

# Token Economy: Mastering Behavior Through Reward Systems

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A token economy is a system of behavior modification based on the systematic positive reinforcement of target behavior. The reinforcers are symbols or tokens that can be exchanged for other reinforcers. Token economy is based on the principles of operant conditioning and can be situated within the applied behavior analysis (behaviorism). Token economies are applied with children and adults.

### **Basic requirements**

Three requirements are basic for a token economy.

### **Tokens**

Tokens have to be used as reinforcers. A token is an object or symbol that can be exchanged for material reinforcers, services or privileges (back-up reinforcers). In applied settings a wide range of tokens are being used: coins, checkmarks, images of small suns, points on a counter. These things are worthless. Their value lies in the fact that they can be exchanged for valued things. Technically speaking tokens aren't primary reinforcers, but secondary or learned reinforcers. Lots of research has been done on token reinforcement, including animal studies.

### **Back-up reinforcers**

Tokens have no intrinsic value, but can be exchanged for other valued reinforcing events: back-up reinforcers. Most token economies offer a choice of differing back-up reinforcers:

Material reinforcers: sweets, cigarettes, journals, money

Services: breakfast in bed, having your room cleaned, activities

Privileges and other extras: passes for leaving the building or area, permission to stay in bed, phone calls, having your name or picture on the wall.

There are plenty of possible back-up reinforcers. They're chosen in function of the individual or group for which the token economy is set up, or depending on the possibilities available to the staff. Before starting they decide how many tokens have to be paid for each back-up reinforcer. Often price lists are exposed or given to the clients. Some back-up reinforcers can be bought anytime, for other exchange times are limited (e.g. opening times of a token shop).

### **Specified target behaviors**

Using exchangeable tokens isn't sufficient for a token economy. The contingencies have to be specified before introducing the program. Sometimes client manuals are written to specify how many tokens can be earned by each target behavior (including the exact criteria being used).

When a staff member gives tokens to a client just because he judges he's behaving positively, isn't part of a token economy. That's just arbitrarily giving tokens. Criteria have to be clarified before starting the program. If making your bed is a target behavior, staff and clients have to know how a well-made bed looks like: do the sheets have to be put under the mattress, cushion on top? Often these specifications are hard to make: eating politely, positive cooperation ... how to specify these? There's a broad range of possible target behaviors: self-care, attending activities, academic behavior, disruptive behavior. Clearly specified behavioral criteria can facilitate the learning process. A token economy helps people experience the immediate consequences of their behavior and get a grip on their life. Their social environment becomes more predictable. While planning how many tokens can be earned by each target behavior some factors have to be considered: one has to assure that everyone can already earn a minimal amount of tokens for a minimal effort, and on the other hand one has to arrange that clients don't earn too much too soon, making more effort useless. Sometimes the possibility of punishment by token loss is included, technically called 'response cost': disruptive behavior can be fined with the loss of tokens. This also should be clearly specified before the application starts. Clients can be involved in the specifying of the contingencies.

### **Other features of a token economy**

Besides the 3 basic requirements, other features often are present.

### **Social reinforcement**

Token reinforcement is essential, but is always accompanied by social reinforcement. Tokens are intended to make reinforcement explicit and immediate, and to strengthen behavior, but in the end social reinforcement should be sufficient to maintain what's been learned.

### **Shaping**

All principles of operant learning are applied within a token economy. Shaping implies clients aren't expected to do everything perfectly at once; behavior can be acquired in steps. Initially clients can be reinforced for behavior that approaches the target. If the target behavior is keeping attention during a 30 minutes session, clients can initially already get (perhaps smaller) reinforcement for 5 minutes of attention.

### **Immediacy of reinforcement**

Reinforcement will more strongly influence behavior if given shortly after the response is emitted. The longer people have to wait for a reward, the less effect and the less they will learn. This is the

principle of delay discounting. Immediate token reinforcement can bridge later reinforcement.

### **Learning to plan ahead and save earnings**

Sometimes clients can earn larger rewards like the permission to spend a weekend at home, going to a movie, or having a class excursion. When such rewards would be given at once for one instance of a target behavior, the scarce resources would soon be depleted and consequently the incentives would be lost. One advantage of tokens is they can be used to divide larger rewards into parts: clients can save tokens to buy more expensive rewards later. This implies they shouldn't immediately spend all earned tokens to attractive smaller rewards, and learn to plan ahead. This way they can acquire self-control.

### **Individual and group contingencies**

Mostly token economies are designed for groups. The system is running for a whole ward or class. Within this group contingency specific individual goals and reinforcers can be added. Though sometimes a token economy is being designed only for one specific individual.

### **Consistent application**

The power of a token economy largely depends on the consistency of its application. To achieve this thorough staff training is essential. Some token economies failed exactly on this point. Token economies imply rights and duties for clients as well as for staff. When according to the system a client deserved tokens, he should get them, even when a staff member judges he doesn't deserve them because he has been impolite the day before. Family education and involvement is very important. They can support the system or they can undermine it, for instance by secretly giving undeserved rewards.

### **Leveled system**

Often token economies are leveled programs. Clients can pass through different levels until they reach the highest level. At that point behaviors are performed without token reinforcement. Higher levels require more complex behaviors. The incentive to progress from one level to the next is the availability of increasingly desirable reinforcers.

### **History of the token economy**

In the early 19th century, long before there was any knowledge about operant learning, there were some precursors of token economies in schools and prisons. In those systems points could be

earned and exchanged for all kinds of things and privileges. Only in the 1960s the first real token economies arose in psychiatric hospitals. Teodoro Ayllon, Nathan Azrin and Leonard Krasner were important pioneers in these early years. In the 1970s the token economies came to a peak and got widespread. In 1977 a major study (a randomized controlled trial), still considered a landmark, was published. This study successfully showed the superiority of a token economy compared to standard treatment and specialized milieu therapy. Despite this success token economies massively disappeared from the 1980s on. It became fairly quiet on that front, having to do with a variety of problems and criticism.

### **Problems and controversy**

Especially the application of token economies with adults became a matter of criticism. In addition some impediments and the evolution of mental health care caused troubles.

Dramatic changes in the mental health system

Token economies had proven their effectiveness and utility for chronic psychiatric patients. They can require months or even years to achieve optimal results. This causes problems when insurance and government policies increasingly require the shortest possible hospital stays. Emphasis was put on community-based treatment. Outpatient and home-based care were the future. It wasn't easy for token economies to adapt to this evolution.

### **Legal and ethical issues**

At the same time there was a growing concern for patient rights. The right to have their personal properties, basic comfort and freedom of choice of treatment constrained the possibilities for token economies. In addition ethical and personal concerns of staff members arose: is it ethically justified to use cigarettes as back-up reinforcers, is it human to rely on 'reward and punishment' as means for treatment (behavior modification often is reduced to this by opponents), isn't sincere human contact much more valuable and effective, isn't human interaction reduced to trade, isn't this manipulating people?

### **Client resistance**

Application of a token economy to adults sometimes triggers client resistance. People can feel to be forced. Badly designed token economies even can induce aggression.

### **Response maintenance and generalization**

Problems with maintaining what's been learned and the generalization toward new situations have

been signaled. When the token program stops the acquired behavior might disappear again.

### **Extrinsic versus intrinsic motivation**

Rewarding behavior could increase the extrinsic motivation and at the same time decrease the intrinsic motivation for activities.

### **Recent applications and findings**

The last 50 years plenty of research has been done on token economy. Especially the first 20 years were very productive. Despite all issues and the disappearance of token economies, they've never been completely gone. Even now token programs are alive and well in several settings.

### **Adults**

In adult settings token economies are mostly applied in mental health care. The criticism that clients have no choice and are being forced, is countered by offering them the choice to enter the token program or not to enter, or to leave again once entered. The vast majority of clients voluntarily chooses to stay in the program. Research shows the effects of token economies can more or less be divided into three categories:

No effect: 5 to 20% of the clients does not (or only minimally) respond to the token economy;

Only effect while the token economy is active and no effect once stopped: in this case the token economy is functioning as a prosthesis (like a wheelchair; it doesn't cure but is necessary to keep functioning well);

Well established long-term effects (including community reintegration).

### **Schizophrenia**

The first token economies were designed for chronic, treatment-resistant psychotic inpatients. Even now token economies are applied to clients with schizophrenia. Sometimes the token economy is being used as a lasting prosthesis. Sometimes it's used to help so-called treatment-resistant clients towards resocialization. A token economy (of course always in combination with other interventions) succeeded in the community reintegration of 78% of the clients within an average period of 110 days, after more than 7 years of uninterrupted hospital stay. Research shows clients experience the token economy positively. Several recent reviews of psychosocial treatment for schizophrenia explicitly mention token economy as an effective, evidence-based treatment.

### **Acute units**

The application of token economies has been extended from psychiatric rehabilitation services to acute psychiatric units. A token economy was successful in decreasing the aggression on a ward where clients on average stayed for less than three weeks.

### **Substance abuse**

As a result of heavy ethical criticism token economy got negative connotations. That's why sometimes the system is being introduced under other names. This is especially the case in substance abuse treatment settings. Since considerable time systems derived from token economies are being used under the name contingency management. Initially contingency management was broader, referring to the direct coupling of consequences (reinforcers) to behavior like staying clean. But more and more it evolved to a kind of token economy. Also the community reinforcement approach is often combined with contingency management. Instead of using the name 'tokens', contingency management is speaking of vouchers or related terms. Research shows this kind of token economy is easily applicable outside of hospitals and clearly leads to less drug abuse. This way the problem of less hospital-based and more community-based treatment is solved. Contingency management is being used with inpatients and outpatients.

### **Developmental disorders**

Token economy is also being applied in settings for adults with developmental disabilities. Target behaviors can be all kinds of social behavior and self care, or the decreasing of inappropriate or disruptive behavior.

### **Children and adolescents**

For a long time token economies are applied with children and adolescents with developmental disabilities as well as in schools.

### **Developmental disabilities**

Token economy is effective for children with developmental disabilities. Research shows it can help to diminish disruptive behavior and promote social behavior.

### **Schools**

Token economy is applied in diverse schools, in special education as well as in other schools. Positive results can imply increased attention and decreased disruptive behavior. In educational settings token economy seems to raise the intrinsic motivation. But there's still need for more

research.

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