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CONCEPT MAPPING FOR PLANNING AND EVALUATION OF A BIG BROTHER/BIG SISTER PROGRAM

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ABSTRACT

This paper describes how concept mapping was used to organize a conceptual framework from which a questionnaire was constructed, in order to evaluate the One-to-One Big Brother/Big Sister youth program. The evaluation results derived from this questionnaire support the claim that the program effectively meets its goals: program participants scored significantly higher on the questionnaire than a comparable group of youth who had not participated in the program. Furthermore, the pattern of results was consistent with the staff's expectations of the program's outcomes as indicated through the concept mapping process.

If the outcomes for social service/educational programs were specific and easily measurable, then evaluating program effectiveness would not be difficult. Most programs, however, provide a variety of services from which participants benefit differently, complicating the evaluation process. Concept mapping assists evaluators in conceptualizing program outcomes, allowing them to design a data collection strategy that strengthens the validity of the results.

This paper describes how the concept mapping technique was used as an integral part of the evaluation process of the One-to-One Big Brother/Big Sister youth program. Concept mapping helped organize a conceptual framework from which a questionnaire was constructed. The evaluation results derived from this questionnaire support the claim that the program effectively meets its goals: program participants scored significantly higher on a questionnaire than a comparable group of youth who had not participated in the program. Additionally, the pattern of results was consistent with the staff's expectations of the program's outcomes, which further suggests that the program is meeting its goals. In the following sections, the concept mapping process and questionnaire development are described, after which the evaluation results are briefly reviewed.

METHOD

Program

The One-to-One Program Proposal states the purpose of the program in the following terms:

> The One-to-One Family Support Program seeks to address a general need on the part of children for focused, caring, individual adult attention . . . Since changes in society (e.g., more single-parent families, more two-job families, increased loads on teachers and others who work with children) make it less possible for these people to spend focused individual time with children, the need must be met through agency-sponsored programs such as One-to-One . . . Youth need skills, opportunities and supports to enable them to deal with the issues of adolescence . . . Specifically, youth need affective education through schools and community programs to learn and practice the skills needed for effective communication, conflict resolution, decision-making, problem solving, satisfying interpersonal, group and inter-group relationships. (Project Proposal; p 1)

The One-to-One Program staff assert that through structured opportunities, children can develop the physical, social and life skills necessary to function successfully in the community. Matching young people with properly trained and supervised adult volunteers provides youth with these structured opportunities.

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State officials requested that the One-to-One Program be evaluated as a condition for continued funding; they wanted evidence of the program's effectiveness. While the program's outcomes are described in terms of the child's social and personal adjustments, the staff recognized that the volunteers' involvement with their Little Siblings consisted mostly of activities such as eating ice cream, hiking, playing baseball and basketball, or doing craft activities, to name a few. Thus it was obvious that a child might benefit in many different ways from participating in the program. Further, within any one of these program activities benefits might manifest themselves differently; one child might identify the program's benefits with an expansion of his or her opportunities, another child might identify the benefits with changes in personal feelings. A third might simply develop increased enthusiasm for a particular activity.

Concept Mapping Program

During preliminary discussions with the nine One-to-One staff members about the nature of the program, long lists of program activities and outcomes were easily generated, creating debate among staff members over which items and outcomes fairly represented the program. Concept mapping provided a method by which both the staff and evaluator could conceptualize the program, enabling them to begin designing an appropriate questionnaire.

The concept mapping process followed the steps outlined in Trochim (this volume) and involved group brainstorming, card sorting, and the interpretation of the resulting map (no ratings of statements were done). The One-to-One staff were able to brainstorm over one hundred items describing the program. Some of these items were very concrete, such as "eating ice cream" or "going to a movie"; others were more abstract, such as "feeling better about one's self" or "an adult friend to talk to." During the session, the staff were encouraged to think of program areas not yet included on the list. By the end of the hour the flow of ideas for this session was exhausted. The staff by and large agreed that the list fairly represented the various aspects of the program.

The second step of the Concept mapping technique—card sorting—helped reveal more about the nature of the program as perceived by the staff. Each brainstormed item was typed out on 3 × 5 cards, and a copy of the entire set of 98 unduplicated items was given to each staff member. Each staff member then sorted all the items into piles of related items, giving each pile a title. The staff found this task enjoyable and easy to do, and, like the brainstorming session, it took less than an hour of their time.

To give the reader a sense of the program, Table 1 lists the titles of sorted items given by three staff members. These sorted piles of brainstormed items formed

TABLE 1
TITLES OF SORTED GROUPS FOR THREE STAFF MEMBERS

Staff Member 1	Staff Member 2	Staff Member 3
Personal growth	Feel good about self	Kids get experience
General fun stuff	Self knowledge	Benefits for parents
Arts & crafts	Intellectual play	Activities
Physical stuff	Physical play	
School academics	Helping with life skills	
Family help	Networking/social service	
	Community service	

the data used to construct the concept map (see Trochim, this volume, for further details about how the concept maps are formed). After consultation with the One-to-One staff, 23 clusters were identified on the concept map as shown in Figure 1, each bound by a common theme: some of them well-defined by the Concept Mapping procedure, others by the rigor of common sense.

While the Concept Map pictorially represents the program, it is not inherently meaningful. Interpretation of the map is organized around the two continuums: an Individual-Group continuum, and an Activities-Social Skills continuum. The Individual-Group continuum differentiates activities in terms of their social organization. The Activities-Social Skills continuum differentiates among characteristics of competence or self esteem. In other words, the basic thrust of the One-to-One Program is to help youth cope personally and socially with dilemmas of adolescence. This is achieved as the youth gain experience and skill participating in a variety of group as well as individual activities. The resulting quadrants represent four conceptual domains of the program: (a) Group/Activity Skills (b) Individual/Activity Skills; (c) Group Social Skills; (d) Individual Social Skills.

One could say that the concept cap represents a local theory about how the One-to-One Program operates. Indeed, when presenting this map to the One-to-One staff, the staff accepted its organization and basic propositions as representative of the program. On the other hand, the reader should note that the map represents an average, if you will, of all the staff members' interpretations of the program through the card sorting technique. Consequently, it will not be surprising to learn that the map did not *fully* satisfy anyone.

Questionnaire Development

The purpose in developing the concept map was to design a questionnaire with outcome measures directly related to One-to-One Program activities. Twenty-three specific dimensions of the program were identified using the concept map. Each question on the questionnaire represented one of the concept map clusters. This

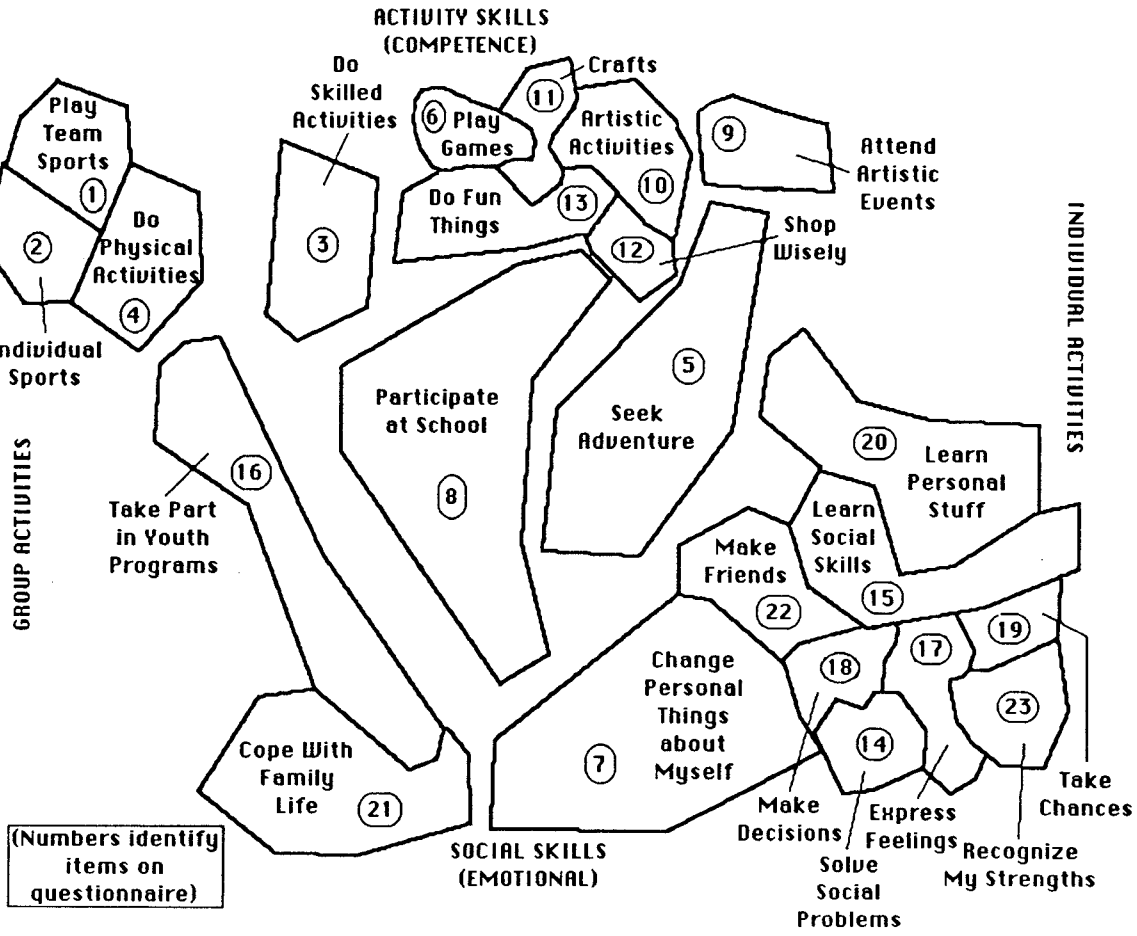

Figure 1. Concept map for the One-to-One Program.

TABLE 2
SAMPLE QUESTIONNAIRE ITEMS

	I GET A CHANCE TO DO THESE THINGS	I AM GOOD AT THESE THINGS	I WANT TO DO MORE OF THESE THINGS
1) PLAY TEAM SPORTS (baseball, soccer, volleyball,	1...2...3...4...5 Not at all Some Yes a lot	1...2...3...4...5 Very bad OK Very Good	1...2...3...4...5 Not at all Some Yes a lot
8) PARTICIPATE AT SCHOOL (finish homework, school	1...2...3...4...5 Not at all Some Yes a lot	1...2...3...4...5 Very bad OK Very Good	1...2...3...4...5 Not at all Some Yes a lot
23) RECOGNIZE MY STRENGTHS (learn what I am good at, special skills,	1...2...3...4...5 Not at all Some Yes a lot	1...2...3...4...5 Very bad OK Very Good	1...2...3...4...5 Not at all Some Yes a lot

ensured that the questionnaire included outcomes, ideas and activities from all relevant program domains.

Additionally, as noted above, participating youth might benefit from the program in a number of different ways. These were categorized as changes in opportunities, feelings about ones self, and attitudes. Hence, a multidimension-multitrait questionnaire was constructed. Table 2 shows three questions used on the questionnaire, and illustrates the format.

The questionnaire was designed for youth ages ten or

older; pretesting established that most youth were able to respond to the questionnaire with little or no guidance.

Design

The One-to-One staff claim that matching youth with a program Big Sibling positively affects their opportunities, feeling and attitudes in a variety of program areas. A quasi-experimental group design was utilized to assess outcomes. The program matched over 140 of the community's youth (including different races, ages, gender and level of economic standards) with volunteer Big Siblings. Additionally, there existed a waiting list of over 200 youth anxious to be matched with a Big Brother or Sister. For the analysis a random stratified sampling strategy was used to select a comparison group from the matched and non-matched groups. The questionnaires were administered year round, thus controlling for any seasonal influences affecting the results.

RESULTS

A t-test analysis was used to compare the scores of the matched and not-matched youth. The results clearly indicate that the matched youth scored significantly higher on the questionnaire than did the non-matched group of youth as shown in Table 3.

TABLE 3
MEANS, STANDARD DEVIATIONS AND OVERALL t-TEST FOR DIFFERENCES BETWEEN MATCHED AND UNMATCHED GROUPS

	Not Matched	Matched
Mean	3.532	3.818
Standard Deviation	0.479	0.394

t-value = 8.95 ($p < 0.001$).

While the evidence for the program's effectiveness appears strong, it is possible that the obtained scores are not as noteworthy as they seem. There is the possibility that no significant difference exists between group scores for all but a few questions. In other words, if the questions were sorted by type or program area, one might find that the mean differences between the two groups varied little except for one or two question areas. Such a pattern of results would lead to a different conclusion about the program than if the results were consistently positive and statistically significant across a wide spectrum of activities and types of questions.

Thus, group differences for the three types of questions and four program areas were also examined. The results of the t-test were positively significant ($p < 0.001$) for the matched youth on all three types of questions (chance, feeling and attitude). This is good news for the program staff, who claim to be positively affecting youth in all three of these domains.

Next, the analysis compared the results among the four program areas (Group Activity Skills, Individual Activity Skills, Group Social Skills, and Individual Social Skills). Figure 2 helps illustrate the pattern of results, and was constructed by sorting each child's questionnaire first by program area and then by type of question. The mean for each program area was calculated and subtracted from the mean of the matched and non-matched groups. Thus, a positive score indicates a group score above the mean; a negative score indicates a group score below the mean.

Two important points are evident from this graph. First, the direction of the differences indicates that the matched youth consistently score higher on the questionnaire across all the program areas. This provides positive feedback for the One-to-One staff, indicating that they are providing services which satisfy a variety of needs. Second, the pattern of results (specifically that the matched youth scored highest in the Individual Social Skills program area) meets the pre-data collec-

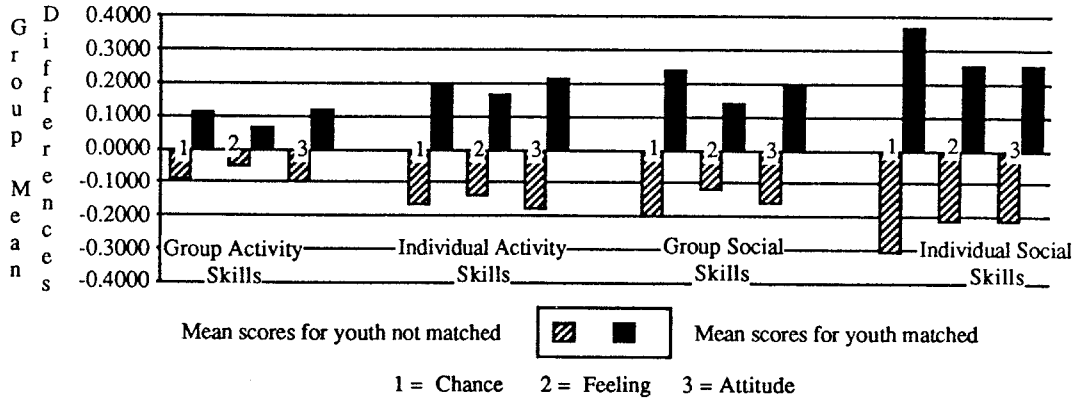

Figure 2. Differences between matched and unmatched groups for the four program areas.

tion predictions of the staff about the program. Since the emphasis of the One-to-One staff training as well as supervision of volunteers is in this area, the staff expected the questionnaire results to reveal a stronger difference between the groups of youth in this program area as compared to other areas. The reasoning for this expectation is as follows: Most youth have other programs available to them which encourage participation in physical activities, but many youth do not have access to the leadership in the personal development area.

The *t*-tests for significance of these results are not as powerful compared to earlier results. This is to be expected since the number of items per test were reduced as the data were further subdivided. Note, however, in Table 4 that the results are significant in the Individual Social Skills area, as predicted by the One-to-One staff.

TABLE 4
MEANS, STANDARD DEVIATIONS AND *t*-TESTS FOR DIFFERENCES BETWEEN MATCHED AND UNMATCHED GROUPS FOR THE FOUR PROGRAM AREAS

	Not Matched	Matched	*t*-value	*p*-value
Group Activity Skills				
Mean	3.540	3.747	1.06	.291
SD	0.607	0.648		
Individual Activity Skills				
Mean	4.060	3.703	2.36	.022
SD	0.514	0.566		
Group Social Skills				
Mean	3.280	3.639	1.81	.076
SD	0.813	0.717		
Individual Social Skills				
Mean	3.278	3.318	2.51	.015
SD	0.760	1.008		

CONCLUSIONS

These evaluation results provide evidence for the effectiveness of the One-to-One program. Concept mapping provided an invaluable tool for conceptualizing the program, designing a questionnaire, strengthening the validity of the results and enabling predictions of the results. Finally, concept mapping proved to be a manageable method, requiring only a few hours of staff time.

CONCEPT MAPPING FOR EVALUATION AND PLANNING

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Guest Editor

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