COMPUTER-ASSISTED PROGRAMMED CASES:
A LEARNING METHOD FOR IMPROVING THE UNDERSTANDING OF
PERSONS

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Abstract

In several professions (e.g. psychologists, educationalists, members of the police force, nurses, forensic experts, a.o.), it is part of the job to be a person with high psychological and interpersonal skills: one has to have an accurate interpersonal perception and a high degree of psychological insight. Assessing the accuracy of psychological insight and interpersonal perception is since long a troublesome area in psychology. The same holds for what concerns the training of such skills.

This paper addresses the presentation of a technique suitable to assess and train persons in their ability to have 'insight' in the behaviour of other persons. If used in a computerized way, this technique could be an assessment and training-tool used in order to teach how to judge other persons. An improvement in the 'psychological insight' skills could probably result in a better performance of such professionals as named above.

This paper has the following four aims:

1. Presenting Programmed Cases, a method developed by J.P. De Waele with the purposes of improving one's ability to predict behaviour and increasing one's understanding of other people. Programmed Cases can be defined as an application of methods of programmed instruction to the study of single cases (life histories). Essential features of this method and the construction of programmed biographies are discussed.

2. Demonstrating the possibilities of on-line computer administering of Programmed Cases (by means of the IMG system (IBM) running on a mainframe computer). The advantages of Computerized Programmed Cases compared to paper and pencil administering are discussed.

3. It is argued that (Computerized) Programmed Cases can be used as a training method for clinical psychologists and other social scientists.
A current research programme is presented in which the effectiveness of Programmed Cases as an educational tool is evaluated.

4. Finally, it is shown that Programmed Cases can be used as a powerful research instrument for studying psychological assessment, person perception and person judgment.

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In several professions (i.e., psychologists, educationalists, forensic experts, members of the police force; nurses and others) it is part of the job to be a person with high psychological and interpersonal skills: one has to have an accurate interpersonal perception and a high degree of psychological insight.

Assessing the accuracy of psychological insight and interpersonal perception has been a troublesome area in psychology for a long time. The same holds for the training of such skills.

All the processes that play a role in 'getting to know a person' such as person impression, person perception, image-building, person judgment, prediction and person description can be encompassed by the term 'psychological insight'.

Psychological insight refers to the individual's ability to understand the personal characteristics and motivational processes of people (Greenspan, 1981). A review of the literature based on computer research (1) revealed:

a) that there is no adequate and acceptable taxonomy available of the constructs 'social and psychological insight'. In other words a lack of conceptualisation.

b) that there are no adequate techniques to measure psychological insight. In other words a lack of operationalisation.

ad a) The concept of psychological insight has a broad and confusing variety of possible meanings. The only attempt known by me and therefore used is the taxonomy of social awareness by Greenspan (1981).

The term 'social awareness' may be defined as the individual's ability to understand people, social events and the processes involved in regulating social events. In the taxonomy of Greenspan social awareness (or social intelligence) is divided into three component abilities: (1) social sensitivity as the individual's ability to label accurately the meaning of a social object or event,
at a given moment in time, (2) social insight as the individual's ability to understand the processes underlying social events and to make evaluative judgments about such events and (3) social communication as the individual's ability to understand how to intervene effectively in interpersonal situations and influence successfully the behaviour of others. For a broader discussion of the abilities social sensitivity and social communication see Greenspan.

The second major component of awareness (social insight) is divided into three constructs: 'social comprehension', 'psychological insight' and 'moral judgment'.

The term social comprehension refers to understanding of social institutions and processes. The term psychological insight refers to the understanding of people, how they differ from each other (person perception), and why they behave the way they do (person prediction). The term moral judgment refers to the ability to think about social rules and about ethical matters.

In all three of these constructs the emphasis is upon the ability to generalize about interpersonal behaviour and events, rather than the ability (as in social sensitivity) to phenomenologically respond to a concrete social event. Such concrete events can be used, however, in assessing social insight; it is just that the question being asked is different: instead of being asked to show a surface understanding of the event (what is happening?), the person is being asked: why is it happening and what is its significance in a broader scheme of things? For more details of these constructs see Greenspan, 1981.

ad (b) Operational definitions of 'psychological insight'. The main reason for the lack of an adequate operationalisation of 'psychological insight' is that most psychological insight tests don't deal with a genuine situation with real persons (Thurstone, 1920, p. 231). Most psychological insight measures have been modelled after traditional tests (mostly intelligence tests) which are primarily composed of items that are abstract, decontextualized and have little or nothing to do with one's actual competence in real-life social situations. Studies in the accuracy of interpersonal perception used to set subjects the 'guess the quantity of a trait' task or the 'guess what he would write' task (McHenry, 1968). In the 'guess the quantity of a trait' task, subjects are given a list of personality traits and they are required to state the quantities in which these are possessed by certain stimulus persons. Often a comparison is then made between the subject's judgment and the stimulus person's view of himself. In the 'guess what he would write' task a stimulus
person is required to fill in a personality inventory and it is the
task of subjects after meeting him or seeing him on film to fill in
the same personality tests as he thinks the stimulus person did.
But these interpersonal judgments which as the subject one is
asked to make in the laboratory are not similar to those we use
to making in everyday life.

In complex problem tasks like the task 'getting to know and judge
a person accurately' the actors are an active element in a complex
network of active and passive elements (Dörner et al., 1984).
The reality the actors act in is:
1) a complex one: there is a lot of information available,
2) intransparent: a lot of necessary information is not available,
3) self dynamic (eigendynamisch): the situation and the other
persons are active and autonomous (selbstbewegend).

In recent cognitive psychology and problem solving psychology
there has been some research on problems of a completely diffe-
rent kind: the problems are very simple, transparent and static
(for instance the prisoner's dilemma). As a consequence most
psychological research is totally inadequate for the analysis and
the understanding of complex problems and especially complex
social problems.

As Ford and Tisak (1983) clearly stated, a measurement approach
is needed in which the behavioural effectiveness criterion for
defining psychological insight is translated into precise, relevant
and practical operationalizations of the construct which retain at
least some of the richness and meaning of real-life social
interactions. So what is needed in order to study psychological
insight is a task that deals with the behavior of real persons who
have a biography. In other words a 'what he would do' task. The
technique of the programmed cases refers to such a task.

Not only assessing the accuracy of psychological insight has been
a troublesome area in psychology for a long time, the same holds
for the training of such skills.

1. Essential features of Programmed Cases.

Programmed Cases is a method constructed by Dalley (1971) and
further developed by J.P. De Waal (1971) with the purpose of
improving one's ability to predict behaviour and increasing one's
understanding of other people.

The method of Programmed Cases can be defined as an application
of methods of programmed instruction to the study of single cases
(life histories). A Programmed Case is a life history of an individual divided into time-segments, called episodes. The case is presented to the subject one event or episode at a time, and the subject is required to forecast the next or following behaviour. Each episode consists of two data:
1. situational data,
2. five possible reactions, behaviours, attitudes, ... of the person to the situation.

For example:

situational data
During his military service he gains the confidence of his lieutenant, because he is the only married man and has two children already. He becomes the confidant, shows himself to be very discreet and is appointed a telephonist. This gives him the opportunity to render some services in his lieutenant's love affairs. At the end of his military service the lieutenant becomes interested in the future of X. As X. has no fixed goals the lieutenant advises him to apply for a job with the police. What will X. do?

five different reactions
a. he does not accept the lieutenant's offer and returns to his former employer.
b. he prefers to stay in the army.
c. he applies for a position in the police-force and is accepted.
d. he starts taking a course in electronics.
e. he applies for a job as an electrician in the city-services.

While the information on an event is always real, there is one and only one real reaction of the person. The task of the subject consists in predicting the real behaviour of the person described on the basis of the information given.

Then the subject is informed as to which of the five reactions did occur.

It is assumed that informing the subject of the truth of each forecast permits him to accumulate information about the person and that accuracy of forecast in a case indicates the subject's understanding of the case.

2. Construction of Programmed Cases.

To construct a programmed biography, the investigator uses single-case data collected in an intensive and idiographic study. De Waal in his article about the Brussels Method (1976) stated that for a systematic personality assessment the convergent use of
four approaches is required:
1. the autobiography is the first step which must enable the person to give his definitions of his present and past situations and his own and other conceptions within his own time perspective.
2. direct observation of behavioural patterns in various institutional or social settings,
3. the social inquiry,
4. experimentally contrived problem and conflict situations.

These four sources of data are characterised by the fact that they are homogenous, because (a) they have to do with common every day behaviour and situations and (b) they belong to a world of meanings shared by the person and by the investigator: they are accessible to both, and expressible in the same ordinary language.

For these reasons the data obtained lead to accounts (justifications, argumentations, commentaries) whose correctness and authenticity can be checked by negotiating them with the focal person, and various informants. They can also be verified independently by field study as well as the use of documentary evidence.

However, to be coordinated with each other, these four sources of data must be linked to a common frame of reference and must, at least as far as 'first order constructs' are concerned, be integrated within the more or less unified system of cognitive structures manifested by the person. In order to reach these two objectives, a technique called the Biographical Inventory is used by De Waele (1979). This is a systematically organized collection of open questions, questionnaires and ratings which (a) are to be used by the investigators and by the investigated person alike, (b) are systematically linked up with the four sources of data mentioned above; (c) are so organized that multiple cross-references and comparisons are made possible; (d) once they have been analyzed, become the starting point for detailed interviews oriented towards situational and interactional structures and (e) allow for comparisons with other sources of information.

The reconstruction of a biography according to the Brussels Method of De Waele, which forms the basis of each programmed biography is the result of very intensive and idiographic research and conceived as a co-operative achievement a team which ideally consists of about half a dozen people, each bringing to the task a different professional background, such as a sociologist, a psychiatrist or psychologist and the participant whose biography is to be generated.
This life-history material is then divided into the smallest possible behaviour units, called episodes, that are still significant. By an episode we understand a behavioural event occurring at a particular time and place, in response to a particular situation; it has to include overt behaviour, words and gestures which indicate the feelings and probable motives of the person.

For each episode the case-writer then prepares four distractors: four plausible but fictitious reactions of the person to the given situation. Before the subject or student predicts the first episode of a childhood event and proceeds to study events in the life history in chronological order, he is given some more information about the social and familial background of the case person or participant. The aim of each programmed biography is getting to know the person. In order to control the plausibility of the distractors the participant predicts his own life-history and criticises the four distractors.

Until now nine programmed cases have been constructed and predicted by several students in the paper and pencil form: 3 cases of fifty episodes and 6 cases of twenty episodes. For more details about these cases see De Waele (1971) and Van den Brande (1984).

It is also possible to construct a computerised form of a programmed biography. It will be argued below that a computerised programmed biography has several advantages both for research and educational purposes.

3. On-line computer administering of Programmed Cases, by means of an author system, the Instruction Modulator Generator system (IMG), running on a mainframe computer, but also on a microcomputer stand alone.

The IMG system is an interactive computer network designed by IBM for computer-based instruction for non-computer specialists like educationalists or psychologists; so no computer background is needed. The IMG system has been especially designed to facilitate the two major aspects of computer based education: Computer Managed Instruction (CMI) and Computer Assisted Instruction (CAI).

Computer Managed Instruction: the software for CMI on the IMG system allows testing of students, routing of students to appropriate lessons and recordkeeping routines that keep track of the lessons the student has completed.
Computer Assisted Instruction: the actual lessons used for CAI or for CA research on IBM are constructed using the IMG system. This system is particularly effective for:
- displaying textual and graphic material,
- the input and judging of students, responses and controlled branching through the programme.

Within the frame of a research project at the Free University of Brussels (Department of Personality Psychology and Department of Education) I designed and programmed several cases. A macro and micro outline of programmed cases on IMG are shown and explained. (see figures next pages)

There are two introduction lessons, one by the IMG system and one by the P.C. method. Then the students are routed to appropriate cases, depending upon the interests, background, the student's former studies, and others.

The micro outline shows the structure of one single episode. First of all the subject reads the situational data and tries to predict the real behaviour of the person described, on the basis of the information given. At the left you can see the student's track. If his choice was right, he is asked for a justification. If the choice and the justification are right, he is given positive feedback. But if his justification is wrong he is routed to an interactive subprogramme with help for finding the right justification.

The right part of the outline is the track of a student who has made a wrong choice. After a second mistrial, he is routed to an individualized and interactive sub-learning lesson for finding the right answer depending on the answers to the episodes before. So the feedback is different for each person. After a third mistrial he is given the right answer.

The most important advantage of CPC composed for paper and pencil administering are the interactive and individualized responses.

The student works at his own pace: after each choice and justification of that choice the student receives feedback, namely cues, suggestions or exercises to do better. This feedback depends upon the route followed by the students through a programmed case. When the student has problems with an episode he can ask for more help... Besides interactive and individualized responses, sophisticated graphic capabilities ranging from line drawings to animation are possible. Microfiche facilities are also available, which involves the backscreen projection of images into the terminal (e.g. of a problem and conflict situation), and interaction is possible among terminals for predicting programmed cases in group.
So the advantages of CPC compared to paper and pencil administering are:
1. Automatic collection of student data by storing student records, responses and scores.
2. Control of presented information and randomization of potential variables such as order of presentation.
3. Routing of students to appropriate lessons and record-keeping routines that keep track of the lessons the student has completed.
4. Interactive responses.
5. Individualization: the student works at his own pace.
6. Product and process evaluation:
   a. After each choice and justification of that choice the student receives adequate feedback.
   b. When the student has problems with an episode he can ask for more help.
   c. After some mis trials (max of 3) he is given automatically some cues, suggestions or exercises to do better.
7. Sophisticated graphic capabilities ranging from line drawings to animation are possible.
8. Microfiche facilities are also available, which involves the backscreen projection of images into the terminal (e.g. of a problem and conflict situation), and interaction is possible among terminals for predicting programmed cases in group.

4. Programmed Cases as a research instrument and a training method.

Programmed Cases and Computer Programmed Cases can be used both
- as a research instrument for studying psychological assessment, psychological insight and the methodology of single case study, and
- as an educational tool for psychologists, educationalists and other social scientists with the aim of improving their ability to predict behaviour and to understand persons.

Several experimental studies conducted at the Free University of Brussels revealed:
1. evidence that the understanding of other people or the ability to predict behaviour improved during a series of cases, and
2. evidence that a learning pattern was discernible within the individual cases.

The first findings indicated that subjects 'generalised' the results of what they were learning.
Research

The principal aim is substituting clinical experience by the development of a course-ware of Computer Assisted Programmed Cases to be used in the training of psychologists, educationalists, forensic experts and others.

a. Therefore an optimisation of the method as an educational instrument is a primary condition.

The series of experiments treated here were related to the following 6 topics:

1. psychometric research: difficulty level, error analysis, item discrimination or validity, item reliability.

2. learning within the scope of a case: does the subject 'learn' about another person in the sense of making increasingly accurate predictions of the other person's behaviour as he receives increasing amounts of information about that person? To test the learning within the scope of cases, one may compare the prediction score of all subjects at successive points within the cases. The method used was a correlation between the first fourth (Q1) and the difference between the first fourth and the fourth (Q1 - Q4).

An experimental investigation (Theissen, 1967, involving n=29 subjects) making detailed analysis of three cases (AB, D and X) revealed that the Programmed Case Method did in a fact result in measurable improvement in the ability of the subjects to make 14 predictions.

Case AB \( r = + 0.64 \)
Case DC \( r = + 0.49 \)
Case Xr = \( + 0.87 \)

fig. 3: correlation between Q1 and (Q1 - Q4) (n=29)

3. learning between cases: Is there a generalization of this prediction skill of subject from one person to the next? To test the generalization of the skill from case to case, the prediction scores of all subjects at successive points during the series of cases were compared (n=29) (Slöeck, 1967)

<table>
<thead>
<tr>
<th>Case</th>
<th>first choice</th>
<th>s sum of s</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB (52 epl.)</td>
<td>27.34</td>
<td>8.22</td>
<td>90.76</td>
</tr>
<tr>
<td>D (56 epl.)</td>
<td>31.69</td>
<td>9.44</td>
<td>93.96</td>
</tr>
<tr>
<td>X (56 epl.)</td>
<td>34.48</td>
<td>9.38</td>
<td>69.24</td>
</tr>
</tbody>
</table>

fig. 4
The correlations between the cases are relatively high, when we take into account that the cases are very different in content.

\[
\begin{array}{c|c|c}
\text{r} & \text{(p=0.001)} & \\
\text{AB (1) - Dr (2)} & +.73 & \\
\text{AB (1) - X (3)} & +.64 & \\
\text{DR (2) - X (3)} & +.77 & \\
\end{array}
\]

fig. 5: Correlations between the cases

4. No significant correlation was found between programmed cases and cognitive complexity (REP-test), ego identity of Kelly-test, exams, vocabulary test and intelligence (Cattell).

cognitive complexity
ego identity

exams in

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c}
\text{AB+D+X} & +0.05(ns) & -0.11(ns) & \text{MATH.} & \text{MATH.} & \\
\text{AB} & +0.03(ns) & -0.05(ns) & +0.02(ns) & 0.00(ns) & 0.27(ns) & \\
\text{D} & -0.11(ns) & -0.16(ns) & -0.11(ns) & -0.21(ns) & -0.01(ns) & \\
\text{X} & -0.06(ns) & -0.06(ns) & -0.13(ns) & -0.27(ns) & 0.00(ns) & \\
\end{array}
\]

Vocabulary Cattell (n=80)

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c}
\text{AB+D+X} & - & -0.12(ns) & \\
\text{AB} & -0.13(ns) & -0.25(ns) & \\
\text{D} & -0.15(ns) & -0.15(ns) & \\
\text{X} & -0.19(ns) & +0.01(ns) & \\
\end{array}
\]

fig. 6

However, these results can be critised on several points and further research is necessary. It can already be concluded that subjects do 'learn to know another person' if the data are programmed as in this experiment and that there is a measurable degree of generalization of this skill to other cases. The implication for education is that something may, indeed, be learned by the case method.
b. Gaining new insights in the field of conceptualization and judgment of persons.

Four steps were essential in predicting Programmed Biographies:

a. Noting the significant: significant statements are:
   (1) the ones about the events most likely to influence the future behaviour and attitudes of the individual.
   (2) the ones that show an action or an attitude that may be characteristic of the individual.

b. Interpreting the data by questions like "What is this person trying to do?", "What kind of approach does he take in trying to do it?".

c. Forming the image: an observer must construct a mental image of an individual so that he will be able to tell why that person acts as he does.

d. Comparing episodes with the image.

Further research involving these 4 steps is necessary in order to answer the questions below:

a. What should a subject predicting a programmed biography discover? or an analysis of the tasks of each case.

b. How does a good performer solve these tasks?
   Does the use more data and argumentations to claim an alternative? Does he predict as he is moving along a programmed case according to a growing abstraction level?
   Does he use 'naive' personality theories and, if so, which one is useful?

c. How can bad performers be taught to predict more accurate programmed biographies?
   Research has shown that initial lessons for adequately using the four steps and feedback at several stages helping the subjects to argue their choices and better conceptualize the person, increase the accuracy of prediction by 25% \(n_{AB} = 81\),\(n_{AB} = 84\).

On these results we designed and programmed three IMG Programmed Biographies with a lot of feedback and sub-learning programmes. In current research \(n = 49\) we are testing the hypothesis that subjects perform better on Computer Assisted Programmed Cases than on the paper-and-pencil version.

5. Conclusion

By way of conclusion, it can be stated that a series of Programmed Biographies and Computerized Programmed Biographies constitute an adequate training in the clinical study of an individual case (clinical didactics).
It should be noted that (1) also psychopathological data can be inserted in Programmed Cases. This would allow to incorporate a training of the DSM III diagnostic categories in a study of all single persons. (2) Not only biographies but all processual psychological data (i.e. action psychological data) can be the subject of the programmed instruction method.

References:


