

CYBERNETIC MODEL OF CORRECTIONAL TREATMENT

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received: april '98.
accepted: september '98.

Scientific paper
UDK: 376.5
519.7

In the past thirty years, treatment in correctional facilities has been severely criticized. Many studies, including meta-analyses, have emphasized the low efficacy of correctional treatment (and every kind of treatment) is related to the three main questions. The first is a clear definition of the features that have to be the object of treatment; the second is the question of methods or programs which are used in the course of treatment; while the third, is the question of the monitoring of the treatment process. Adequate monitoring of the treatment process is possible only in the event that the treatment programming and the evaluation of its effects are undertaken individually, in short intervals or, in other words, at several transition time points from the initial to the final treatment point. The feedback about the effects of treatment is analysed by a personal computer at each transition time point.

According to the results obtained, modification in group and individualized treatment programming takes place successively at each transition time point. The proposed model consists of three levels; the first level performs a comparison of results between the transition time points; the second level, using hierarchical cluster analysis, forms larger groups of inmates convenient for group programming, and the third level, using hierarchical cluster analysis again, forms small target groups of inmates convenient for individualized programming.

Thanks to their great speed of data processing and immense possibilities of data storage, personal computers allow quick decision making about the continuation of treatment at each transition time point. Combining group and individualized programming, provisional treatment programs are modified to satisfy the needs of inmates throughout the treatment process.

Key words: correctional treatment, monitoring of treatment

INTRODUCTION

The meta-analyses of correctional treatment efficacy done by Whitehead and Lab (1989), Andrews et al. (1990), and Lipsey (1992) rank among the most important meta-analyses. The results of these analyses are not quite congruent. Whitehead and Lab offer a mainly negative appraisal of correctional treatment efficacy while Andrews et al. and Lipsey are more optimistic in their appraisals, but all three analyses are similar concerning institutional correctional treatment: they agree that it is performed more poorly than community-based treatment.

Andrews et al. found that inadequate treatment programs produce markedly negative outcomes in the correctional facilities and that the effects of programs that are qualified as appropriate are

considerably reduced in these settings. In accordance with the authors' opinion, the negative influences of the prison environment diminish the efficacy of correctional treatment, so that a continuation of treatment after release is necessary. All three meta-analyses showed that concrete and clearly conceptualized correctional treatment programs give better outcomes than unclear and overly general programs. The meta-analyses carried out by Andrews et al. and Lipsey showed that better results are manifested by behavioural programs and programs aiming at the acquisition of skills (behaviour therapy, cognitive behaviour

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therapy), and that programs relying on psychoanalysis and similar therapies are weaker. The effective programs are directed at higher risk cases, they target criminogenic needs, and are adapted to the particular needs and learning styles of the offenders (Andrews et al., 1990).

Many objections can be addressed to institutional treatment, but the main ones are the following: 1. Institutional treatment as a procedure is not sufficiently standardized - i.e., it is not quite clear what is included in the concept of institutional treatment. 2. The choice of methods or treatment programs is unsatisfactory; it cannot satisfy all the particular needs of inmates. 3. The follow-up procedure of treatment effects in the institution and after release is not precise or systematic (Mejovšek, 1986, 1989).

There is a need to take into account individual differences in any kind of treatment. It is well-known to experienced practitioners that the same treatment is not equally effective for all persons. The same has been noticed by teachers and professors in their work with pupils and students. Individuals differ from each other and consequently, in their reactions to treatment. That is the reason why an ATI (Aptitude-Treatment Interaction) paradigm pointing out individual reactions to treatment and the importance of considering individual differences was proposed (Snow, 1991). The term "aptitude" is defined here broadly, as a complex of personal characteristics enabling adaptation to treatment situations, or as one's readiness to accept treatment and the advantages that it offers. In any case, the adaptation to offered treatment and the situations in which the treatment occurs, and in turn the achievement of a favourable outcome, is the matter of personal attributes.

Pointing out the importance of the ATI paradigm, Snow actually advocates individualized or differentiated treatment. In everyday practical work this implies a broad offering of different treatment programs

enabling the choice of an appropriate treatment program for each person. Although the possibilities for individualized treatment have been very limited in the residential setting, the problem could be resolved by forming homogeneous groups of inmates according to their personal and behavioural characteristics. For these groups we could select particular methods or treatment programs. However, even when the treatment is organized as a group treatment, the evaluation of treatment effects must always be individualized, because only individual changes "count" for later social integration. The planning and programming of group treatment should be completed by individualized planning and programming, especially concerning characteristics which differ significantly from the group average.

The involvement rate of inmates in treatment programs affects the order in an institution. McCorkle et al. (1995) pointed out that in prisons where inmates were included in treatment programs to a greater extent, there were lower rates of assaults on inmates and staff. According to the authors, programs enabling self-improvement had a particular value. The inmates preferred different educational, vocational, or industrial programs that enabled them to satisfy their needs and to feel progress and overall improvement. They were interested in participating in these programs in order to avoid behaving violently and thus risking the possibility of being excluded from the treatment program or being sent to another more custody - oriented institution.

In the field of psychotherapy the well-known "case study" method was developed many years ago. Following the idea of the "case study", a methodologically more sophisticated model, known as the "single case design", was proposed some thirty years ago, but has drawn more attention only recently (Long and Hollin, 1995). The aim is to evaluate treatment effects for each individual at several time points during treatment. Different models of this kind

were developed, and further advancement of this approach is expected. The analysis of data can be undertaken at two levels: statistical and graphical, and is best if done at both levels. Statistical methods vary from simple non-parametric tests to the complex analyses of time series. The possibilities for further development are also seen in the combination of the "single case design" with the standard "group case design" in which the data of one or more groups of subjects are analyzed by standard statistical methods (Long and Hollin, 1995; Morley, 1996).

Institutional-based correctional treatment cannot yet give satisfactory answers to three necessary questions. The first is a clear definition of the characteristics of inmates which are to be the object of treatment; the second is the question of methods or treatment programs which are used in the course of treatment; and the third question (which is no less important) is that of the monitoring of the treatment process. Many personal and behavioural characteristics may be the object of correctional treatment, such as aggressiveness, self-respect, responsibility, self-control, acceptance of authorities etc., as well as characteristics such as educational level, vocational level, and others. Among the different characteristics of offenders, Andrews et al. (1990), Andrews, Bonta and Hoge (1990), and Andrews and Bonta (1994) emphasize criminogenic needs or dynamic risk factors (e.g., antisocial attitudes, antisocial feelings, association with antisocial persons, drug abuse) as the main targets of correctional treatment, because

they are valuable predictors of recidivism. The second question is more complex. In the past there was a lack of methods, but today the problem is rather in the choice among a great number of very different methods or treatment programs. Some of these programs have been evaluated, and some have not, or not sufficiently. The third question concerning the monitoring of the treatment process is the subject matter of this paper. Unfortunately, this important question remains neglected. However, the final effects of treatment largely depend on the capability of constant monitoring throughout the treatment process. Monitoring implies exact information about individual changes in all characteristics which are the object of treatment, during the whole period of treatment, from the beginning to the end.

MODEL

The problem of correctional treatment monitoring and evaluation could be resolved by a cybernetic model of correctional treatment based on the "single case design". In this model the analysis of feedback about the effects of treatment is undertaken at several transition control points, for each individual and for each characteristic under treatment. Effective monitoring of the treatment process requires a great deal of information about each inmate which must be elaborated very quickly, for the treatment continues and cannot be stopped. The problem can be managed by the use of personal computers, which enable the

Figure 1. Transition points of correctional treatment

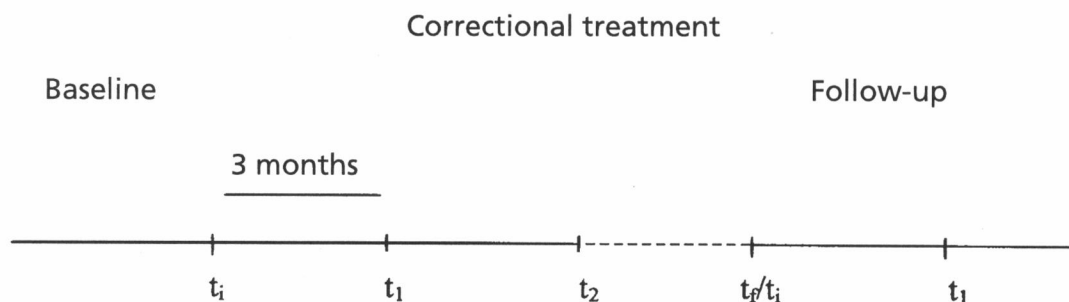
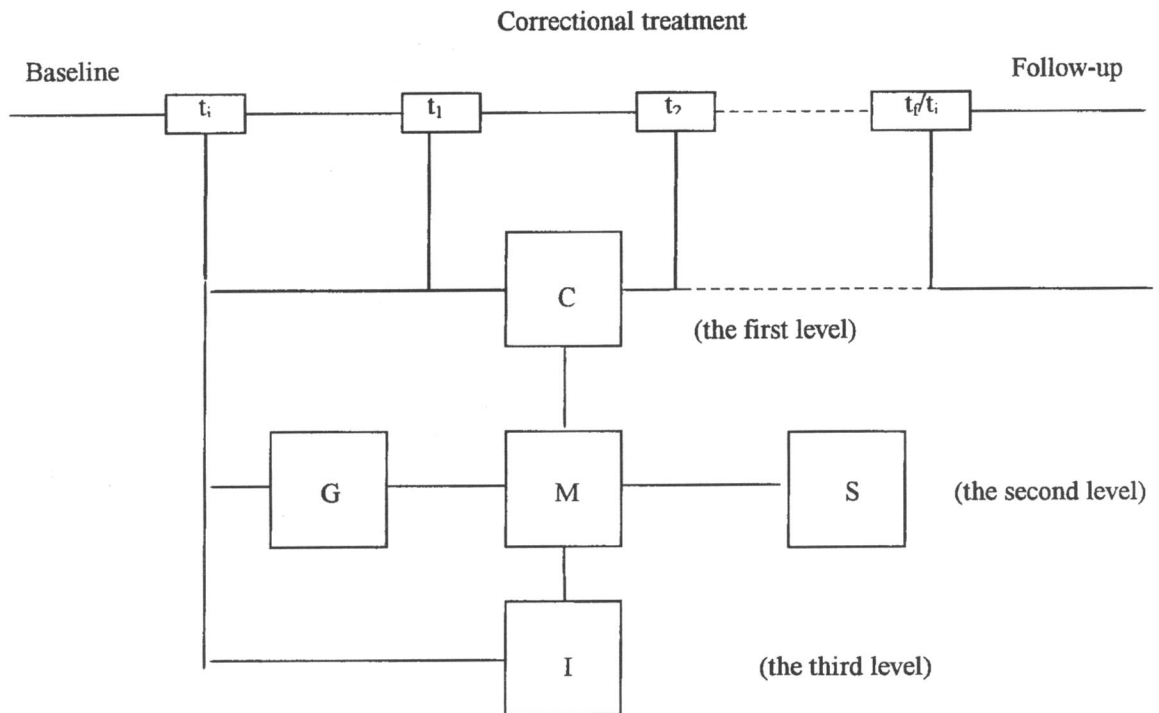


Figure 2. Cybernetic model of correctional treatment



(C = comparison unit, M = management unit, G = group programming unit, S = storage unit, I = individualized programming unit)

storage of a great quantity of data and the quick and efficient processing thereof.

Before the beginning of treatment, all characteristics that are to be treated have to be measured (or estimated). The level of characteristics at the beginning represents a baseline for later treatment evaluation. The whole period of treatment is divided into several three-month intervals. So, between the initial (t_i) and the final (t_f) point of treatment, there are several transition points (t_1, t_2, \dots, t_{f-1}) at intervals of three months from each other (Figure 1.).

A period of three months is enough to notice some changes in personality and behaviour. Shorter intervals would be impractical and longer would not allow the control of the treatment process. The same intervals could be used after the release.

The proposed model of correctional treatment is conceived as a model of three levels. The first level performs the compa-

parison of data within each particular pair of transition points. The second is responsible for group programming. At this level, larger homogeneous groups of inmates which are convenient for group programming are constituted. The third is responsible for individualized programming. At this level, small target groups of inmates are formed to satisfy particular treatment needs, using special treatment programs (Figure 2.). The second level is a standard level. The third level is a special level designed for small groups or even single persons with particular problems of personality and behaviour, for persons who are significantly different from others.

How are the changes in the different characteristics under the influence of treatment measured, recorded, and analyzed? The changes in personality and behaviour could be measured by tests, rating scales, questionnaires, systematic observation, etc.

There are reliable procedures, such as LSI (Level of Service Inventory, Andrews and Bonta, 1995). This instrument is designed to measure the level of need for treatment, but can also be used for treatment evaluation. The best way to record and store data is by using personal computers. In the proposed model the collection and analysis of data should occur at each transition point. At the first level, the analysis of data consists of a simple comparison (subtraction) of results obtained at the beginning and at the end of each three-month interval of treatment that is, between two neighbouring transition points ($t_i - t_1, t_1 - t_2, \dots, t_{i-1} - t_i$). The comparison has to be made for each characteristic and for each individual, in order to find out in which characteristics there has been progress, stagnation or decline. This is performed by comparison unit C. At the second level, unit G, on the grounds of personal and behavioural characteristics, homogenizes groups of inmates by hierarchical cluster analysis. With homogeneous groups it is easier to perform group programming at the beginning of the treatment and then later at each transition point. The term "homogeneous group" as used here does not mean a group composed of uniformly similar inmates, for no such group can actually exist, but rather a group with only global features of similarity. During the course of treatment, the inmates can change their group if they do not belong in the same group any more because of having markedly changed in their personal and behavioural characteristics. So, at each transition point, unit G performs a new classification of inmates into homogeneous groups. Considering the fact that the groups formed at the second level are only approximately homogeneous, there is a possibility at the third level to constitute small target groups to satisfy the individual needs of the inmates, by individualized programming offering special treatment programs. So, at the third level, unit I forms small target groups, again using hierarchical cluster analysis. Units I and G use different levels of

hierarchical cluster analysis for their purposes. However, for practical reasons the individualized treatment would be offered mainly to a limited number of small groups of inmates, who differ considerably from the others, namely to those who exhibit having personality and behaviour problems of greater extent.

Each level of this model can be applied in practice separately. The higher the level the greater the requests. The application of the third level intended for individualized programming requires a large number of particular treatment programs adapted to very different constellations of personal and behavioural characteristics. All the three units (C, G, and I) are computer programs. The entire process is conducted by a management unit (M). Due to the great amount of data, a storage unit (S) is also included in the model.

The comparison unit (C) is a very simple computer program which computes differences between data in pairs of transition points. Different statistical tests that analyse series of data can be added to this unit. These tests can vary from simple non-parametric tests (when the series of data are short) to complex methods (when the data series are large). Simple non-parametric tests are not conceived for testing treatment effects, but only for data description and should be applied along with graphical presentations (Morley and Adams, 1989, 1991). When larger series of data are available, the principal components (factors) of changes could be computed as well (Momirović et al., 1987).

Based on the differences computed by unit C, graphs of changes can be plotted for each characteristic of every individual, the average of all characteristics for every individual, the average of each characteristic for a particular group of inmates, and the average of all characteristics for a particular group of inmates. The program Microsoft Excel for Windows 95 is very useful for that purpose. The comparison could be made not only between neighbouring transition

points, but also between other transition points. It would be interesting, for example, to make a comparison between the initial point of treatment and each successive transition point throughout the treatment ($t^i - t^1, t_i - t_2, \dots, t_i - t_f$).

To allow for comparison of the results of the different characteristics measured (or estimated) in different ways, all the results should be standardized first. The norms for standardization (means and standard deviations) should be obtained from the population of inmates in correctional facilities. This can be the concrete facility in which the evaluation of treatment takes place. Thus, the evaluation of treatment effects is relative to a particular population. This seems more reasonable than using norms obtained from the non-criminal population. If there are norms obtained from a broad criminal population, they can be used as well.

This model best applies to therapeutic group work with inmates. It is, however, also applicable to educational activities and to other activities in correctional facilities. A large choice of effective treatment programs is the main condition for the full application of the model in practice. In this case only individualized treatment in small target groups can be performed. However, the model could also help develop new methods or treatment programs. These methods and programs, as well as those which have not yet been verified, could be evaluated by the model.

The computer program applied at the second and third levels which homogenizes inmates into large or small groups is a complex program of hierarchical cluster analysis. At each transition point this program enables the identification of the appropriate groups (the large and the small one) for each inmate, taking into account

all of his/her personal and behavioural characteristics. There are many hierarchical cluster analysis methods (Jain and Dubes, 1988). One which has been used for many years is Ward's method. It must be noted that this method begins with as many groups as there are persons, and then successively reduces the number of groups by one (the computer program is described in Veldman, 1967). At each step, a reduction of the number of groups is performed by the criterion of minimal increase in the total within-groups variation. The difference between the second and the third level of the proposed model would therefore be in the size of the increase in the total within-groups variation when defining groups.

It is recommended that every inmate should have insight into his/her data, which can stimulate self-improvement. It can also be suggested that the quality of the relationships among the group members be measured, which would certainly affect treatment efficacy.

The model requires additional effort on the part of the staff, but in return offers exact and systematic feedback about the undertaken treatment, and makes group and individualized programming easier.

In the course of treatment it is of extreme importance to measure precisely the changes which occur in the personal and behavioural characteristics of the inmates. For this purpose, valid, reliable, sensitive, and objective measuring instruments and procedures are needed. The model could stimulate the construction of new instruments and the revision of existing ones.

This paper is one result of the project: "Models of intervention for the prevention of behavioural disorders", which is in the course of realization at the Faculty of Special Education and Rehabilitation, University of Zagreb.

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