Neobehaviorism and Second Language Acquisition

Laleh Fakhraee Faruji
Department of Humanities, Shahr-e-Qods Branch, Islamic Azad University, Tehran, Iran
fakhraeelaleh@yahoo.com

Abstract

Behaviorism dominated the field of SLA until the end of the 1960s and found its most visible application in contrastive analysis and the audiolingual method (Johnson, 2004, p. 10). In this tradition, the focus was on the learner's external environment. By now it is consensus that a mature psychology will contain a level of intermediate theory which bridges the divide between physiology and behavior, but there is disagreement over the best way to do that (Reisman, 2003). Now behaviorism is like a cube of sugar dissolved in tea; it has no major, distinct existence but it is everywhere (Harzem, 2004).

Keywords: Bloom's taxonomy, Behaviorism, Neo-behaviorism, Competition model

1. Behaviorism

Three general principles of language learning have been identified in this framework (Dakin, 1973, as cited in Ellis, 1994, p. 299). The law of exercise which indicates that language learning is promoted if the learner repeats the responses to the stimuli. Here, practice plays a fundamental role. The law of effect which places importance on reinforcing the correct or native like response and on correcting the non-native like responses. Here reinforcement, such as approval of correct responses strengthen the association and is necessary to learning. These two principles had been proposed by Thorndike, as cited in Ellis, 1994, p. 299). And, the principle of shaping which mentions that learning will be rapid and smooth if the complex behaviors are broken into smaller units and are learnt bit by bit.

Jordan, Carlile, & Stack (2008, p. 32) explained some criticisms of behaviorism. They believed that it can be considered anti-humanistic in its refusal to acknowledge human freedom and choice. Behaviorism gives insufficient weight to contextual factors such as the social, economic and political conditions and forces that promote or constrain action. It also fails to consider other determinants in learning, such as inherited intelligence and personality.

In higher level learning, behaviorist techniques may not be effective in promoting deep learning, which is related to personal understanding and meaning-making. In adult, further, and higher education, it is also difficult to apply behaviorist principles, because they often fail to take account of creative processes and of incidental, unexpected and self-initiated learning. In general, behaviorism is often seen as anti-intellectual (Jordan, Carlile, & Stack, 2008, p. 33).

They concluded that behaviorism is not totally antagonistic to other theories of learning; rather, it can co-exist with later learning theories that focus on cognition or the social acquisition of meaning. It may serve as a foundational element on the basis of which more complex cognitive processes are developed.

2. New behaviorism

By the mid-twentieth century, there was a growing recognition that conditioning involves a cognitive element. **Neo-behaviorists** acknowledge that operant and classical conditioning together do not completely determine behaviors. For example, the American psychologist Tolman (1948) demonstrated that rats could go beyond simple stimulus–response behavior and could learn, remember and use facts about a maze. The new-behaviorist, Clark Hull (1943, 1951, 1952, as cited in Ormrod, 2008), was the first behaviorist who recognized the importance of learner's internal characteristics such as motivation.

Hull's plan for an S –R behaviorism was very ambitious. It aspired to conceptualize the bases for adaptive behavior in a broad sense, including certain cognitive processes and the

performance differences between species and individuals (Rashotte & Amse, 1999, p. 126). He believed that learning was insufficient for behavior and therefore we need to have motivation.

Hull proposed that a number of other factors (intervening variables) unique to each organism and each occasion must be considered in order to predict the likelihood and strength of a response's occurrence (as cited in Ormord, 2008). Thus, Hull's ideas comprised an S-O-R theory, rather than an S-R theory, of learning. According to Ormord (2008), Hull described the following intervening variables which are critical for a response to occur.

Habit strength: The degree to which a particular stimulus and a particular response are associated. The more often a response has previously been rewarded in the presence of the stimulus, the greater is the habit strength and the more likely the response is to occur.

- Organism's drive: An internal state of arousal that motivates its behavior. To illustrate, one might become "driven" by a need for approval if approval has previously been associated with a candy bar.
- Stimulus intensity: An intense stimulus bringing about a stronger response than a weak stimulus.
- Incentive: The amount and immediacy of reward

All of the above factors work together to increase the likelihood and relative strength of a particular response. At the same time, inhibitory factors (e.g., fatigue) decrease the likelihood and strength of the response.

Recent models of language learning, like connectionism and competition models with reinforcement learning algorithms, inspired by one of the fundamental law of behaviorism; association between input and response are now having their advocates (Keramati, 2008).

3. Connectionism and new behaviorism

Connectionism is a cognitive framework for explaining learning processes, which began in the 1980s and became increasingly influential. It assumes that SLA results from increasing strength of associations between stimuli and responses (Savile Torike, 2006, p. 186).

"As learners are exposed to repeated patters of units in input, they extract regularities in the pattern; probabilistic associations are formed and strengthened" (Savile Torike, 2006, p. 80). So, for them the notion of innateness is not seen as an innate capacity to learn the abstract rules of language. In connectionism, knowledge is assumed to be distributed between neural connections and learning consists of reinforcing certain types of connection. Mental patterns can be represented by neural assemblies (that is, groups of neurons that are close together or particularly well connected) (Mistri, 2002).

The claim that learning is not innate nor rule based is supported by computer simulations. In learning irregular verbs, it is known that children go through three phases: first they produce the correct form of irregular verb, i.e. went. In the second phase, they over-generalize the regular past tense ending to irregular verbs, i.e., goed, known as U-shape curve of learning for irregular verbs, and in the third phase, they produce irregular form correctly (Keramati, 2008). Pinker (1991) argued that irregular verbs are retrieved from an associative memory, like what connectionists have described, but regular verbs are produced by learners as a result of suffixation rule.

Kaplan et al. (1990) explaining the criticisms of the connectionist models argued that: first, connectionist models are fundamentally behaviorist in nature (and, therefore, non-cognitive), and second that connectionist models are fundamentally associationist in nature (and, therefore, cognitively weak). The critical difference between the two, however, lies in the respective building blocks of association. The only associations that behaviorists considered were those between observable entities, that is between stimuli and responses. The associationists, on the other hand, were concerned with the association of "ideas". In spite of the fact that "idea" was a rather nebulous construct by modern standards, it clearly referred to an internal, mental entity. So, while behaviorism denied the existence (or at least the usefulness) of cognitive processes, associationism was a cognitive theory.

According to Kaplan et al. (1990) modern connectionists are proposing an alternate way of modelling cognition; they certainly do not deny the existence of cognition or the validity of studying it. However, the possibility remains that the connectionist models themselves have unavoidable behaviorist implications which their proponents did not intend.

4. Competition model and new behaviorism

Competition model (Bates and MacWhinney 1981; MacWhinny 2001, as cited in Savile Torike, 2006, p. 87) of language learning offers a theory of performance in contrast with Chomsky's theory of competence. This approach considers that learning the system of form–function mapping is basic for L1 acquisition. SLA involves adjusting the internalized system of mapping that exists in the learner's L1 to one that is appropriate for the target language.

Besides, they claim that language learning is nonmodular and is not domain specific (Jordan, 2004). Relevant to the discussion in this paper is two of the theoretical commitments (Keramati, 2008). The first one is the connectionist model which competition model uses to model the interaction between lexical mappings. There, they reject nativist view and argue that brain relies on a type of computation that emphasizes patterns of connectivity and activation. The second one is that of input- driven learning. According to this commitment, learning is explained in terms of input rather than innate principles and parameter. Cue validity is the key construct in this explanation.

The basic claims of competition model is that cues such as stress, intonation, rhythm, morphological marking, and word order are available in input and language processing involves competition among these cues. Different types of cues interact dynamically every time children or adults hear a sentence. Word order or first position of nouns is very strong cue for English speakers (Savile Torike, 2006, p. 87). However, strong cue in one language might be weak cue in another. Transfer of L1 cues strengthen to L2 is something which is likely at early stages of SLA when the systems differ.

5. Educational implications of new behaviorism

Neo-behaviorists recognized the importance of learners' internal characteristics, such as personality, motivation and habit. Whereas classical behaviorism focused only on the external manipulation of the organism, the development of cognitive science led to a stronger awareness of the importance of internal as well as external behaviors (Jordan, Carlile, & Stack, 2008, p. 25).

Skinner (1953, as cited in Jordan, Carlile, & Stack, 2008, p. 26) talks about students developing self-control and self-monitoring programmes, where they identify their own reinforcers and apply behaviorist principles to themselves. For example, a student might identify tendencies towards lateness, monitor performance, decide which stimuli are effective, set goals, and consider reinforcers.

In the 1950s, the neo-behaviorist Benjamin Bloom attempted to develop a model that linked external and internal behaviors (Bloom and Krathwohl 1956, as cited in Jordan et al., 2008, p. 26). In his influential taxonomy of learning, he proposed three domains or spheres of learning; the cognitive, affective and psychomotor, which translate learning into overt observable behaviors. Each domain presents a set of behaviors, which are hierarchical according to complexity and sophistication.

The cognitive domain is the best-known and most educationally applicable of Bloom's domains and deals with the ways that internal knowledge may be revealed by external behavior. Behaviors progress from those demonstrating basic subject knowledge up to an ability to evaluate or judge the worth of knowledge. For example, learning a language moves from knowing simple vocabulary at the lowest level to the ability to evaluate literary texts at the highest level.

Bloom's taxonomies, particularly in the cognitive domain, have been used to guide curriculum planning; his concept of 'mastery learning' (1968 as cited in Jordan et al., 2008, p. 26) has been particularly influential. 'Mastery learning' involves the statement of educational objectives

and their translation into learner behaviors so as to generate criteria for assessment grades at various levels in the domain.

6. New behaviorism and language assessment

One of the applications of new behaviorism is in concerning the assessment. It is commonly held that effective assessment tasks should test the performance of behaviors stated in learning outcomes under the same conditions as those under which they were learnt (Jordan et al., 2008, p. 30). For example, if the learning outcome states that apprentice carpenters will be able to hang a door, the assessment should require them to hang a door rather than describe the technique in a written examination, which is what often happens.

Behaviorist principles may also be seen in the move towards criterion referenced assessment. The extent to which a learner has achieved stated learning outcomes is judged according to behavioral criteria specified in those outcomes. This replaces older concepts of norm-referenced assessment, which are based on rating learner performance in relation to average or 'normal' group performance. In norm-referenced assessment, the pattern of distribution around the norm means a certain portion of learners must be rated as performing at a below-average level (Jordan et al., 2008; Keramati, 2008, p. 31).

Behaviorist principles are useful as part of formative assessment, which is a kind of assessment designed to provide feedback for the learner and teacher, rather than to record or certify achievement. Formative assessment may be seen as a form of reinforcement, designed to motivate and encourage learners. To be effective, the reinforcement of desired behavior must be provided consistently and in a timely manner so that the correct response is reinforced. When it comes to assessment, therefore, learners should receive feedback as quickly as possible after the assessment task (Jordan et al., 2008; Keramati, 2008, p. 31).

7. Conclusions

The explicit linking of cognitive developments and behaviors helps teachers both to devise learning activities that allow learners to practice the behaviors, and to look for these behaviors when assessing learners' performance (Jordan et al., 2008, p. 27). Despite the fact that connectionists reject innateness in the sense that Chomsky uses, they differ from behaviorists in fundamental ways: they consider causal explanation and try to overcome all theoretical bias (Keramati, 2008). Behaviorism is no more considered merely as stimulus-response-reinforcement chains; rather it contains an element of cognition without which it will lose its real effectiveness in different areas of learning and assessment.

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