers own behavior). Examples of egocentric speech are reading to one-self quietly, verbally sounding out words, and counting on ones fingers. As egocentric speech develops the child is able to begin “internalizing” the outward form of language or using soundless speech, to count in his/her head and use logical memory (operate with given relations and derived relations in private verbal behavior). After the person comes under the functional control of language, language begins to have a large reciprocal effect with thought.

Thought and language are seen by Vygotsky (1986) as two interacting spheres. In his view, speech is involved in most thought, and thought is involved in most speech. However, development of thought and speech are not parallel. For example, there are aspects of thought such as emotions (e.g., anger, joy, disgust) that can be verbally discussed, but are not verbal in nature. That is, we can describe our own emotions but the experience of emotions is not necessary verbal. Conversely there are parts of speech in Vygotsky’s conceptualization that do not require thought, such as reciting a well-known poem or prayer. While these spheres are mostly overlapping, the processes of thought and speech are not the same, even though both are influenced “indirectly by the process of verbal thought” or inner speech (Vygotsky, 1986).

An example of this interaction would be a person who smells a particular kind of flower and then remembers (through a history of conditioning) a long lost lover who used to ornament his/her house with this kind of flower. As the person uses inner speech in creating imaginary dialog of this memory he/she may experience sadness realizing that they should not have ended the relationship with this person (emotional response). In this case inner speech may affect and increase emotions indirectly. Reciprocally thoughtless speech (such as a recital of an extremely well known poem) can be influenced by inner speech by word substitution (e.g., saying the ex-lovers name in place of a similar sounding word in the poem).

In short, the bifurcation of function and structure of inner speech begins at the same time as the emergence of egocentric speech. For Vygotsky thought development is contingent on language, and language is socially determined. In this way a child’s environment, and culture, play a pivotal role in language and thought development.

**Skinner and Vygotsky**

Similarities exist between Vygotsky’s inner speech and Skinner’s private verbal behavior. Both Skinner (1957) and Vygotsky (1986) state that thinking is a process learned from the verbal community, and learning to think is no different than language acquisition or other socially-learned behavior. Skinner goes so far as to say verbal behavior has no special properties and obeys no special laws when compared to other types of behavior (p.438). Vygotsky’s egocentric speech is considered language (or verbal behavior), but the function of egocentric overt behavior (develops simultaneously with inner
for this. First, social interference can be systematically studied as a behavioral transition, and individual and social transitions can be compared on the basis of their different sources of control. Second, differences in context can be identified and described, showing different levels of occurrence of the behavioral transitions. Of course, differences in sources of control must be emphasized. For example, the differences in frequency of behavioral transitions between classroom and playground could be due to normative control, instructional control, the quality of materials, or some interaction of them.

One implication of such differences could be found in the relative reinforcing value of the activities for children. Perhaps the reinforcing value of playground activities is higher than that of classroom activities. Perhaps persistence is higher on the playground because children often select the activities there, whereas they cannot select as often as they want the activities in the classroom. One of the main advantages that the behavior analysis approach has is the empirical possibility of submitting to experimental or empirical evaluation of the different questions that investigations offer. Evaluation of the value of different stimulus situation or different behaviors can be conducted as a choice responding approach with the advantages of consistent theoretical and methodological models, both in the laboratory and in natural settings (e.g., Fisher & Mazur, 1997).

Another problem remaining is the developmental study of individual differences, stability and the change of behavioral patterns of children, focusing on behavioral transitions. Research on such transitions is being conducted in an ongoing longitudinal study in our laboratory to evaluate the effects of peer relationships on the interference patterns. This longitudinal study also evaluates the quality of the academic context, the nature of the interrupted activity (i.e., social play, self-stimulation, social interaction) and the degree of control that the teacher exerts, to name a few. Time allocation on task before the interruption is a good predictor of the frequency of interrupted episodes and the time needed to take up the task again. This data set has a relationship with Zeigamik (1927) effect, and Mandler's (1964, 1989) and Schopler's et al. (1977) work. The main advantage of this strategy relies on the systematic approach and on the environmental situations that are included in the study of behavioral transitions and their ecological validity.

Our approach in the longitudinal project was descriptive and several implications are derived from it. The number of behavioral transitions in this sample is high (3 or 4 per minute) and the children take a lot of time to return to the activity once they were interrupted. The study was replicated in a private school, with preschool age children, and within different grades of elementary school displaying similar results. The results have an important implication for instructional psychology and the psychology of motivation. Conceptually, this strategy, based on a behavior-analytic approach, can be related with some of the main topics of experimental analysis of behavior, in our case they included: time allocation, choice and behavioral preferences. Some preliminary data on the study of relative frequency of transitions as a function of behavioral preferences were obtained. In fact, a regression analysis describes the data of relative frequency of transitions as a function of behavioral preferences defined by the relative frequency of activities (Santoyo, 1999). However, this function is different depending on the class of analyzed activity.

In sum, some implications of trends on persistence and "susceptibility" to social interference must be analyzed focusing on individual data rather than on aggregated information across subjects (Magnusson & Stattin, 1998). In fact, a primary goal of developmental research should be to understand those individual processes that contribute to the ontogeny of the child's adaptations in the particular settings of life (Cairs, Cairns, Rodkin & Xie, 1998, p.16). On this account, the present perspective is full of challenges and we may have more questions than answers at this point, but it seems like a worthwhile task.

REFERENCES


