**Articles**

# Disability and Behavior Analysis: Beyond "Medical" and "Social" Models[1)]

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When considering human services that encompass all assistance and service activities geared to the person with disabilities (in this paper, the focus is mainly on the person with mental and developmental disabilities) and if the aim of such services is to reduce disabilities or resolve disability issues at present without delaying the resolution as a matter of individual differences, what methodology is required? In this paper, "behavior analysis" is adopted as a framework to address the issue, through which the author discusses methodologies that make a fresh departure from the conventional "medical" or macro "social model" in order to assist each person with disability in establishing social relationships that facilitate his or her selected manner of social involvement (self-determination) while reviewing some critical research in empirically demonstrated.

## 1. Changes in disability model

"Normalization" seems to be the most common principle that represents the direction and philosophy of assistance to the person with disability. To be very brief, the philosophy of normalization requires "society to accept the disabled as they are with their natural rights and individual differences" (Nirje in Shaddock & Zilber, 1991).

"With...individual differences" means that it does *not* presuppose assimilation, specifically to bring the biological nature of individual differences that can be called impairment, the difference in the mode of response or the difference in each ability closer to that of the majority. "To accept" within the context of normalization can be understood as ensuring that the individuals with disabilities lead a normal life as full members of a community (integration) by abolishing isolation (exclusion), as represented by the de-institutionalization that was actively conducted at the beginning of the normalization movement.

While basic policies toward integration have progressed and its name has changed from "normalization" to "social role valorization" and to the more recent "inclusion", the direction of the change in disability recognition has been consistent: disability is not an issue attributable to individual attributes (impairment), but an issue of relationships in the present society.

Such an approach represents breaking away

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from the medical model (Bailey, 2000), which views the individuals with disabilities as "patients" and unilaterally requires them to adapt themselves to the current environment. The medical model states that "the problems that the individuals face, including the functional disabilities, arise from impairment and therefore, it is indispensable to eliminate or relieve the impairment to fully resolve the issues concerning the persons with disabilities" (Kuramoto, 2001).

Then a new model called the social model was presented. In contrast to the medical model, the social model states that "the cause of problems that the person with disabilities face lies in the social system and has nothing to do with impairment and therefore, the key to the solution of these problems is to change society, which produces disability" (Kuramoto, 2001). We , recent years, do not need to draw on the social model to recognize that society is responsible for resolving disability issues. This is already the public perception. Then, the next issue is how each individual with disability can be addressed in the effort to reduce or resolve disability issues.

When the concept of normalization was introduced, "it was only a fantastic concept that everybody was believed to have understood until they were asked how it could be applied to the actual situation" (Shaddock & Zilber, 1991). While institutional macro reforms, such as de-institutionalization and inclusion, were actively conducted, specific methodologies to address the particular problems each individual faced in the community have not be fully provided. Even for the aforementioned social model, some said, "While the strategies of the early social model successfully addressed the problems related to social systems, such as a lack of equal employment opportunities and restricted mobility, they were unable to fully address topics related to individuals, such as identity and feelings" (Kuramoto, 2001).

In the midst of such a context, the concept of QOL (quality of life) has attracted attention in the field of disability as a means to evaluate support to individuals, which the institutional macro reforms have neglected. While controversy existed as to the definition and indices of QOL (Schalock et al., 1989), existing indices had been roughly classified into two types: 1. Physical and social environment settings and 2. The subjective satisfaction of each individual (Mochizuki, 2001). The latter subjective satisfaction is indeed an index geared to each individual state and in that sense, it addresses the issues of individual persons (compared to the macro indices figured in Normalization). Since "satisfaction" is, however, often measured simply by verbal behavior, such as answers to the questionnaires or aural interview, it may not fully reflect the demand and actual living environment where the individual is living. Support providers may easily force the individual to answer "I am satisfied" without awareness about their own attitude. Measures to address individuals, which have been captured by such an index, are likely to assume the same characteristics as the medical model that demands the assimilation of individuals into the present situation. In this sense, QOL has also fallen short of

providing a solution to the basic issues of individuals, although it has served to make inherent problems explicit in a concrete manner. Thus, what is now needed is a new methodology that fully addresses individuals and makes a departure from both the medical and social models.

Whether the target was to change the attributes or abilities of individuals (medical model) or the environment (social model), conventional models have identified the cause of disability issues with either the disabled individuals or the environment and then strived to resolve them by addressing either of the two.

What is required of "the methodology with a focus on individuals" is not to identify the cause of disability issues with either individuals or the environment, but to describe how individuals relate to their actual environments and provide assistance and services to facilitate each individual's own selection of a relationship with the environment (Bailey, 2000).

In the field of social case work, the development of a methodology that strives to capture individuals in terms of their relationships with the environment may sound quite familiar. A scientific, "viable" (De Hoyos, 1989) methodology has not yet been established, however. Below, the author explores a viable methodology with behavior analysis as a springboard.

## 2. Behavior Analysis: Relevance to the disability issues

As is widely known, behavior analysis is a methodology based on the philosophy of radical behaviorism initiated by B. F. Skinner. Behavior analysis, often called operant conditioning or behavior modification, is generally recognized, including in the field of disability, as a "technique" to change the behavior of individuals. When discussing disability and a new methodology that can address operational practices of providing assistance and services to individuals with behavior analysis as its framework, it is essential to have a clear understanding of the philosophy of behaviorism and the definition of behavior, specifically the conceptual characteristics of behaviorism (Hayes, 1978).

### Basic framework of behavior analysis and "disability"

Three characteristics can be cited as how behavior analysis views behavior in connection with disability.

The first is that it views behavior not as a fixed attribute of the individual in question, but an interaction itself between the individual and the environment. Behavior analysis describes behavior (operant) as the functional interactions among discriminative stimulus ($S^D$) – response – reinforcement (three-term contingency), including environmental stimuli. The second characteristic is that it is the reinforcement (consequence) that establishes, maintains or extinguishes this behavior. While behavior is

considered as a group of responses that bring the same result (reinforcement) prevail or disappear as one class, it is the reinforcement following the behavior that determines whether the group of responses should prevail or disappear. Similarly, the reinforcement, a consequent event, determines whether or not the discriminative stimulus, an antecedent event, obtains the power to produce a particular group of responses. The third characteristic is that the reinforcement that determines the prevalence or disappearance of behavior becomes effective not only when there is physically inevitable dependency between the response and the reinforcement, but also when there is just a contingency brought by an accidental stimulus following the response (Reynolds, 1975). The idea of accidental contingency enables us not only to analyze behavior in a particular situation, such as superstitious behavior (Skinner, 1948), but also to understand the overall formation of *arbitrary* behavior typical of human beings, such as verbal behavior.

If disability is viewed as something structured with an individual's behavior as its basic unit, it can be positioned and understood in terms of the individual's interactions with the environment. Such an approach enables us to view disability as an issue of very *arbitrary* relationships with the environment. Consequently, the focus moves from impairment, which was viewed as "difference" and the cause of disability issues in the medical model, to what form of behavior the reinforcement should be contingent upon, in other words, the issue of agents who implement the reinforcement. This approach shows that the reinforcement process can be made accessible to the person with disability with individual differences by adjusting the standards and extent of reinforcement contingencies, as is the case with the forms of behavior that the majority happen to have.

When interpersonal relationships are viewed from behavior analysis (whether it is in research or practice), the target is not a comprehensive or abstract one, such as a personality, an attitude or a holistic approach, but an individual's behavior in a particular environment, which is to say something specific and *quantifiable*. Although studies that analyze relationships among more than one behavior and their interactions with one another have increased in recent years, their basic unit is a concrete behavior as a result of mutual interaction with the current environment (Baer, 1976).

This fundamental assumption of behavior analysis has received criticism that it creates a view of people that is mechanical or lacks totality in the field of disability (Wolfensberger, 1989). Viewing behavior as a basic unit, however, has a special significance in that it enables the acknowledgement of disability not as an overall attribute as expressed by the term, "the disabled," but as an individual's specific interaction with the environment at that particular time. In addition, this approach seems to facilitate the discovery of concrete and viable measures to solve the disability issues (Muto et al., 1999).

**Values of behaviorism**

When discussing involvement in disability issues from the perspective of behavior analysis, the values or ethics of B. F. Skinner, the creator of Behavior analysis, must be mentioned. The values of behaviorism may be addressed as the issue of operational selection or that of philosophy, independent of the issue of scientific methodology (Baer, 1998). These values have rarely been emphasized in the recent studies and practices in the field of applied behavior analysis, which represent the application of behavior analysis to social issues. They must be reconfirmed as we discuss the practices to address disability issues, however.

The ethics of Skinner can be summarized into the following two points: securing of behavioral opportunities and that of living in an environment of positive reinforcement (Skinner, 1978: Nye, 1992). The former literally means to secure opportunities for behavior as an approach to the environment. It means to give priority to the situation where some spontaneous action on the part of the individual involved enables him or her to *get* something (= bring about a change in the environment) over the situation where something is *given* without any spontaneous action. The securing of positive reinforcement means to secure the environment where particular behavior is not reduced via aversive contingencies (behavioral control via punishment) nor evoked to avoid aversive events (control by negative reinforcement), but maintained and expanded by providing reinforcement that is preferred by the person involved (control by positive reinforcement) (Fuji, 2001). This approach by Skinner does not necessarily mean to require modification on the part of the individual involved (shaping of behavior) for him or her to receive reinforcement in society, but focuses on increasing the target behavior by changing reinforcement settings in the environment. It should be noted that Skinner considered positive reinforcement as an *objective*, not as a means as used in operant conditioning (Mochizuki, 1995).

## 3. Addressing disability via Behavior analysis

Disability viewed from the perspective of behavior analysis discussed above and the general mission of addressing it can be summarized as follows:

- Disability is a state of a particular individual where there is a lack of behavior that can be maintained by positive reinforcement or where such behavior cannot be established (Throne, 1970: Bijou & Dunitz-Johnson, 1981).
- The mission to solve the disability issues is to expand the alternatives for the individual's behavior that can be maintained by positive reinforcement.

Below is a chronological summary of behavior analysis-based approaches that have been applied to the person with (mainly mental and developmental) disability to fulfill the aforementioned mission:

1. By modifying the forms of responses

of a particular person (to those similar to the majority's norms) with positive reinforcement and the minimum burden on the person, secure access to the reinforcement process that the majority enjoys.

2. While maintaining the difference in response form, secure access to the reinforcement process that the majority enjoys.
3. While maintaining the difference in response form, secure the reinforcement process which is specific to and preferred by each individual.

#1 is an approach that uses positive reinforcement as a *means* and has been and is widely known as a behavioral approach in the past and at present. It can be roughly categorized as rehabilitation under the medical model or the developmental model in that it strives to bring the form of response closer to that of the majority without changing the current environment (Bailey, 2000). On the other hand, the recent trend in this approach features the full use of positive reinforcement in the modification process, such as the thorough non-use of punishment and striving to achieve the minimum burden on the person involved when changing his or her particular behavior. In the past, the behavioral approach was severely criticized by normalization advocates for its use of punishment as a means to control problematic behavior including self-injury, which gave rise to public misunderstanding not only about techniques, but also about the aforementioned methodology as a whole (Mochizuki, 1995b; Muto et al., 1999; Wolfensberger, 1989). Currently, the method most commonly used is positive behavior support, where no punitive or restrictive measures are used even at the technical level. The positive behavior support approach views problematic behavior as behavioral issues, specifically the result of mutual interactions with the environment and has developed a method to build different forms of responses that are functionally equivalent to the mutual interactions with the environment (Duland & Carr, 1991: Hirasawa and Fujiwara, 1997).

#2 typically uses interfaces that make individual differences in form functionally equivalent by using equipment as a concrete means, such as AAC (augmentative & alternative communication). In this sense, it is almost equal to the approach of barrier-free (Fujiwara, 2001). Moreover, there are other cases where a group of less obvious responses, which have failed to function as "behavior," are established as behavior with a certain function (for example, a demand) not by introducing the aforementioned physical assistance settings, but by changing the standards of reinforcement contingencies from those set for general behavior. For example, a functional behavior can be established in an almost vegetative patient in a coma by associating very few movements remaining in a finger or around the mouth with music (Boyle, 1983).

These methods do not intend to change a person's behavior by using positive reinforcement as a "*means*," but aim to establish a variety of behaviors or expand

their alternatives by using changes in the environment, such as the introduction of assistance settings or changing the rules of reinforcement standards, as a major means. Therefore, they can be categorized into a group of approaches where positive reinforcement is an *objetive*, not a means.

The behavior analysis method that describes behavior as a functional unit has been widely used to establish "assisted behavior" in a broad sense and as a tool to confirm or detect the function involved (Remington, 1994; Fujiwara, 2001). Such usage typically represents the role of behavior analysis in the field of disability, which is suggested by the aforementioned conceptual framework of Behavior analysis or Skinner's values.

The assisted behavior is achieved by introducing into society assistance settings that did not exist in the conventional environment. Such assistance settings can be phased out over time, which is to say the behavior of an individual may come to exist without the previously required assistance. If the variance in response cannot be eliminated, however, the assistance setting must remain permanently in the environment, which may require new social costs. At this point, assistance and service providers need to not only provide assistance and services to the target individual, but also to launch *advocacy activities* geared toward society. The experimental design called comparison of within-subject conditions (or single subject design) is a technique to identify the environmental settings required for the establishment of each of an individual's behaviors (Fuji, 2001). This technique can be an effective tool when requesting a new "assistance setting."

Although #3 can be included in #2, it focuses on detecting and realizing the particular reinforcement access each individual desires to have. In recent years, the number of practices and amount of research based on this approach has increased. What can be effective reinforcement for each individual is subject to change depending on the time and situation to begin with. As mentioned in #1, the currently most sought-after methodology is the one that enables the selection of the manner in which a particular individual interacts with the environment, specifically a methodology that ensures and fully assists the "difference in reinforcement." In this sense, this is the most important approach at present. Below is the research direction on self-determination, one of the embodiments of this approach.

## 4. Assistance to self-determination : Development of a new methodology geared to individuals

With respect to the issue of providing full assistance for each individual's choices, much research and practice has been conducted in recent years on the choice making of the person with severe or profound disability under the context of self determination (Hughes & Agran, 1998).

Baer (1998) summarized the principle when conducting such research and practice as follows: *The proposal is to develop our sensitivity to the various forms of*

*communication used by people with severe disabilities so that we may do more of what they want and impose on them less of what we assume they want or want them to want.* (*p*.51).

This principle is what is essentially required when assisting individuals in their choice making regardless of the severity of disability. In order to ensure that the principle is met, each choice option can be set as shown in Figure 1.

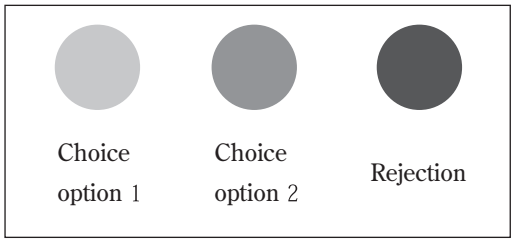


**Figure 1 Setting of options required for choice making**

Choice options 1 and 2 represent alternative things or behavior that an assistance provider presents. When the individual in question chooses one option, he or she can access the thing or behavior corresponding to the option. The response form for the choice making behavior ranges from the use of language (verbal or written) to the simple movement of pointing to the thing or an index that represents it (refer to Mochizuki & Nozaki, 2001). Rejection is the option for the individual to deny the options presented or the situation of choice making itself. It can serve as a setting that meets the principle presented by Baer (1998) that assistance providers (presenters of options) should not impose the things that they (providers) assume are the desires of the target individuals or force them to have make a choice it self.

Targeting individuals with multiple or severe disabilities, studies based on Behavior analysis have been conducted on the situations where the selection of rejection satisfies the demand for the provision of new options (Kennedy & Haring, 1993; Mochizuki and Nozaki, 2001) or where the withdrawal from the choice making situation itself is guaranteed (Nozaki & Mochizuki, 1995). Since such studies have just started, there are still many issues left to be solved, such as what specific behavioral objectives can be set to verify that an assistance provider did not impose anything on the target individual (Mochizuki, 2000). It can be said, however, that empirical methodologies are being developed to assist severely disabled individuals in choosing their own environments.

In the past, social relationships where the people surrounding individuals provided what they thought were the preferred choices of these individuals have been permitted on the grounds that the individuals had no means of communication (Parsons and Reid, 1990). Such a mindset served as one of the reasons that allowed the overall provision of assistance to remain within the frameworks of the medical and social models. Since the circuit of communication that links individuals with the environment is beginning to open now, however, it is urgent to establish ways to provide practical services and assistance that enable environment settings exclusive to each individual.

In the process of providing services and

assistance geared to each individual, activities should not be divided between expertise (positions in an office organization) that deals with micro individuals and expertise that deals with the macro social environment, but should jointly follow the entire process from individuals to the environment as a continuous functional chain of relationships and establish the environmental settings required for each individual. To this end, it is also necessary to develop methodologies and new practical systems to facilitate their collaboration.

## 5. Conclusion

The author outlined a new methodology to provide assistance and services to disabled individuals, which makes a clear departure from the conventional medical model and focuses on the establishment of behavior for each individual, while reviewing the framework of Behavior analysis and empirical studies conducted in this field.

The methodology presented here involves the setting of reinforcement that each individual prefers to have on the premise of the variance in reaction. The core activities in the methodology include: i) assistance that intends to establish behavior via new environmental settings (assistance settings or change of reinforcement standards); and ii) advocacy that ensures the settlement of the environmental settings in society. The conventional discipline of psychology, which deals with individuals, has not developed advocacy methodologies to demand of society the settlement of new environmental settings. Nor has the discipline of social welfare, which deals with macro environmental settings, provided systematic methodologies to fully address individuals.

Needless to say, many people in different positions at the forefront of providing assistance to disabled individuals have made practical efforts to link individuals with the environment. In order to further promote such efforts, however, it is necessary for them to have a common language. This paper has strived to establish the common language for practice with behavior at the core.

Currently, a range of attempts are being practiced within the behavioral framework. Particularly in the field of the welfare of the person with disabilities, some welfare facilities have addressed relationship improvements between staff members and users and the consequent system improvements toward the mission of "expanding behavior options that can be maintained by positive reinforcement" (Matsubara, 2001), while some others dealing with individuals with severe behavioral problems have been striving to shift their policies from the conventional method of eliminating problematic behavior to the expansion of behavioral QOL (Oda et al., 2001; Katsuragi et al., 2001).

Since these efforts are geared toward the creation of new assistance systems, it is indispensable to conduct advocacy activities in the surrounding environment. In an effort to create totally new environmental settings and services, it is sometimes difficult to obtain cooperation from organizations and colleagues that have supported previous systems. One of the most serious and important issues the

field of human services currently faces is how to maintain the proactive activities of assistance providers through positive reinforcement. As discussed above, the specific common issue in all human services, to which priority should be given from a behavioral perspective, is to ensure that the behaviors of service recipients are reinforced by positive reinforcement and their behavioral options are expanded. To this end, it is also necessary to maintain the behavior of the service providers responsible for maintaining and promoting such positive reinforcement and behavioral options. The science of human services should also provide a methodology to address assistance to assistance providers (the arrangement of positive reinforcement).

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