Computers in child placement planning

Eliezer D. Jaffe

Although computer technology and the field of human services may seem antithetical to many, a number of professionals have explored the potential usefulness of computers in social work. This article describes a study in which computers were used to determine placements for dependent children and then compares these placements with plans determined by traditional case conference methods.

Eliezer D. Jaffe, DSW, is Senior Lecturer, Paul Baerwald School of Social Work, Hebrew University of Jerusalem, Jerusalem, Israel. The author wishes to thank Adina Potok and Gila Rosner Lazarowitz for their help in conducting some of the research described in this article.

MOST DEFINITIONS of social work and child welfare usually begin with an analysis of the differences between science and art, and the impression often given is that social work is somewhere in the middle, a synthesis of art and science.[1] However, as Greenwood has pointed out, social work is neither a science nor an art, but a technology "trying to achieve controlled changes in natural relationships via relatively standardized procedures which are scientifically based."[2] Although it may be a technology, to a large degree social work has not harnessed technological machinery and the industrial arts to achieve its goals. It has concentrated a great deal more on borrowing principles and knowledge from the social and behavioral sciences than on developing or borrowing "hardware" from fields such as computer technology for the delivery of social services.

One of the areas in which computers might be used in social work is the field of child welfare. This article describes a study in which computer technology was used to determine placement plans for dependent children. It also compares the types of placement plans proposed by the computer with those plans arrived at by the traditional case conference method for a group of young dependent children.

It may seem blasphemous to some to suggest that placements for children can be determined by computers in addition to the use of case conferences, which have been the primary vehicle for arriving at decisions in this area. The major complaint of these individuals would probably be that making decisions by using computers dehumanizes the situation and does not take into account the many intangibles that are so often involved in determining placements. However, the information fed into a computer is simply a specification of the criteria to be used in decision-making. The need to make the intangibles involved in the process of thinking tangible is the very heart of computer programming. Once this has been done, the resulting clarity enables decisions to be made by computers. Not surprisingly, then, a great similarity exists between the way in which social workers and computers arrive at a decision.

For example, if detailed information about a particular child and his or her family were available and other information about the kinds of placements most beneficial for certain children were available as well, both sets of facts could be compared to determine the best possible placement for the child in question. This is basically the process caseworkers go through in planning with clients, and it is precisely the same process used by computers.[3]

However, this procedure could be taken a step further. If both sets of information were fed into a computer, would it not be possible to obtain a set of plans or alternatives for placement that were ranked according to priority? Richan has suggested that this kind of "input-output" procedure be used concerning the determination of caseload levels in welfare agencies, and others are taking this suggestion seriously.[4] In addition, in the field of medicine, Weed has attempted to teach medical students by a coded computer input-output model.[5] Furthermore, important experiments regarding the use of computers in medical diagnosis and treatment are being conducted at several hospitals in the United States.[6]

What is the basis of this so-called input-output approach? Simply stated, it is rendering the decision-making process rational and easily communicable by specifying relevant information and the values according to which decisions are made. Weed has pointed out that what the approach essentially involves is making the decision-making process intelligible: "To be intelligible is to be found out, and to be found out can be quite painful. But the sooner it happens the better off everyone is. . . ."[7]

STUDY DESIGN

The research described in this article dealt with groups of dependent or neglected children for whom some type of placement planning was necessary. The following is a description of the groups and study design used.

Young Children A group of 187 institutionalized children ranging in age from infancy to 6 years old was one of the groups studied. These were neglected and dependent youngsters who had been placed in a large institution for children in Jerusalem by public welfare agencies. The children had been living in the institution for at least two consecutive years prior to the time of the research.

All 187 children were individually assessed by professional social workers to determine the most appropriate placement plan for each of them. Several years later, the author selected a quota sample of 33 children from among the 187 and noted where they had actually been placed. He then developed a computer program to assess placement plans for children and used the program to arrive at recommendations for placement for all 187 children, including the subgroup containing 33. This yielded a comparison among the recommendations for placement made by social workers, the recommendations for placement made by the computer, and the actual outcomes of placement.

Older Children The second group for whom the computer's recommendations regarding placement was obtained was composed of 497 institutionalized older dependent children, ages 6 through 15. Unfortunately, assessments made by social workers regarding placements for children in this group were not available, and data on the whereabouts of these children several years after the initial placements had been made were lacking as well. It was therefore impossible to compare social workers' recommendations and actual placements with the computer's recommendations for this group.

However, the author succeeded in locating a group of 197 comparable children for whom actual placements had been recorded. This enabled him to undertake a comparison between the computer's recommendations for the 497 older institutionalized children and the actual placements of the 197 comparable dependent children.

The research concerning the 187 younger children who ranged in age from infancy to 6 years old afforded an excellent opportunity to compare clinically based recommendations for placement and actual outcomes of placement with a computer's recommendations. The author's hypothesis suggests that since both methods of planning—that is, planning by computer and planning by case conferences undertaken by social workers—rest on the same conceptual foundations, there should be no significant differences in their results.

In brief, then, this article presents a comparison among the recommendations made by a computer, the recommendations made by social workers, and the actual outcomes of placement. It will also describe in detail how assessments made by the computer were carried out.

COMPUTER ASSESSMENTS

Two sets of information were painstakingly assembled, coded, and fed into the computer. The first consisted of a battery of information concerning each child and his or her family that had been gathered systematically and in a uniform fashion in every case. Among the sources for these data were the child, the parents, the staff of the institution in which the child was placed (specifically, the director, house parents, and counselors), teachers, the municipal social workers for the families, and the district social workers of the Ministry of Social Welfare, who are responsible for a child's follow-up after placement has been instituted.[8]

The data collected included a mental health inventory and educational and behavioral inventories for each child, preplacement and postplacement histories, and responses to parental attitude scales and a measure of familial relationships.[9] Although children under age 10 were not interviewed or tested, data concerning them were available from records and interviews with staff members of agencies and parents and other adults connected with their case. The data collected for each child came from a total of ten different sources and were recorded on thirteen data cards, which constituted his or her "profile." From this collection of information, 110 different items of various importance were extracted for the computer.

"It may seem blasphemous to some that placements for children can be determined by computers."

The second set of information given the computer was a detailed specification of the criteria or conditions under which six settings used in the placement of children were indicated or contraindicated. The settings or placements were the following: (1) institutional care, (2) adoption, (3) the child's return to his or her own home, (4) placement with relatives, (5) placement in a foster home, and (6) placement in a kibbutz.[10] The criteria for selecting or rejecting each of these settings were determined by a panel of consultants consisting of five graduate social workers who had extensive experience in the area of child welfare. The panel began its work by compiling a statement in which it operationally defined various principles for the sound use of each type of setting and set forth a list of the considerations that determined the acceptance or rejection of each setting for placement of a particular child. In addition, some by-products of the panel's meetings were an operational definition of foster home care and a written standard regarding the use of institutional placement for dependent children.

The panel of consultants was then asked to review the 110 items gathered in the profiles for the children and, in the light of the theoretical criteria for placement that it had already decided on, to rate each item in terms of the type of placement seemingly required. In short, the consultants were to decide what each piece of data in a child's profile indicated concerning one or more of the six possible placements that might be explored. This involved weighting all 110 items according to their relative importance. An ordinal, arbitrary 4-point weighting

system was used in which the designations of "very important item," "important item," "less important item," and "least important item" were applied, and the weight of each item had to be agreed on by all the panel members. "Importance" referred to an item's significance and relevance in influencing a child's placement.

Once the relative importance of each item in a child's profile had been determined, the panel then rated the kinds of placement indicated by the information relating to each item. For example, if the item designated "parents' health" revealed that a child's mother was hospitalized for chronic illness, the favored placement for the child might be foster care, the placement next selected might be a relative's care, and the third placement indicated might be the child's own home, in descending order of preference. Thus, the panel rated the content of each item in a child's profile by listing in rank order the six plans for placement that it suggested. Its first choice, or the plan most preferred, received a score of 6, and the plan least preferred received a score of 1.

Once scores ranging from 1 to 6 had been assigned to the items and weights ranging from 1 to 4 had been determined, the scores were multiplied by the weights for all 110 items in a profile to obtain the total number of points for each one of the six potential placement plans for each child. The plan accruing the highest number of points was considered to be the first placement to investigate for the child, the plan with the second highest number of points was to be considered

next, and so on. All the computations involved in arriving at the rank order of preference for the six potential plans for each child were carried out by means of computer and were statistically error free.

FINDINGS

As can be seen in Table 1, the plan ranked first most frequently by the computer for 54.5 percent of the 187 younger children surveyed was the child's return to his or her own home. Placement in a relative's home was ranked first for 27.8 percent of the children. Having to remain in the institution was regarded as the first potential plan to explore in the case of only .5 percent of this group. The plan ranked third most frequently was foster home care; placement in a kibbutz was ranked fourth; adoption was ranked in fifth place; and institutional care was ranked in sixth or last place.

The same general pattern emerged for the 497 children surveyed over the age of 6. For these children the potential plan ranked first most frequently was also return to their own home, in second place was placement in a relative's home; foster home care was ranked in third place; placement in a kibbutz was ranked fourth; institutional care was ranked fifth; and adoption was ranked in sixth or last place.

The rejection of institutional care as a preferred potential placement undoubtedly reflects the criteria established for the use of institutions by the panel of consultants. The panel's

statement of principles indicated that large institutions should be seen primarily as settings for treatment and should not be used as solutions to the placement problems of healthy dependent children. It went on to suggest that placement in an institution should be chiefly reserved instead for children or adolescents with emotional disturbances that prevented them from functioning at home or in the community.[11] Since the panel adhered to these principles, it is not surprising that the majority of most preferred plans regarding children living in institutions involved a return to the child's own home or placement in settings marked by familylike relationships. Although the values inherent in the principles set forth may be contested, they are explicit.

As noted earlier, the author's study compared the computer's plans for 187 institutionalized young children with recommendations made by social workers for them and with actual placements made by social workers for a selected sample of 33 children. These comparisons appear in Table 2. Thus, the figures presented for the computer's recommendations relate to the entire group of 187 children; the figures presented for the social workers' recommendations and actual outcomes relate to the quota sample of 33 children selected by the author.

The major type of placement recommended by the computer for most of the children (54.5 percent) was a return to their own home. Similar recommendations were made by social workers for 47.6 percent of the children, and 42.1 percent of the children

TABLE 1. PLACEMENT PLANS RECOMMENDED BY COMPUTER FOR YOUNG AND OLDER INSTITUTIONALIZED CHILDREN SURVEYED (percentage)

| | Recommendations | | | | | | | | | | | |
| | First Choice | | Second Choice | | Third Choice | | Fourth Choice | | Fifth Choice | | Sixth Choice | |
Placement	Young	Older	Young	Older	Young	Older	Young	Older	Young	Older	Young	Older
Institutional care	.5	.4	.5	.2	–	.4	1.5	4.2	34.2	73.6	77.1	21.8
Own home	54.5	94.5	23.6	2.0	–	1.0	5.1	.4	9.0	–	–	–
Relative's home	27.8	2.4	36.1	84.0	36.4	12.2	2.1	–	1.1	–	–	–
Foster home care	15.2	1.8	37.7	13.8	55.2	84.9	–	1.8	–	–	–	–
Kibbutz	.5	.4	.5	–	4.6	1.5	69.2	92.6	13.5	5.0	5.9	.4
Adoption	1.5	.5	1.6	–	3.8	–	22.1	1.0	42.2	21.4	17.0	77.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 2. PLACEMENT PLANS RECOMMENDED BY COMPUTER FOR YOUNG CHILDREN SURVEYED, COMPARED WITH PLANS RECOMMENDED BY SOCIAL WORKERS AND ACTUAL PLACEMENTS FOR A SELECTED SAMPLE (percentage) [a]

Placement	Computer's Recommendations (N=187)	Social Workers' Recommendations (N=33)	Actual Placements (N=33)
Own home	54.5	47.6	42.1
Relative's home	27.8	20.2	30.1
Foster home care	15.2	15.5	13.7
Kibbutz	.5	11.9	–
Adoption	1.5	–	–
Institutional care	.5	4.8	14.1
Total	100.0	100.0	100.0

[a] Probability levels for the comparisons are as follows: $p=30$ for computer's recommendations compared with social workers' recommendations; $p=10$ for computer's recommendations compared with actual placements; $p=70$ for social workers' recommendations compared with actual placements.

were actually returned to their own home by social workers. The computer recommended foster care or placement with relatives for 43 percent of the children. Approximately the same percentage of children were actually placed in these settings, although such placements were recommended for only 35.7 percent by social workers.

The computer recommended placement in a kibbutz for .5 percent of the children. Social workers, however, recommended placement in a kibbutz for 11.9 percent, but not a single child was actually placed in this setting. In addition, both the computer and the social workers rejected institutional placement, the computer recommending it for only .5 percent of the children surveyed, social workers recommending it for only 4.8 percent. In reality, 14.1 percent of the children were placed or remained in an institution.

A comparison using chi-square of the distributions obtained for the recommendations of the computer, the recommendations of the social workers, and the actual placements showed significant differences. Because of the small number of cases of some types of placement, categories were collapsed, which permitted a comparison of "own-home" versus "out-of-home" placements only. Further examination of the variance of differences among the three distributions showed that the computer's recommendations were somewhat more sim-

ilar to the actual outcomes of placement than were the recommendations of the social workers.

OLDER CHILDREN

As indicated earlier, the computer's recommendations were also obtained for 497 older children, ages 6 through 15. These recommendations were compared with actual placements made for a group of 197 comparable children who had been the subjects of a unique demonstration study completed in 1967. The study involved extensive casework with the 197 children, who were dependent youngsters referred to Israeli public welfare offices and approved for placement, and an exhaustive case history had been recorded for each child.[12] The special caseworkers assigned to these children and their families undertook eighteen months of intensive work with them,

and at the end of that time, the whereabouts or placements of the children were recorded. This information appears in Table 3, along with a comparison of recommendations for placement made by the computer for the 497 comparable institutionalized children.

The computer recommended placement in their own home as its first choice for 94.5 percent of the children, and placement with relatives was recommended as the second choice. In reality, 56.8 percent of these children, a surprisingly high number, remained in their own home, indicating that social workers strongly favored placement in the home. The computer generally rejected institutional placement, recommending it for only .4 percent of the children surveyed. On the other hand, 29.1 percent of the children were actually institutionalized, revealing a large difference between the computer's recommendations and the actual outcomes of placement.

The great discrepancy between the computer's recommendations for these older children and actual placements made by social workers may be accounted for in several ways. One possibility is that the panel who programmed the computer provided guidelines more appropriate for younger children and did not clearly distinguish the criteria for deciding on placements for older children. Another explanation might be the incomparability of the sample of 497 older institutionalized children with the sample of 197 children with whom it had been compared. The most plausible reason

TABLE 3. PLACEMENT PLANS RECOMMENDED BY COMPUTER FOR OLDER CHILDREN SURVEYED, COMPARED WITH ACTUAL PLACEMENTS OF SIMILAR DEPENDENT CHILDREN (percentage)

	Computer's Recommendations (N=497)		Actual Placements (N=197)
	First Choice	Second Choice	
Own home	94.5	2.0	56.8
Relative's home	2.4	84.0	2.1
Foster home care	1.8	13.8	8.6
Kibbutz	.4	–	3.4
Adoption	.5	–	–
Institutional care	.4	.2	29.1
Total	100.0	100.0	100.0

for the discrepancy, however, is that the instructions given to the computer reflect the way in which social workers relate to the disruption of families and the placement of children but that the pressures of reality often dictate different outcomes. In Israel, for example, a great abundance of money exists on one hand for institutional placements and a dearth of social workers and funds exists on the other for work with families and foster homes. Therefore, although workers may frequently feel that children should be placed with their own families or in foster homes, many children may instead be placed in institutions because of financial considerations.

Whatever the reason, the comparison between the computer's recommendations for older children and the realities of practice highlights the need for an explanation of the discrepancies between the professional values and actual practices of social workers. Such an explanation may help workers rethink their professional criteria in various areas or change or develop services that will allow them to implement sound practices. If using a computer enables professionals to do this, the effort may be useful for practitioners and policymakers in the area of child welfare.

Klein and associates examined the completeness of physicians' psychiatric case studies with and without the help of a computer.[13] Differences were also found in that study, and results showed that the overall completeness score for case studies that psychiatrists prepared with the help of the computer was significantly superior to the score for studies that were not prepared with the aid of the computer. In this instance as well as in the author's study a need emerged to account for the differences in order to sharpen practice skills.

CONCLUSION

This article reported on a comparison between plans for the placement of institutionalized dependent children arrived at by the use of a computer and plans determined by the traditional case conference method. These plans were also compared with actual placements. It was stressed that the logic used by the computer and by workers involved in case conferences is basically identical but that the use of computers for determining placements requires the conscious definition of the various criteria for decision-making in social work. The problem in using computers for clinical decisions lies in the degree of difficulty involved in identifying the values and principles underlying clinical practice.

The author is less interested in convincing social workers to use computers than in expressing the belief that the principles and techniques of good clinical practice, whatever the method used, must be capable of being communicated in order to be replicable and verifiable. He believes that science, technology, and art can be synthesized and need not be in conflict, as Teicher feared:

> . . . social workers deal in values and these are not ordinarily reducible to the quantitative mathematical language of the computer. Mathematical reliability models do not readily apply. They are applicable to the development of space technology, but the individual human being is far more complex than that. . . . We hold with abiding conviction that human beings matter more than numbers or things.[14]

It is important to acknowledge the potential dehumanization of the individual and the problems of powerlessness and alienation that tend to accompany the use of modern technology. However, these phenomena are not the goals of science or technology. The availability of ingenious technological tools can certainly facilitate the provision of rational, effective help to people. Like medicine and other professions, social work has begun harnessing computers and other scientific hardware for the achievement of its goals but is a long way from being converted into "a community of attendants for computers."[15] Techniques of mechanical processing are useless unless prior efforts at conceptualization, completion of operational definitions, and the verbalization of criteria for practice have been undertaken. Only when these steps have been completed can data be collected, processed, and analyzed mechanically.

If recent developments are any indication, the synthesis of technology and art in social service and child care will be seen with increasing frequency in the decade ahead.[16] A momentum has begun, spurred primarily by trends toward administrative accountability, and the implications for clinical and policy-related decision-making will soon emerge.

NOTES AND REFERENCES

1. See Jean Charnley, *The Art of Child Placement* (Minneapolis: University of Minnesota Press, 1961).

2. Ernest Greenwood, "Social Science and Social Work: A Theory of Their Relationship," *Social Service Review*, 29 (March 1955), p. 24.

3. See Joel Fischer, *Effective Casework Practice* (New York: McGraw-Hill, 1978), pp. 71–75; Charnley, op. cit., pp. 69–105; and Alan F. Klein, *The Professional Child-Care Worker* (New York: Association Press, 1975), pp. 18–20.

4. William C. Richan, "Research in Occupational Restructuring," in Edward E. Schwartz, ed., *Manpower in Social Welfare: Research Perspectives* (New York: National Association of Social Workers, 1966), pp. 43–54. See also "Measuring Progress: The Government Seeks New Tools to Evaluate Its Social Programs," in *Wall Street Journal*, July 18, 1967), pp. 1 and 13; Joseph Pardess, "A Formula for Determining the Optimum Number of Social Workers in Welfare Bureaus," *Society and Social Welfare*, 1 (March 1978), pp. 62–68; Betty Richey, "The Computer in a Child Care Agency," *Child Welfare*, 56 (April 1977), pp. 259–270; and David W. Young, "Computerized Management Information Systems in Child Care: Techniques for Comparison," *Child Welfare*, 53 (July 1974), pp. 453–463.

5. Lawrence L. Weed, "A New Approach to Medical Teaching," *Medical Times* (September 1966), pp. 1030–1038.

6. See Lawrence L. Weed, *Medical Records, Medical Education, and Patient Care* (Cleveland, Ohio: Case Western Reserve University Press, 1970).

7. Weed, "A New Approach to Medical Teaching," p. 1038.

8. See Eliezer D. Jaffe, "Long-Term Placement of Dependent Children from the Client's Point of View," *Mental*

Health and Society, 3 (October 1976), pp. 300–314.

9. Eliezer D. Jaffe, "Effects of Institutionalization on Adolescent, Dependent Children," Child Welfare, 48 (February 1969), pp. 64–71 and 111; and Jaffe, "Perceptions of Family Relationships by Institutionalized and Non-Institutionalized Dependent Children," Child Psychiatry and Human Development, 8 (Winter 1977), pp. 81–93.

10. See Eliezer D. Jaffe and Gila Lazarowitz, "From Outsiders to Insiders: Placement of Dependent Children in the Kibbutz," Applied Social Studies, 2 (November 1970), pp. 27–33.

11. For a discussion regarding the controversy surrounding institutional care, see Martin Wolins and Irving Piliavin, Institution or Foster Family: A Century of Debate (New York: Child Welfare League of America, 1964); Edmund Sherman et al., Children Adrift in Foster Care (New York: Child Welfare League of America, 1974), pp. 1–129; and Martin Wolins, "Group Care: Friend or Foe?" Social Work, 14 (January 1969), pp. 35–53.

12. See Eliezer D. Jaffe, "Correlates of Differential Placement Outcome for Dependent Children in Israel," Social Service Review, 41 (December 1967), pp. 390–400; and Jaffe, "The Impact of Experimental Services on Dependent Children Referred for Institutional Care," Social Work Today, 1 (May 1970), pp. 5–8.

13. D. F. Klein et al., "Automating the Psychiatric Case Study," Comprehensive Psychiatry, 11 (Winter 1970), pp. 518–523.

14. Morton I. Teicher, "Social Casework—Science or Art?" Child Welfare, 46 (July 1967), pp. 394–395.

15. Ibid., p. 394.

16. See Elliott R. Rubin, "The Implementation of an Effective Computer System," Social Casework, 57 (July 1976), pp. 438–445; Paul Abels, "Can Computers Do Social Work?" Social Work, 17 (September 1972), pp. 5–11; William J. Reid, "Developments in the Use of Organized Data," Social Work, 19 (September 1974), pp. 585–593; Theron K. Fuller, "Computer Utility in Social Work," Social Casework, 51 (December 1970), pp. 606–611; G. A. Ulett and I. W. Slatten, "A Statewide Electronic Data-Processing System," Hospital and Community Psychiatry, 20 (Fall 1969), pp. 74–77; and Ivan T. Vasey, "Developing a Data Storage and Retrieval System," Social Casework, 49 (July 1978), pp. 414–417.