

# Developmental behavior analytic therapy: Procedures and case studies

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ABSTRACT

This paper discusses the case studies applying Developmental Behavioral Analytic Therapy (DBAT), a new behavioral therapy with developmental underpinnings. It also lays out the sequence of procedures of this therapy. The procedures have been illustrated with examples from six case studies of individuals who have undergone the therapy. It also presents the methodology and results of intervention using DBAT on those six individuals. With DBAT, five out of the six individuals achieved their target behaviors and increased their developmental stages. The positive results yielded from this small sample suggest potential benefit and success of DBAT therapy.

**KEYWORDS:** behavioral development, therapy, individualization of behavioral requirements within task sequence, reinforcement, action, behavioral disorders, value of consequences and its discounts, model of hierarchical complexity

**T**HE FIRST PART OF this paper (Commons & Tuladhar, 2014) introduced the Developmental Behavior Analytic Therapy (DBAT) and discussed the theoretical underpinnings of the therapy. The current paper is a sequel of the first paper and presents the applications of the therapy. First, it discusses the history of the therapy. Second, it lays out the sequence of procedures using illustrations from examples of six case studies of individuals who had undergone this therapy. Finally, it presents the methodology and results of interventions using DBAT on those six individuals. The six case studies are presented in full in Appendix A for reference.

## The development of DBAT

The idea of DBAT began to develop in 1962 from the observations of child behavior at the Dubnoff Center for Educational Therapy while working with the children there. The diagnoses of these children included autism, brain injury, and schizophrenia. Many of these children had difficulties in their school work. Some of them were unable to talk. They displayed aggressive and seemingly un-cued behaviors, such as, shouting-out incomprehensible words and phrases. What seemed to work well in helping the children engage in desirable behaviors was instituting positive reinforcement contingencies for those desirable behaviors, and contingencies for behaviors that interfered with the non-work behavior. For example,

food was used as a positive reinforcer for desirable behaviors. To help some of the children overcome distraction and wandering, remaining seated was reinforced with a positive reinforcer. Later on, positive reinforcers were observed to work better when the children had the opportunity to choose their own reinforcers (M. L. Commons, Personal communication, 1962). This insured that the reinforcers were valuable to that particular individual, simplifying the consent process.

Later on this approach was observed to work well with adults as well (M. L. Commons, Personal communication, 1962). The problems of those adults were less severe than those of the children at the Dubnoff Center. In 1970, at the behest of Lovaas, the Dare School for Autistic children was founded in Brooklyn, New York. The success rate at Dare for mainstreaming its students into regular school was 20%. This rate is among the highest in the field, even today. In working with children with autism, it was discovered that this was due to the failure to know what developmental sequences were important to change behaviors for those children. One of the more important challenges that were addressed was, where in a developmental sequence of tasks do the behaviors of the child with autism fell. Another challenge was determining what sequences were crucial to facilitate the development of that individual child.

We observed that the target behavior required an individual to acquire a behavior that was one developmental behavioral stage higher than the stage at which they initially functioned. The increase in stage could not be two or higher (M. L. Commons, Personal communication, 1962). The need to know the developmental sequences is not an accepted finding. The field of applied behavior

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analysis is split into two groups: one that sees development as being sequential with later behaviors dependent on the acquisition of earlier behaviors (Binder, 2000; Ruiz-Rosales, 2000). The other group does not see long developmental sequences (Rosales-Ruiz & Baer, 1997; Skinner, Vaughan, 1983). They only see sequences that are two behaviors long.

Taking the former approach, it was found that the target behavior had to be an attainable one, and that it was the next step in the developmental sequence. Trying to instate behavior too far removed led to aping responses in children with autism at the Dare school. For example, the children learned to imitate words in an “as if” fashion, but did not use those words to communicate, because using those words in their speech was a quantum leap in their developmental sequence. To determine whether a target behavior was attainable or not, it required scoring problem behaviors and determining the stages of performance of the behaviors in the task sequence.

DBAT was developed to extend these observations. This approach was successful in altering behaviors of individuals who would be classified as having obsessive compulsive disorder (OCD), depression, and borderline personality disorder (BPD).

## » THE THERAPY

DBAT is a task oriented therapy that involves altering one’s behaviors by helping an individual raise their developmental behavioral stages of action, and alter their outcomes for specific behaviors. Superficially, DBAT resembles coaching, in that both involve proffering advice. Hence, the individuals whose behaviors are altered are referred to as the *advisee* as opposed to the client or patient. This highly instruction-based therapy requires the *Developmental Behavior Analyst (DBA)* to provide direct supervision to the advisee. *Problem behaviors* are identified by both the DBA and the advisee in most cases. In some cases, only the DBA identifies such problematic behaviors, while the advisee may disagree. However, if the advisee wants to be left alone, the DBA respects the advisee’s wish.

The core principles of this therapy require the DBA to:

1. Form a strong alliance with the advisee
2. Intervene in a work or home setting
3. Set boundaries
4. Allow DBA induced and real world contingencies to work on attaining the target behavior
5. Raise developmental stage at which the advisee behaves
6. Change value of outcome behavior
7. Combine DBAT with other therapies/interventions known to work well for the specific problem the advisee may be suffering from.

### The advisee

We define advisees as individuals who need help in altering their behaviors in order to lead a more satisfying life. DBAT aims to increase the rate of adaptive behaviors in individuals with behavioral problems. We have observed that in most cases advisees recognize their problem behaviors. Although they recognize a behavior as problematic, they may deny the seriousness of their problem by misjudging the cost of such behaviors (Commons & Tuladhar, 2014). Example of this is discussed in later sections of

this paper. In some cases, the advisees are in complete denial about problematic behaviors. Such individuals may require additional assistance by the DBA to overcome denial.

### The DBA

The DBA provides supervision to advisees in their natural environment. An important characteristic of DBAT is that it requires the DBA to be highly instructive and task oriented. DBAs do not aim to alter the “motives” of their advisees. They aim to alter their behaviors, such that their behaviors become more adaptive. The DBA and the advisee jointly determine which behaviors are adaptive and which behaviors are not. One of the ways in which the DBA helps the advisee to overcome a problem behavior is by raising the developmental stage of the advisee. This is done by providing models that help the advisee reach the next-stage behavior (Fischer, Hand & Russell, 1984). DBAs also alter the values of outcome behaviors of the advisee. Unlike conventional clinicians, DBAs contract for sharing the responsibility of altering the target behaviors with advisees.

### Therapy setting

Unlike most conventional therapies, the DBA “intervenes” in the advisees’ natural environment such as their homes, work and schools. This conflicts with the traditions of office-based therapy. The reasons are straight forward. Behavior occurs in the specific contextual background. Advisees quickly come to discern which situations the contingencies that alter a behavior will hold. The contingencies may hold in the office, but not in other settings. Hence, if the therapy is done in the different settings of the advisee, it is possible that the improvement can be generalized. But one cannot assume that simply because therapy is helpful in the office setting that it will also be helpful in other settings without clinical evidence. This position is supported by the shift of early childhood intervention therapists and educators into family centered practices (Thompson, 2012). Moreover, Dunst, Hamby, Trivette, Raab, & Bruder (2000) also hold that intervention in children should be done in natural settings as most of the learning takes place in natural environments, such as home and child care facilities. A partial example of a therapy that adopts similar therapeutic settings would be Linehan’s (1987) work in which she insists that therapists be available by phone to intervene in vivo for clients who are cutting or self-injuring.

### Primary goal

The primary goal of this therapy is not to alter the biological susceptibility of advisees to behavioral problems, but to help them change behaviors in ways that help them lead more satisfying lives as defined jointly by the DBA in collaboration with the advisee. This therapy does not aim to replace any existing therapies, but rather complements existing ones (Commons & Tuladhar, 2014).

### Procedure

The procedures of DBAT are categorized into three broad steps:

- a) Building an alliance
- b) Presteps in intervention
- c) Intervention

**Building an alliance.** From a behavioral perspective, a therapeutic alliance is a form of cooperation between the advisees and the DBA. This dyad undertakes improving behaviors together, while at the same time maintaining boundaries about who is doing what. The first step, as in conventional therapies, is to establish an alliance. The alliance is achieved in the following manner:

1. The DBA asks advisees to describe their feelings and sufferings.
2. The DBA makes the advisee feel that the DBA cares about the advisee. This can be done by checking in on the advisee every day and respectfully inquiring about how the advisee is doing.
3. The advisee begins to feel that the DBA understands the advisee. This is accomplished by integrating the advisee's wants into the treatment.

*Cases illustrating alliance building.* Case 1 illustrates how the DBA facilitated the alliance. D was a 72 year old man who suffered from dependent personality disorder and OCD with hoarding behaviors. His partner had received a diagnosis of borderline personality disorder. They had a difficult relationship in which she pushed him around and constantly yelled and screamed at him, making hysterical demands. He tried to comply with her impossible demands, although his effort was vilified. The DBA started by asking him how he was feeling. He asked him about his marital problem. This helped the DBA gain D's perspective and establish a therapeutic alliance. This was something that neither D's partner nor anyone in his family had ever accomplished. The DBA conversed with him daily and inquired about how he was doing. The DBA listened to what D had to say and kept track of where he was, and what he was doing. This assured D that the DBA wanted to help him, thus establishing a therapeutic alliance.

Case 2 illustrates how a DBA can help the advisee feel heard and understood. "A" was a 9 year old girl, who was diagnosed with oppositional-defiant disorder. Her behavior was very problematic as she threw fits by throwing things around and attacking other people. She had authoritarian, punitive parents who got extremely angry when she protested or had a fit. The DBA started building an alliance with her by asking her how she would like to spend the day. He listened to her and planned her day according to what she wanted to do. Whereas A's parents did not listen to her, the DBA made her feel that her struggles were important. Unlike her parents, the DBA was non-confrontational and nonjudgmental. He respected her consent and involved her in establishing rules for herself.

**Presteps in intervention.** Below are the presteps taken after building an alliance.

### 1. Identify problem behaviors

*Problem behaviors* are behaviors that hinder advisees from reaching their objectives. For example, in the case of "D," one of the problem behaviors was that he hoarded goods such as old cars, wood, garbage cans, etc. In case of "A," she threw fits and hurt other people. The problem behavior is identified by the DBA alone, if the advisee lacks the requisite capacities necessary to be considered competent. It is possible to score the stage of that understanding of behavior using the Model of Hierarchical Complexity Scoring Scheme. If the

stage of performance is below the order of complexity required for understanding, then the person should be presumed incompetent with respect to that particular task. Under those circumstances, the DBA establishes a substitutive judgment in the interests of the advisee. In contrast, if the advisee is presumed competent, the DBA and the advisee together identify the problem behavior. In such cases, the DBA obtains informed consent from the advisee regarding what problem behavior to work on. If on the other hand the advisee cannot be presumed competent to point out the problem behavior, as in the case of "A," the DBA designated the problem behavior on the advisee's behalf.

### 2. Recognize stage of problem behavior

Recognizing stage of problem behavior is important as the target behavior is established based on the stage of the problem behavior. This is done using the Hierarchical Complexity Scoring System (HCSS) (Commons, Miller, Goodheart & Danaher-Gilpin, 2005). For example, in the case of "C," he did not represent himself and submitted to his wife's unreasonable demands to "maintain harmony" in the family. This was scored as an abstract stage behavior. In the abstract stage, one understands and conforms to social norms of the group to which one belongs. For a behavior to be abstract in stage, it has to coordinate two or more concrete stage tasks. In this case, at least two concrete stage deals contributed to C's abstract stage behavior of following the social norm of harmony. First, he thought that his marriage would end if he did not submit to his wife's demands. Second, he thought that if he did not submit to his wife's demands and ended up having a divorce, she would appeal for sole custody of their daughter which she might win. The loss of his daughter was a very high price to pay. These two concrete stage deals coordinated to give rise to C's behavior of submitting to his wife's unreasonable demands.

### 3. Assess how delay, discounting, and perceived risks affect the problem behavior

Both delay discounting and perceived risks contribute in the maintenance of a specific problem behavior. Avoidance of a target behavior results from high perceived risk and/or long delayed positive outcome, and conversely engagement in the problem behavior results from short delay and/or low perceived risk. Delay discounting decreases the likelihood of the adaptive behavior occurring, and failed discounting increases the likelihood of a non-adaptive behavior occurring (Ainslie, 2008; Commons, Woodford & Duchney, 1982; Logue, 1988; Mazur, 1987; Rachlin, 2006).

Cases 1 and 3 illustrate how delay discounting and perceived risks are dynamics that reinforce problem behaviors. In the case 1, one of D's problem behaviors was that he was a hoarder. His hoarding made his neighbors uncomfortable and exposed him to risks regarding hygiene. However, he did not see these consequences and was in denial regarding the risks of his problem behaviors. The negative reinforcer was the anticipation of loss regarding future use of the hoarded object. Typically this is described as anxiety, but the behavioral developmental view describes the contingencies themselves rather than the effect of those contingencies. The positive reinforcement was his belief that he would not be able to use the hoarded object in the future. Although he would receive

the positive reinforcement for the hoarded goods, the value of that reinforcer did not decrease which led to the reinforcement of his behavior. In this situation, failed discounting of the use of hoarded goods and low perceived risk of hoarding those goods combined to maintain the hoarding behavior.

On the other hand, in case 3, “F” avoided a target behavior due to discounting and high perceived risk. F was a very smart 22 year old attending *Harvard Extension School of Harvard University*. However, he was struggling to form good study habits as he experienced problems with concentration, planning, work attack and completion. As a result his grades suffered. This hindered him from working towards his future goal of being admitted to the degree program in *Harvard Extension School* to complete college and attend graduate school. He had no understanding about how to work on improving his grades. One of his problems was that he avoided taking classes that required him to write papers for classes, because he said he was afraid of criticism of his work. This was true despite the fact that he hoped to become a fiction writer. He did not value the fact that taking those classes would help him move forward in getting a college degree in the future, as much as he valued the immediate negative reinforcement that he obtained from avoiding those classes. Consequently, he discounted the value of taking those classes. In addition, his perceived risk of taking those classes was too high due to fear of being criticized. In this way, discounting the value of taking those classes and having a very high perceived risk interplayed in maintaining and reinforcing his behavior of avoidance.

#### 4. Set target behavior

*Target behaviors* are behaviors that the DBA and the advisees aim to achieve. They are behaviors that help advisees reach their objectives. A target behavior should require the advisee to perform at a stage higher than the problem behavior. For example, in case 4, C was a 50 year old radiological physicist who obtained his Ph.D. from a prestigious university. Before the intervention, he was working as a supervisor. One of his problems was that he was on the verge of being let go from his work because of poor performance. He did not communicate well with his supervisees nor monitor them. His shyness and anxiety interfered. He seemed unable to be a leader without realizing that he lacked the skills to be a supervisor. This was identified as the problem behavior and scored to be a formal stage behavior. The target behavior was to recognize which job might suit his skills better. This required him to perform at a systematic stage. Systematic stage is a stage higher than formal stage. Thus, the target behavior required “C” to perform at a stage higher than the stage at which he had customarily performed.

#### 5. Target small behavioral change to win the advisee’s trust

The small behavioral change has to require the advisee to perform at the same stage as that of the problem behavior. This ensures the success of the small behavioral change, as it does not require the advisee to function at a higher stage than their current stage. With the success of a small behavioral change, the DBA can build trust and strengthen the therapeutic alliance.

Case 3 illustrates how this is done. “F” struggled to form good study habits and attain good grades. However, the DBA did not

start by aiming to help F form good study habits and improving his grades. Initially, he targeted a small behavioral change. He took F to a grant proposal workshop. F did not think he could complete the workshop. However, the DBA helped him overcome this fear. The DBA frequently contacted him to gauge his success. The DBA reviewed his work. In the end, F was able to complete the workshop. On completing the workshop, F’s trust of the DBA increased. This trust helped F build a stronger alliance with the DBA. This is an example of how the DBA starts with a small, attainable task, hoping to win the advisee’s trust. The DBA proceeded by working on more challenging behaviors, such as improving F’s study habits.

#### 6. Identify necessary skills or subtasks to overcome the problem behavior.

The DBA teaches the skills that the advisees would need to solve their problem and overcome their target behaviors. Whereas skill training may be part of other therapies, such as modern CBT, skill training in DBAT focuses on acquiring necessary skills to overcome problem behaviors that will allow the advisee to move up one stage. Other therapies do not address moving individuals along development stages, and the individuals’ skills are not contingent upon the stage at which they perform. The DBA analyzes the subtasks that go in between the order tasks. According to the Model of Hierarchical Complexity, subtasks are actions between two consecutive orders that organize only one action from the lower order and one or more from orders below the lower order. Such coordination does not result in the higher order and are thus subtasks between two orders. The higher order tasks organize two or more actions from the immediate lower order. (Commons & Pekker, 2008).

A simple example of how skills or subtasks are identified is illustrated in case 1. One of the problem behaviors “D” and the behavioral developmental analyst worked on was getting his vehicles fixed. One of his vehicles had a broken ignition switch. The target behavior was to get the switch fixed. In order to attain the target behavior, D had to go through a series of subtasks such as knowing where to get his ignition switch fixed, how much it would cost him and such. Once D figured out the necessary steps, he was able to get the switch fixed. Thus, identifying the subtasks or necessary skills is important in overcoming the problem behavior.

**Intervention.** Below are the steps taken after completing the pre-steps for the intervention.

#### 1. Setting boundaries

*Setting boundaries* means making the advisees aware of who is doing what and to whom. This includes learning the impact they have on others and themselves and vice-versa. For example, “D” did not realize that his partner had been diagnosed with ADHD and borderline personality disorder. He experienced his partner as unappreciative. Although he listened to everything she said and helped her in response to her hysterical requests, she always complained that he did not do enough for her. In this case, setting boundaries meant getting D to realize that his partner was not just unhappy with him, but also did not distinguish the boundary between her own suffering and what he did or did not do secondary to his own passive-aggressive behaviors. Clarifying boundaries

requires a person to have *social perspective skills*. This is the skill of understanding what other people think, feel, and reason. It requires integrating others' perspectives with one's own perspective, feelings, and actions. At the concrete stage, this is done by asking questions about what the advisee thinks, feels, and wants and what he believes others think, feel, and want.

Individuals can set boundaries only if they take the perspective of another person. People with personality disorders usually lack this skill (Commons & Barry-Heffernan, 2012). Thus, establishing boundaries is important with advisees who struggle with personality disorders.

## 2. Setting contingencies

Setting contingencies is the key to helping the advisee obtain the desired behavior. The DBA motivates an advisee to abandon the problem behavior and adopt the target behavior by setting contingencies that reinforce the advisee's desired behaviors. First, the DBA sets the contingencies. For example, to manage D's problem with his partner, the DBA gradually establishes contingencies. After building a therapeutic alliance, it became clear that D enjoyed talking to the DBA over the phone. However, if he responded to his partner's yelling by attending to her during the phone conversation with the DBA, the call would be ended. The contingency here was that if D responded to his partner's yelling, he did not get to talk to the DBA, an activity D greatly enjoyed. The contingency punished D's behavior of allowing his partner to interrupt his call. In this way D was trained to confront his partner and to let her know that he would address her concerns later.

As the DBA sets contingencies with the advisee's consent, problematic behaviors gradually subside. The DBA makes the advisee aware of real world contingencies, and let these contingencies serve to reinforce the target behavior. For example, the real world contingency set for F was that if F did not take measures to perform better in class, he would not attain his career goals. Once the advisee helped him realize that, he began to form study habits as advised by the DBA. Real world contingencies tend to work better than DBA-induced contingencies. They work even in the absence of the DBA. In this way, the DBA helps the advisee appreciate increasingly complex contingencies. This raises the value of the target behavior and hence helps the advisees work towards achieving the target behavior.

## 3. Help the advisee recognize the cost of the problem behavior

Often, advisees engage in problem behavior because they do not understand the costs of doing so. Thus, the DBA is required to recognize the cost of the problem behavior so that the DBA may help the advisee understand the economics of the problem behavior. Understanding these economics helps the advisee achieve target behaviors. For example, D did not realize the cost of not fixing the ignition switch of his partner's car. However, when the DBA pointed out to him that he needed to drive his partner everywhere no matter how trivial the errand was, he was able to get the ignition switch fixed. The problem behavior was leaving the ignition switch broken. The target behavior was getting the ignition switch fixed. Once D understood this cost to him, he was able to achieve the target behavior.

## 4. Measure sensitivity to reinforcement by measuring preference and use it to reinforce the target behavior.

The DBA finds out which consequences serve as effective reinforcers and punishers to change the problem behavior. Advisees are given a list of possible reinforcers and asked to rate them according to their preferences. The reinforcer with the highest rating is used to alter the problem behavior, if it is possible to manipulate the behavior. For example, in case of A, the DBA asked A what activities she was most interested. She said that she had never been asked this question by her parents. The DBA chose making her feel appreciated as one of the reinforcers. As per her preference, he also engaged in activities that she liked as reinforcers, such as eating and watching educational videos. Consequently, she did not throw fits nor hurt anyone in the presence of the analyst, when she was gratified in this manner.

## 5. Increasing the rate of responding in one area to increase rate of action in another.

The heart of DBAT is task analysis, which means measuring where the person is in developmental behavioral sequence and measuring the rate of activity. Often, behavior occurs in chains, that is, one behavior must be completed before the next behavior can be attempted. Rate of activity is measured by how many times a behavior occurs in a given period of time for a given task. In therapy, DBAs have to know the rate of the behavior to determine whether this rate is to be raised or lowered. Problem behaviors are lowered in rate, and non-problematic behaviors that compete are raised together with next stage behaviors. By increasing the rate of responding in one area, the DBA can help the advisee succeed in increasing the rate of behavior in another area (Premack, 1959). This helps raise the advisee's stage in the domain of the problem behavior.

## 6. Charting behavior and keeping to-do lists

The DBA helps advisees chart their behaviors concerning their problem behaviors. This helps them keep track of their behaviors. Seeing their progress serves as a positive reinforcement to them. Advisees are also asked to keep to-do lists. This is to help them break down their tasks into smaller steps, helping to prevent them from becoming overwhelmed. Again, checking off tasks from the to-do list serves as a positive reinforcement. These measures help advisees move forward instead of getting stuck.

## 7. Other supplemental therapies and training

DBAT is recommended to be used hand in hand with other therapies. DBAT has been specifically developed to treat certain behavioral problems. Hence, advisees can be advised to receive other intervention specific to their needs. Behavior interventions such as skills training, behavior management, and behavior modification can be used along with DBAT as they help advisees increase rate of action and change behaviors. Similarly, other non-exclusively behavioral interventions, such as CBT and DBT, can also be practiced with DBAT. For example, C suffered from depression due to events in his personal and professional life. In addition to

**Table 1.** Problem Behaviors Identified and Their Stages in the Model of Hierarchical Complexity

Advisee	Problem behavior	Stage
A	1) She threw fits by throwing things around and attacked other people.	1) Primary
B	1) He engaged in behaviors that hindered him from resubmitting his article to a journal and getting it published. He needed to resubmit his paper after a rejection from a reviewer who most of his colleagues thought was “silly”. However, he did not do it. 2) He watched television for 6-8 hours per day. This kept him from having a social life or doing other beneficial things. 3) He could not represent himself and submitted to his wife’s unreasonable demands 4) He hoarded things like old computers. 5) He held a job that required him to have leadership skills that he lacked.	1) Formal 2) Transition between formal and systematic 3) Abstract 4) Sentential/Concrete 5) Formal
D	1) He hoarded land, cars, flyers, garbage cans and such. 2) He did not take social perspective. He did not know that his partner complained all the time because she was borderline or hysterical. He was uninterested in the lives of people he ate with every day. 3) He complied with unreasonable demands of his partner who suffered from borderline personality disorder.	1) Sentential/ Concrete 2) Concrete 3) Abstract
E	1) She felt the necessity to talk about all her friends with everybody she talked to although they did not want to listen to her talk about her friends.	1) Primary
F	1) He had a study habit which did not include making a to-do list and following it. In turn, he was did not complete his assignments on time. 2) He estimated how long it would take him to finish his readings incorrectly. He did not allocate enough time nor establish a reasonable strategy to read more efficiently. 3) In order to avoid writing papers he took six classes that did not require him to write papers and dropped three out of five classes that required him to write papers.	1) Concrete 2) Abstract Value issue and not stage. Overestimation of risk.

DBAT the DBA sent him to a cognitive behavior therapist to help him with his depression. After receiving both CBT and DBAT, C was able to find a position that suited his skills and feel better about his losses. Similarly, advisees can also receive non-clinical trainings that educated them about necessary skills to change their problematic behaviors. C also received leadership training, which helped him convey himself better to his supervisees. As in this example, the DBA encourages advisees to receive appropriate intervention and training.

» **METHOD**

**Participants**

All the six advisees were obtained through convenient sampling. Four of the advisees were males aged 22, 50, 53 and 72 years and two were females aged 9 and 65 years. Five of the advisees suffered from one or more of the following non-psychotic behavioral problems as diagnosed by a licensed clinician: oppositional defiant disorder, borderline personality disorder, obsessive compulsive disorder, dependent personality disorder, and depressive

**Table 2.** Target Behaviors and Their Stages in the Model of Hierarchical Complexity

Advisee	Target behavior	Stage
A	1) To stop throwing fits, and attacking people.	Concrete
B	1) To work towards making his paper acceptable for publishing. To look for other journals and submitting it to those journals.	Systematic
C	1) To stop watching television and engage in behavior such as socializing which are more beneficial to him.* 2) To represent himself better by standing up to his wife. 3) To find a job that matches his skills (i.e. programming)	Systematic Formal Systematic
D	1) To gradually get rid of at least some of the things he had hoarded. 2) To stand up to his wife. 3) To take social perspective of others. 4) To understand that they have to be interdependent on each other. **	Preoperational/Abstract Formal Abstract Systematic
E	1) To stop talking about her relationships with other people since they are not interested in listening to her.	Concrete
F	1) To study more efficiently in a more organized fashion. To make a study schedule. 2) To correctly gage how long it will take him to complete his readings. To develop a strategy to do his readings more efficiently. 3) To take and complete classes that required him to write papers.	Formal Systematic Not stage issue. Problem in assessment of risk. (see Commons & Tuladhar, 2014)

*Note.* \*Could have been a target behavior but the DBA did not aim to achieve it because removing his television would generate an angry response from the advisee and would break the alliance he had with the DBA. \*\*This was a target behavior set later on after target behavior 2) was achieved by D.

**Table 3.** Behavior after Intervention and Their Stages Before and After Intervention

Advisee	Current behavior	Stage	
A	1) Continued to throw fits and harm other people except in the presence of the DBA. She is still in the alliance building phase with the DBA.	1) Primary	1) Primary
B	1) Revised and resubmitted the paper, but the paper got rejected. He understood that he could look for other suitable journals and submit there. He submitted the paper to another journal and it got accepted.	1) Formal	1) *Systematic
C	1) There was no change in his behavior of watching television for six to eight hours per day. This was not set as a target behavior because the DBA was not physically present with the advisee and the advisee was home alone. The DBA could not change the advisee's environment to change his behavior.	1) In transition between formal and systematic	1) In transition between formal and systematic
	2) Represented himself better by standing up to his wife.	2) Abstract	2) *Formal
	3) Worked as a programmer. This job matched with his skills better.	3) Abstract	3) *Formal
D	1) Gradually got rid of at least some of the junk.	1) Sentential/ Concrete	1) *Preoperational/Abstract
	2) Could stand up to his wife.	2) Abstract	2) *Formal
	3) Could take social perspective of others.	3) Concrete	3) *Abstract
	4) ***Did not understand that he and his common law wife had to be interdependent on each other	4) Formal	4) Formal
E	1) Stopped taking about her relationships with other people and understood that they were not interested in listening to her.	1) Primary	1) *Concrete
F	1) Kept his to do list and kept it up to date intermediately. He submitted all his assignments on time.	1) Concrete	1) **Formal
	2) Finishes his readings but still has not developed a strategy to read efficiently as he takes a long time to do them.	2) Abstract	2) *Formal
	3) Started taking classes that required him to write papers. Wrote all the required papers and did not drop the class. Got good grades in all his papers. However, he continued to struggle with writing more efficiently as he took very long time to finish his papers.	3) Value issue and not stage. Overestimation of risk.	3) His value has changed since he does not overestimate the risk anymore and does not avoid writing classes anymore.

Note. \*Indicates that the advisee moved up by one stage in that particular behavior. \*\*Indicates that the advisee moved up by two stages in that particular behavior. \*\*\*This was a new behavior the DBA and D were working on after behavior 2) was achieved by D.

disorders. The remaining advisee did not suffer from any formal diagnosis but required help with developing skills to perform better at the undergraduate level.

### Procedure

Problem behaviors of the advisees were identified and scored to determine the stage at which they were performing in those particular behaviors. The HCSS (Commons, Miller, Goodheart, & Danaher-Gilpin, 2005) was used to score behaviors. Target behaviors were set and scored as well. The DBA applied DBAT to help the advisees alter their problematic behaviors. Behaviors after intervention were then observed and scored. The behaviors were scored by both the authors.

### Problem behaviors

The problem behaviors identified and scored are presented in Table 1.

### Target behaviors

The target behaviors set and scored are presented in Table 2.

## » RESULTS

Although one of the advisees remained in initial phases of the therapy such as alliance building and had not achieved the target behaviors nor moved up in stage, five of the advisees achieved their target behaviors. They also had moved up at least one stage in their

problem behaviors. Behaviors before and after intervention and their respective stages in the Model of Hierarchical Complexity are detailed in Table 3.

A was still in an alliance building phase as she achieved the target behavior when she was with the DBA, but failed to do so at other times. She had not moved up in stage in her problem behavior. B, C, D, E and F all moved up a stage in their problem behaviors. F moved up two stages in studying and doing his assignments in an organized way.

## » DISCUSSION

DBAT has been developed recently and has not yet been applied to a large sample. However, the positive results yielded from our small sample suggest potential benefit and success of this therapy. Among the six advisees, whose case studies have been presented in this paper, five of them successfully achieved their target behaviors. Four of the advisees moved up one developmental stage, whereas one advisee moved up two developmental stages in the behavior of interest. One of the advisees, A, did not achieve the target behavior. She was still in the alliance building phase of the therapy when the therapy was discontinued because her parents' were not willing to assist the DBA to continue the therapy. The fact that the therapy was modestly successful in five out of the six advisees suggests that DBAT is an effective therapy.

As with any new therapy, DBAT has limitations. The first is that the success of this therapy has not been experimentally tested and verified. We also used convenient sampling. The next step towards the development of DBAT would be to utilize this therapy on a larger sample with a more systematic sampling method including control samples. We suggest additional experimental studies to replicate our findings.

Another critique regarding the approach of DBAT may be that it would be difficult to conduct the therapy in a workplace. This problem can be overcome by getting consent of the workplace, as all organizational consultants do. Additionally, the therapy often does not require the DBA's actual presence in the workplace, because other modes of communication are effective in this therapy, such as telephone and Skype. As discussed previously, conducting therapies in natural settings

has the advantage over conventional therapies in terms of generalizability of contingencies to other settings.

A suggestion for future research would be to examine if there is a differential effect of the mode of doing the therapy. Research topics may include whether it is less effective to conduct the therapy via telecommunication and internet than in person. Although we recognize that physical presence of the therapist is optimal in dealing with certain behaviors, such as providing advisees exposure to certain stimulus, most of the therapy can be done remotely. There have been studies that show that remote treatment of such nature have been effective in treating individuals with problems such as panic disorders (Carlbring, Bohman, Brunt, Buhrman, Westling, Ekselius, & Andersson, 2006), compulsive gambling with severe depression (Carlbring, & Smith, 2008) and, anxiety and depression (Veazey, Cook, Stanley, Lai & Kunik, 2009). ■

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## APPENDIX 1: CASE STUDIES

### Case 1: D

D was a 72 year old man who suffered from dependent personality disorder and hoarding. His partner suffered from borderline personality disorder. His partner pushed him around and constantly yelled at him with her hysterical demands. He complied, often after long delays, with her demands. However, she never gave him credit for anything he did for her. For example, he drove her everywhere even though she had her own car and accompanied her to church events against his wishes although he was an atheist. She never appreciated him for any of those things he did for her. She complained that he did not love her or care for her constantly. Sometimes, he would yell back or walk out when he could not handle her behavior. His main defense was to ignore her as long as possible and literally forget unpleasant things. At some point, he did do what she asked after even more yelling. He tried to stay away from her and took care of a few stray cats instead.

He also suffered from OCD as shown by his hoarding of junk things. He had four cars in his yard that did not function. Only two could be fixed but he never had them fixed. He used one side of his house for storage and three garages. He also had a large storage container. His yard was full of random things, such as a toilet and a compressor. He also had poor hygiene. He washed his sheets once in six months. He had no heat nor hot water in the apartment because he did not get the drain fixed or the gas turned on. Instead, he would use space heaters and shower downstairs where there was hot water.

He also lacked social perspective taking skills as he had no idea that other people were different from him. He did not realize that other people see the world differently than he did. He assumed that everyone was rational. He did not understand that his partner would never be satisfied with anything he did and that she would always have a fear of abandonment because she suffered from borderline personality disorder. He thought she was eccentric but did not realize that she had serious problems.

When D started therapy, the DBA asked him how he was feeling. He asked him about his problems. This helped the DBA gain D's perspective. This was something that neither D's partner nor anyone in his family ever did. The DBA talked to him every day and checked up on him. The DBA listened to what D had to say and kept track of where he was and what he was doing. This assured D that the DBA cared. These approaches helped the DBA form an alliance with D.

To form an alliance, D enjoyed talking to DBA over the phone which happened regularly.

It took the DBA a long time to help D see how his way of dealing with his partner was problematic and that he has a hoarding problem. First the DBA helped him set boundaries regarding his partner. He began to realize that he was being taken advantage of by his partner in certain cases. He helped him understand that his partner was much more mentally ill than he thought. To manage his problem with his partner, the DBA had him gradually set contingencies. However, if he responded to his partner's yelling by attending to her during the time he talked to the DBA on the phone, the DBA would hang up. He was trained not to confront

his partner but tell her that he wanted to talk/attend to her, but not right at that moment. After the intervention, D stood up for himself more. For instance, one day D was watching a television show. His partner wanted him to make falafel and stop watching television. However, he finished the show first and then afterward made falafel. In this occasion he stood up for himself and gained independence from conforming to his partner all the time. After the therapy, he was aware that he was being manipulated by his partner. He expressed his anger better as he was no longer passive. He stood up to his partner. This was the first behavioral change D achieved. The next step was to make him understand that he and his partner had to be interdependent on each other to have a better functioning relationship. D had not realized it yet.

He also became a house supervisor for a place where mentally ill people lived and realized that there were people who were more severely mentally ill than he thought.

After building the alliance and helping D set boundaries, the first step the DBA took was to break down everything he had to do into small steps. The DBA made a to-do list for D because D was not good at typing. When the DBA visited him, had days when they recycled some of the things D had hoarded. They bought a battery operated hedge trimmer and weed whacker. They trimmed hedges together. The DBA would check on how many of the tasks on the list were done frequently. This helped D make his life more manageable despite his OCD.

Similarly, his hoarding habits improved dramatically. As a result of the therapy he threw flyers out and recycles things. He sold some property to obtain more cash. He painted his house and replaced all the refrigerators and doors. He got this roof fixed and got a lot of plumbing done. He kept his computers updated with antiviruses. He remained a hoarder but, his hoarding became much more manageable after the therapy. He also improved in understanding and taking perspective of others.

### Case 2: A

A was a 9 year old, who was diagnosed with oppositional-defiant disorder. Her behavior was very problematic as she threw fits by throwing things around and attacking other people. She had authoritarian, punitive parents who got extremely angry when she protested or threw fits. Her parents suffered from terminal narcissism and anger as diagnosed by a licensed clinician. Her parents were not willing to put her under her paternal uncle's care although the uncle would have been a better care taker and had volunteered to take her in.

The DBA recognized her throwing of things and hurting of other people as the problem behavior. A was not aware that it was a problem behavior. The DBA, started building an alliance with her by asking her how she would like to spend the day. He listened to her and planned her day according to what she wanted to do. He made her feel heard. Unlike her parents, the DBA was non-confrontational and patient with her. He did not force her to do things that she did not want to do and involved her in making rules for herself. He maintained good behavior in her through differential reinforcement and reinforcing behaviors other than acting out. For

example, he asked her what she wanted to do and made her do what she thought were fun activities. She was appreciated by the DBA. This was highly reinforcing to her. He became a high source of reinforcement. He set the contingencies that he was confident would work based on the preferences A expressed. She did not fight with him. She never acted out when she was with the DBA. Before the completion of the therapy, her parents got her out of it. She continued to throw fits and harm other people in the absence of the DBA because she was still in pre-steps for intervention phase with him when the therapy ended.

### Case 3: F

F was a very smart 22 year old attending *Harvard Extension School of Harvard University*. However, he was struggling to form good study habits. He had problems concentrating, planning, work attack and completion. As a result, his grades had suffered. This hindered him from working towards his future goal of being admitted to *Harvard Extension School of Harvard University* to complete college and then attending graduate school. He had no clue about how to work on improving his grades. He had difficulty in gaging how long the readings would take him or how difficult they were. As he approached the middle of the semester, he fell behind on most of his assignments and readings. He also avoided taking classes that required him to write papers for classes because he said he was afraid of criticism of his work. This was true in spite of one of his goals in life to a fiction writer.

At the time F started the therapy, he had been a high school intern working for the DBA in a research organization. F started forming an alliance with the DBA as the DBA took interest in his life and what he was struggling with. The alliance got stronger as the DBA took him to a grant proposal workshop. The DBA was successful in building an alliance with H as the DBA was helping him gain necessary skills to move forward in his career path. At the workshop, F got an opportunity to meet different people in academia. He realized how far he had to go in terms of reading and writing academically to build a career in research. Initially, F was unsure whether he could get all the work done for the workshop. However, the DBA frequently checked up on him to see how much he had done. The DBA would go over his work. In the end, he succeeded in completing the workshop. On completing the workshop, F began trusting the DBA. It helped F build a stronger alliance with him. This is an example of how the DBA starts with a small, attainable task first that helps the DBA win the advisee's trust. After this, the DBA proceeded on to altering more challenging behaviors such as changing F's study habit.

Once the alliance was built, both the DBA and F agreed that the target behavior was to change F's study habit in order for F to perform better in his classes. The natural *Harvard Extension School* contingency set here was that if F did not take measures to perform better in class, he would not attain his career goals. If he did perform better, he would be admitted to the regular program. First, the DBA had F come in on Sundays to study under the DBA's supervision. He had him keep track of the hours he put into doing his readings. This helped him become more conscientious of how much time he required to do his readings. He made a to-do list which helped him see how much he had done and organize

and plan how much he needed to do. The DBA checked in with H everyday about how he was doing in terms of getting his readings and assignments done. The DBA gave him tips on how to aim at finding out what the professors looked for in his work.

The DBA also took him orienteering which requires one to concentrate, plan routes to get to the controls and stay highly motivated in order to complete the routes. Developing these skills in this area helped him apply those skills in other areas as well. After this intervention, F did not fall behind on his work as much as he used to before the intervention. Even if he did fall behind sometimes, it was easier for him to get back on track. He had no assignment turned in late and got perfect scores on all his assignments except one of them. He kept his to-do list. He finished his readings, but had not developed a strategy to read efficiently as he took a long time to do them. He also started taking classes that required him to write papers. He wrote all the required papers and did not drop classes. He got A's and A-'s in all his classes post intervention.

### Case 4: C

C was a 50 years old radiological physicist who worked on writing programs for radiological treatment. He obtained his graduate degree from a prestigious university. However, he had four competing behaviors when he first met the DBA. The first was that he watched six to eight hours of television every day. This kept him from having a social life and doing other beneficial things. Second was that he had problems representing himself. He agreed with everybody and accepted responsibility for things he was not responsible for. Later after being married, he submitted to unreasonable demands made by his wife. Third was that he had OCD and was a hoarder. He collected every computer that he ever owned. Fourth was that he held a job that did not match his skills. It required him to have leadership skills that he lacked.

During the beginning of the therapy, C was clinically depressed. He was on the verge of getting fired from work. He was in a supervising position, but was not a good supervisor. He had recently separated from his wife. His wife was abusive and extremely controlling. She constantly yelled at him and told him that he was no good. She tried to control his activities to such an extent that she would not let him eat junk food with his daughter occasionally. They sent their daughter to a private school even if it meant putting a financial strain to their household. They had to give up the house they were renting out in order to afford living closer to their daughter's school. Even after the separation, he seemed to have little say over his daughter's life or how they should treat his daughter.

The therapist began by making a routine to talk to him every day and check up on him. They came up with a plan and recognized what they wanted to fix together. Together they recognized the target behaviors as to have a say in his daughter's life and to find a more suitable position where he worked. The DBA helped him set boundaries and see that he was not solely responsible for his marital problems. He realized that it was also because his wife had problems. The DBA helped him understand that as the father, he could do what he wanted with his daughter and that his wife should not affect how he interacted with his daughter after the separation. He went over the worst scenario that could take place

if he stood up for himself against his wife. This helped him reduce some of his anxiety regarding standing up for himself. The DBA also got him to see a cognitive behavior therapist to help him with his depression and OCD. The DBA also supported his decision to go to Toastmasters International, where he learned public speaking and leadership skills.

After the intervention, he learned to represent himself much better. He talked more with his wife and sometimes represented his view. They remained separated. He did what he pleased to do with his daughter regardless of how his wife felt. For example, he ate junk food with her and let his wife know when she asked him about it instead of lying to her. The three of them did do activities together as family during weekends. He spent his time in her apartment. At work, he did not get fired, but did get demoted. He now just programs rather than leading a team. He started going to work on time. He did as well as he could in his job and communicated with his boss and let him know what he was doing. The DBA helped strengthen his own view that he was a great programmer and working as a programmer would be a better match for him. Thus, C worked as a programmer instead of a supervisor.

He also applied to law school to become a patent attorney. He also started taking online classes. When asked to rate how depressed he was on a scale of 1 to 6 with 1 being totally depressed and 6 being very happy, he rated 4 after intervention and 3 before intervention. When asked how he was performing at work on a scale from 1 to 6 with 1 being going to get laid off and 6 being his bosses love him, he rated himself as 4 after intervention. He still spends the same amount of time watching television. However, the DBA did not aim to alter that behavior because C was by himself in the house and the analyst intervened through telephone and video call software. They lived in different geographical locations. Changing the behavior might require the DBA to change C's environment which was not possible.

This case study illustrates how DBAT can work hand in hand with other types of therapies. In C's case, the Cognitive Behavior Therapy helped him with his depression and OCD. The training he received from Toastmasters International helped him represent himself better. The supervision he got from the DBA helped him establish boundaries which helped him empower himself as a father and realize that the failure of his marriage was not entirely because of him. He is moving on with his life by going to law school.

#### Case 5: B

B was a 53 year old psychiatrist who suffered from not getting work done. He did not know to get help from others about how to bring his ideas to a larger audience. He had a chance to publish a paper he gave at a meeting in an international journal. However, he lacked social perspective taking skills. He described everything in terms of his own personal experience. He wrote a paper that was 90 pages long including all the cases he had taken which were not remotely related. The DBA was able to build an alliance with him as they worked together in a number of things professionally. However, B never agreed with the DBA that his goal was to get his paper published. The time pressure to finish his paper overwhelmed him. The DBA helped him get help from a colleague who helped him cut the paper down and

format it according to American Psychological Association (APA) style. The paper was accepted with pending revisions. B finally resubmitted the paper. However, B even when he finally did the revisions, they rejected the paper. He presented it at another meeting and they asked him to submit a manuscript. He submitted a revised version of the manuscript that had been rejected. B finally realized at that time that his paper might have been a better fit for the second journal. When they asked for revisions, he put the revisions into a letter rather than into the manuscript. After about four tries, the DBA and his other colleague convinced him to make the changes in the manuscript directly. The DBA worked with B in helping him realize it. By the end of the intervention, B finally submitted his paper to a different journal and was accepted. What worked in this case was having an alliance and giving lots of direct suggestions and following up if the suggestions were followed

#### Case 6: D

D was a 65 year old woman suffering from borderline personality disorder. Her mother suffered from severe depression. Her father had died when she was very young and her mother got remarried. When her mother went to a mental hospital, her step father covered it up. At the age of 18, her stepfather made her leave the house. She had a long line of very disturbed family relations. She had many cousins who were abandoned. She was constantly afraid that her partner did not care about her and that he would abandon her. She lacked social perspective taking skills as she did not understand that her partner would not abandon her. She would yell at him all the time to get him to do things around the house. She was jealous of most people who had any kind of relationship with her partner. However, she wanted many people in her own life. She also suffered from OCD.

She wanted someone to help her get the virus off her computer. The DBAs volunteer to help her. Her problem was that she wanted to talk about who she had met and how important they were and how nice they were to everybody. This made it difficult for people to work with her. She talked at people and told her life story to them over and over again. She had the compulsion to tell people all the new things going on with her new friends. In this way, she got off track and never ended up working on getting the virus off her computer. D and the DBA build an alliance as the DBA helped her fix her computer. The target behavior was to prevent her from getting distracted by her compulsion to talk about the people she met. The DBA gave her two choices. She was told that either he would help her get the virus off, or that he would not work with her if she kept going off topic. She realized that there would be real consequences if she kept talking, and she chose to take care of the virus first. Then the two could stay focused and work together. The removal of the virus served as a reinforcer for inhibit going off onto tangents. This is a case where one lets real world consequences work as the reinforcer. The consequence made her realize that talking did not get the job done but focusing did. As a result, she could focus on what needed to be done as opposed to having to report on all the people to others. Also setting limits help make the boundaries between herself and the person helping her clearer.