
Computer-Assisted Vocational Life Skills Program for Offenders

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Abstract

Deficits in social-cognitive skills are deemed to be a major problem for many offenders. The development of a computer-based software package designed to support existing life-skills training programs is outlined. The program is based on extensive field data collected from life-skills instructors. The data and the models upon which the product is based are described along with the prototype package.

Résumé

Les manques d'habiletés socio-cognitives représentent souvent un problème majeur pour plusieurs délinquants. Le développement d'un programme progiciel, basé sur ordinateur, est décrit. Ce programme fut conceptualisé dans le but de supporter les programmes déjà existants d'entraînement des habiletés socio-cognitives. Le programme est basé sur des données provenant d'instructeurs d'habiletés socio-cognitives. Les données et les modèles sur lesquels le produit est basé sont décrits ainsi que le contenu de progiciel.

INTRODUCTION

According to Fabiano and others (Fabiano, Robinson & Porporino, 1990; Ross & Fabiano, 1985) a cause of recidivism and initial criminal behaviour is limited social-cognitive competency combined with frequent content knowledge deficits. One of the adverse effects for individuals with social-cognitive deficits is their failure to anticipate consequences of their behaviour. In addition, they may be unable to conceptualize how to reach their employment goals—how to design a strategy for achieving requisite training and then how to systematically pursue the necessary sequential stages. As a result, their adjustment within the labour sector is marred with difficulties which are often associated with the selection of inappropriate and unrealistic goals when searching for employment.

Even at work, employees with social-cognitive deficits may have serious problems maintaining employment because of their impulsive egocentric tendencies. By failing to adequately understand the effects of their behaviour on co-workers and supervisory personnel, and by failing to recognize that people may retaliate, such employees often behave in ways which antagonize peers and supervisors. Because they lack this understanding of why people react to them as they do, these individuals may become antagonistic, hostile and rebellious in successive job placements.

As a result, their lack of self-esteem and confidence reaches an intolerable level for them and they drop out of the labour market entirely, regarding work as devoid of purpose and meaning.

Offenders' social-cognitive skill deficits include: the inability to comprehend the problem-potential of people interaction; inadequate skills in generating alternative solutions to problems; poor skill in anticipating the consequences of solutions; an inability to conceive the process involved in achieving goals; and an inability to see the cause-and-effect relationship between another's behaviour and one's own actions (Ross & Fabiano, 1985). Ross and Fabiano maintain that evidence exists which demonstrates that social cognition skills can be taught and that the persistence of criminal behaviour among offenders can be decreased by the acquisition of these skills.

Incarcerated offenders have difficulties perceiving the causal relationships in interpersonal interactions (Dean, 1979). But as one's role-taking ability increases, so does one's sensitivity to others' reactions to one's own behaviour, resulting in a decrease in egocentric thought processes which in turn results in the capacity to recognize and the likelihood to consider the interpersonal results of one's actions (Short & Simeonsson, 1986). Offenders experience problems in assuming the role of others, resulting in an inability to anticipate others' behaviours (Jurkovic & Prentice, 1977). According to Ayers (1979), offenders lack analytic problem-solving skills, while Spivack, Platt and Shure (1976) add that offenders often have deficits in interpersonal problem-solving leading to an inability to solve problems sequentially. Many offenders may persist in maladaptive behaviours because they simply have not accumulated the skills necessary to enable them to analyze interpersonal problems and respond in alternative ways to them (Fabiano & Ross, 1985).

Improving the social-cognitive functioning of young offenders may be an essential factor in reintegrating these individuals into the community and the labour market, but it is not in itself sufficient. In addition to the acquisition of social-cognitive skills (how to think), offenders must also be provided with training in basic life (or "survival") skills.

Social-cognitive skill deficits are addressed by various programs (Larson, 1988; Ross, 1986). A program entitled "Cognitive Skills/Employment Preparation Programme" is offered in many locales by the John Howard Society. Offenders who have had some type of conflict with the law are accepted into this program. The participants may range from those who have been recently released from incarceration, to those on parole or probation. In some instances, participants have had little recent contact with the legal system. The program is eight weeks in duration. It involves classroom instruction covering such areas as improved self-awareness, communication skills, human relations skills, criti-

cal thinking skills, and improved understanding of consequences. The program also includes a job readiness training component.

In literature searches and contact with professionals active in the field, virtually no computer-based materials pertaining to social-cognitive functioning were found. This project aims to develop computer-based materials to assist offenders in acquiring the social cognition skills needed to seek out employment, and once successful, to remain employed after their period of incarceration. The program being developed seeks to meet the following objectives: to create a high interest/low vocabulary product that independently sustains user interest; to utilize a software model that is easily modified and potentially multilingual; to use "state of the art" technology and current social-cognitive thinking; to be used with populations outside the prison system; and to create products in a format potentially compatible with different hardware and operating systems. The target population for the product are offenders between 15 and 25 years of age.

DATA GATHERING

The typical offender profile for inmates admitted to correctional centres in Newfoundland and Labrador is as follows: male (96%), single (53%), between the ages of 18 and 29 (54%), a self-reported educational level less than grade 10 (68%), unemployed (72%), serving at least a second term of imprisonment (60%), for an impaired driving conviction (34%) or a property offence (26%) (Marvin McNutt, personal communication, December 9, 1990). This population, in most respects, is considered typical.

To determine the critical needs of this offender population, persons directly involved with offering training and programming were interviewed. To get a broad sampling of views, a total of five data-collection sessions were carried out, each in a different area of the province. As a means of avoiding bias found in any one area of corrections, each data-gathering session had at least one representative from each major correctional category—education, adult corrections, and youth corrections. Personnel from the John Howard "Cognitive Skills/Employment Preparation Programme" were also involved. A total of 23 field workers took part in the information-gathering sessions. Persons interviewed represented various types of services. Included were staff from a short-term holding unit used for the detention of male and female persons awaiting court appearances or detained under the Mental Health Act; a correctional facility which accommodated inmates who required only minimum security; the only correctional centre in the province accepting female prisoners; and the primary correctional facility for the province, a maximum/medium security institution accommodating sentenced and remand male prisoners.

Information from these sessions was taken using a "direct to text" process which allowed the researcher to record or paraphrase, in print (as contrasted to audio tapes), each person's statements. At the same time, the speaker could be noted. Care was taken to transcribe as closely as possible the actual words used by the speakers themselves. Prior to the data-collection sessions, each worker was given a copy of the original proposal of the study and told why their input was needed. Specifically they were asked to come to the session prepared to discuss two to three sample cases/files of persons in the target age range. Input as to personal traits, useful programs, motivation, background, and instructional suggestions was sought. At the beginning of each session, the facilitator introduced the participants and data recorders, explained the process of recording data, and reviewed the objectives of the project. It was made clear that the aim of the project was to develop products that field personnel perceived as being needed. Each session was attended by the field personnel, a member of the research team who acted as a facilitator, and at least one person who recorded the text by keying it into a micro-computer. The facilitator was always knowledgeable about the offender population and training programs.

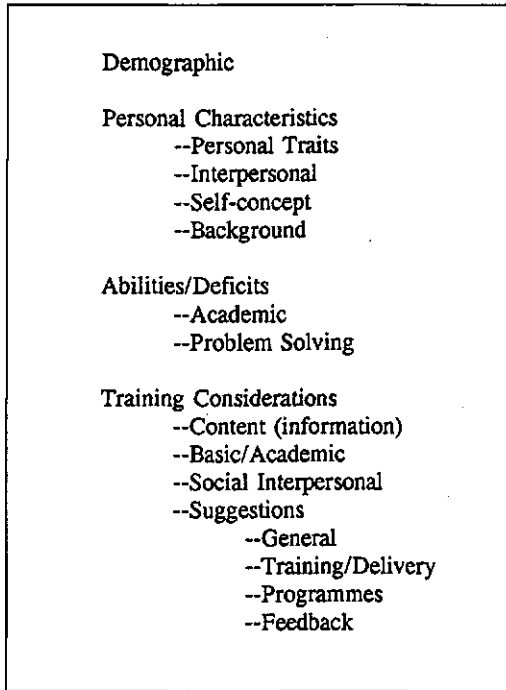
DATA ANALYSIS

The data gathered from each session was analyzed independently. Initially, the files were "cleaned" by correcting spelling and grammatical errors, and deleting introductory and explanatory comments made by the session facilitator. Any confused or ambiguous statements were made clear by asking the speaker or another participant for clarification. Cleaning was always done within 24 hours of a session. Each individual participant's comments were then grouped. Once this was done, repetitive and redundant statements by individuals became evident and duplicates were deleted. All speakers' statements (specific points) were then merged into one large file.

To identify potential needs/item categories, the researchers, after studying the literature and becoming familiar with the offender population, prepared a possible master list. These "need" themes were quite broad and were expected to change as the analysis progressed. To facilitate the identification of additional or more specific headings, a "miscellaneous" category label was included. Data not fitting in the previous categories were included here. This category was later sorted to identify new themes. Any "unused" categories were dropped. Each statement made in a session was then sorted under the appropriate specific theme. If a statement contained more than one idea, the statement was copied and the ideas were individually underlined. Each point was thus separately categorized. Next, similar and related statements under each theme were grouped and comparable statements combined.

This eliminated redundancy. Main points were thus identified. Points were grouped under four major headings which included: demographic, personal characteristics, abilities/deficits, and training considerations. A detailed listing of the categories and subcategories that resulted from this sorting process can be found in Figure 1. These lists formed the basis for the development of the questionnaire discussed below.

FIGURE 1
Categories of Needs/Items



QUESTIONNAIRE DEVELOPMENT

A four-part questionnaire was developed to supply data on the pervasiveness of traits and problems and also to identify those problems which were better addressed by existing programming. Part one contained 34 items and was designed to determine the percentage of offenders who displayed particular personal traits and characteristics. A seven-point Likert scale was used to record rater estimates of the number of offenders manifesting the described trait. Part two also used a seven-point Likert scale. This section contained 16 items which asked respondents to estimate the percentage of offenders who displayed each of the listed deficits. In section three, respondents were asked to rank 13 social-

cognitive skills according to how well they were presently addressed in existing programming. The final section utilized a four-point Likert scale. Respondents were asked to evaluate 20 statements regarding academic and programming issues. This section was used to provide the researchers with insights into the best ways to deliver instruction. The questionnaire also added a portion which invited comments regarding needs of offenders which respondents felt had not been addressed by the questionnaire.

QUESTIONNAIRE ANALYSIS

All the deficits listed had been previously identified as common to the offender population by the field personnel. Because only a small number of deficits might be addressed by the software, it was necessary to identify those deficits viewed as being most commonly found so that these might be targeted for intervention. Field personnel were thus asked to rank (based on percentage) the degree to which the identified deficits exist in the offender population.

The second objective of the questionnaire was to identify the relative degree to which these identified needs were being addressed by existing programming and resources. While it was known that many of these identified needs were being focused upon by various programs, some are less well addressed than others. To establish the degree to which deficits were being addressed, raters were instructed to force rank all areas from "1" (best served) to "13" (most poorly served). This ranking did not necessarily indicate that a given area was, in absolute terms, either poorly or well addressed. It instead indicated only the relative ranking of these services.

The analysis of the first data set (given below), focuses upon the degree to which needs exist. The second data set focuses upon the success with which these needs are met.

On the Likert scale used, "1" referred to less than 25% of the offender population exhibiting the specified trait while "7" indicated that 90% or more exhibited the trait. The means for the 16 items ranged from 4.4 to 5.8. This indicated that, in the opinion of the raters, all the traits identified were found in 60% to 80% of the offender population. Given that the raters had initially identified these traits, this high level of rating was not surprising. This data set revealed that, of the 16 items, four had a mean rating of between 4.4 and 4.89. This suggested that the field personnel perceived 60% to 69% of offenders to have these traits. The respondents felt that at least 70-79% of the offender population exhibited the remaining twelve traits.

The four items with the highest means dealt with offenders: having difficulty in recognizing long-term consequences of their actions ($m=5.8$); having difficulty setting and following through on goals ($m=5.7$);

lacking strategies for problem solving ($m=5.7$); and having difficulty with "means-end" reasoning ($m=5.6$). All of these items are considered as clearly focusing upon social-cognitive skills.

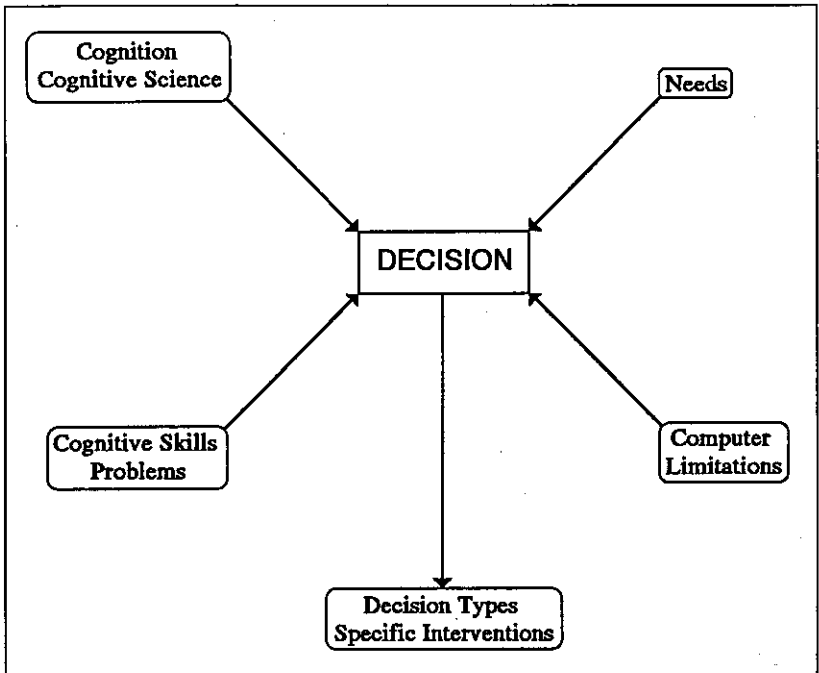
Lower ratings were found on items describing personal traits as contrasted to social-cognitive traits. These items related to how offenders felt they were coping. An item focusing upon the offenders' beliefs about the degree to which their coping strategies were working for them yielded a mean of 4.8. Another relating to their lifestyles, more specifically to their dislike of certain activities in which they are involved (e.g., drug abuse) and their lack of knowledge about other lifestyles, produced a mean of 4.8. The respondents felt that between 60-69% of offenders believed that their coping strategies worked for them and that most disliked their lifestyle but knew no alternative. These data suggested that offenders appear to feel their strategies are functional but not especially personally satisfying. A relatively low mean (4.4) and a wide range (6) on an item dealing with offenders' ability to read suggests the widely ranging reading ability within the offender population, as well as perhaps differences in their willingness to reveal this skill. Reading is largely an academic skill.

The means on the remaining nine areas of deficits, focused upon in the instrument, tend to fall more in the mid-range (i.e., from 4.9 to 5.5). These items deal with a lack of job finding skills; problems transferring skills from one area to another; difficulty with fact-finding strategies; difficulties with recognizing the short-term consequences of acts; poor general learning strategies; poor communication skills; inability to handle money; limited ability to use "feeling words" and poor skills related to job acquisition.

The second part of the questionnaire dealt with ranks assigned to how well "Cognitive Attributes and Skills" were addressed. The questionnaire asked field workers to assign a ranking from "1" (best addressed) through "13" (most poorly addressed) to each of the 13 items in this section of the questionnaire. It was decided to identify those items deemed amongst the most poorly addressed by at least half of the raters. Operationally this meant items assigned a low rank ("8" or more on the forced ranking) were identified. An item, for example, might be ranked "8" or above by anywhere from perhaps 2 to 16 raters. The total number of raters assigning a ranking in this range was the criterion used by the researchers to decide on the current availability of services. Four items were ranked to be "least well" addressed by over half of the respondents. These items address the need to develop "feeling words" as part of the offenders' vocabulary (66%); the need to improve fact-finding strategies (61%); the need to be able to recognize short-term consequences (61%); and the need to be able to recognize long-term consequences (61%).

The two key parts of the questionnaire were then considered relative to each other. Since all of the identified deficits were deemed to exist in 60% or more of the population, all were considered pervasive enough to be potentially addressed by the planned software. It was thus decided that the final selection of needs to be addressed could not be exclusively dependent upon the needs assessment but should be based on various other factors. These factors included computer limitations, knowledge about existing interventions, social-cognitive skills, etc. The needs areas being targeted by the program include: skill in recognizing short- and long-term consequences of actions; increased "feeling" words in the vocabulary; and the development of fact-finding strategies. It is important to keep in mind that the goal of this project has never been to develop a comprehensive program to meet any given deficit or need. The intention has always been to support the existing program. Figure 2 illustrates the types of information taken into account when making the decision regarding the needs to be addressed in the final product.

FIGURE 2
Decision Module Used When Selecting Intervention Area



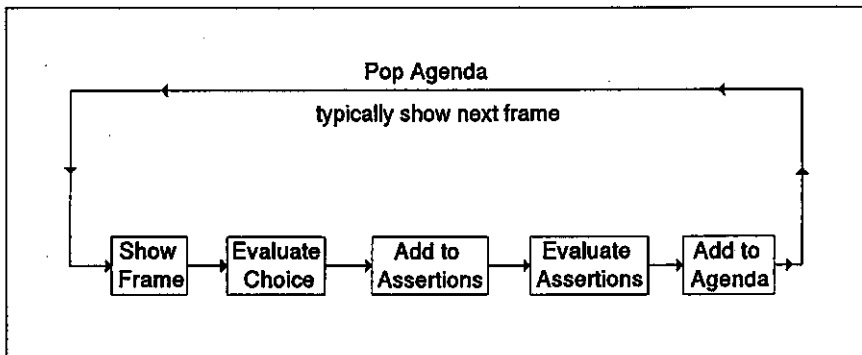
PROGRAM

The computer program, codenamed ANNA, builds on the design of an existing intelligent tutoring system, EMMA (Quigley, 1989). The ANNA prototype is essentially a classical-branching computer-assisted learning program. Given an initial scenario, the client must choose an option that leads to another scenario, another option choice, another scenario and so on. A script is being developed in conjunction with rehabilitation workers from the John Howard Society based upon the theme *Conflict at Work* in which the client has a contretemps with the immediate superior.

Schematically, we may picture the system as in Figure 3. Put simply, the client is presented with a dialogue frame and must make a choice from several possible actions. Depending upon the choice made, some information may be deduced about the client which is added to a list of assertions. The totality of assertions is then scanned to determine what action needs to be taken to reflect what is now known about the client. This action is placed into an agenda, and the top item on the agenda is popped off and executed.

FIGURE 3

Decision-Making Model for Computerized Life Skills Program



The typical frame consists of a graphic image, usually of near photographic quality. The image is accompanied by a text menu of possible actions from which the client must choose (using a mouse). A production system (see, for example, Wenger, 1987) is employed to extract information about the client from the choice made and to deposit what it finds in *Assertions*, a list of things known about the client. This list accumulates information about the client both during the current session and prior and future sessions. In this way, a profile of the client is built up which, because it is stored external to the program in a plain text file, may be made accessible to the case worker for that client.

A second production system has the responsibility of scanning the totality of *Assertions* to determine what should occur next. In the prototype, this typically turns out to be the presentation of the next frame in the sequence. It is expected that a much more diverse range of actions will be possible in the final version. For example, the client may be referred to a case worker, or may be offered an academic tutorial in feeling words. (The field testing of the prototype will determine exactly what range of options will be available.) The action chosen is added to an *Agenda*; at the top or the bottom depending on whether it is of high or low priority. Thus, whatever action is at the top of the *Agenda* is carried out, and the cycle repeats. The database of dialogue frames consists, in the prototype, of two distinct files, one containing the graphic images and the other the text menus. Separation is desirable both to permit easy porting to other languages (see below) and to permit several versions of the text menus pitched at different reading levels in the finished version. Although the image file is machine-readable only, the text files are readable and easily edited with any word-processor to permit fine tuning. Both the *Assertions* and the *Agenda* are maintained as external plain text files (although they are loaded at run-time) to permit retention of information about the client and about the extent to which the client has explored the program from session to session.

Although this type of program can be implemented using the classical authoring paradigm, a decision was made to use production systems for three reasons.

1. A production system offers much more flexibility in design and implementation, especially because the flow of control in the program is explicitly stated in the production rules.
2. An intended follow-up project is the porting of ANNA to foreign languages, notably French and Spanish. This will be much easier if all language referents are external to the program itself.
3. By making the production rules explicit and external, a reasonably competent case worker could customize the dialogue and the graphics to suit the particular clientele being addressed.

Alpha testing of the program prototype is scheduled for May 1, 1992 and beta testing for October 1992.

CONCLUSION

This project is developmental in two senses. It seeks to develop products to foster the acquisition of social-cognitive skills in offenders and also to develop a software model that is easily adapted to other situations. It has produced useful data describing the educational needs and nature of the youth offender population. The production of the program, especially in terms of its specific content, took place utilizing extensive involvement of

persons who worked full-time with the offender population. While the final products have yet to be tested, the prototypes are completed and appear to be functioning as planned. It is felt that the approach taken in identifying the target needs and in developing the software might be useful to other developers of educational materials. Computers offer an alternative, high-interest way of helping offenders learn target skills. Innovative products addressing different areas of learning are needed and can be developed.

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