



Concept mapping in mental health: uses and adaptations

Jeffrey A. Johnsen*, David E. Biegel, Robert Shafran

Cuyahoga County Community Mental Health Research Institute, Mandel School of Applied Social Sciences, Case Western Reserve University, Cleveland, OH, USA

Received 1 July 1998; accepted 1 February 1999

Abstract

Concept mapping is a structured method for translating complex qualitative data into a pictorial form that displays the interrelationships among ideas. Over the past ten years, this methodology has been applied to numerous program planning and program evaluation issues in a variety of disciplines. The ability to adapt concept mapping methodology to meet specialized needs and to accommodate external constraints has been demonstrated during this period. This paper describes the use of concept mapping in the field of community mental health. Investigators have used concept mapping for purposes ranging from mental health needs assessment to studying program models and theory. Adaptations to the methodology have been applied to the ways in which the qualitative data are generated, structured, represented, and interpreted. Examples from the mental health literature are presented to illustrate these purposes and adaptations. The contributions and value of concept mapping to the mental health field are discussed. © 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Concept mapping; Qualitative research; Mental health; Program planning; Program evaluation; Methodology

In the past decade concept mapping has become an increasingly popular tool for program planners and evaluators. Since the publication of the special issue of *Evaluation and Program Planning* (Vol. 12) dealing with this technique, concept mapping has been utilized for a variety of purposes in a number of diverse fields. Trochim (1989a) illustrates this variety through the presentation of 20 different projects that utilized concept mapping. While these and other projects reported in the literature have been guided by the steps outlined by Trochim (1989b), there has also been considerable adaptation of the methodology over the past decade to meet various demands and constraints.

Concept mapping is a structured process that involves quantitative analysis of qualitative data. This paper focuses on the use of concept mapping in the field of community mental health. In mental health, as

in other disciplines, qualitative research methodology is usually employed when a problem area or concept is in its exploratory stage, i.e., where there is a lack of an existing theory or predetermined categories (Epstein, 1988; Grinnell, 1993; Patton, 1990). Qualitative research takes an inductive approach by describing social reality from the points of view of participants within the systems under study (Epstein, 1988), allowing concepts to emerge from the rich experiences of the individuals being studied. The quantitative techniques produce a conceptual organization of complex information and present a visual representation of the relationships among ideas. Thus, concept mapping is a useful tool that assists researchers, evaluators, and planners to meaningfully interpret and utilize qualitative data.

The versatility of this research tool is demonstrated by a review of a number of community mental health studies that have utilized concept mapping, including a study conducted by the authors of this paper. These studies are presented to illustrate both the variety of purposes for which concept mapping has been used

* Corresponding author. Tel.: +1-216-241-3400; fax: +1-216-368-6121.

E-mail address: jaj14@po.cwru.edu (J.A. Johnsen).

and the particular ways in which the method described by Trochim (1989b) has been adapted. Finally, the implications of the concept mapping technique for mental health practice and policy are discussed.

1. The concept mapping technique

Concept mapping is a technique for the generation, organization, and analysis of qualitative data. It helps groups to organize complex and diverse ideas into an understandable and coherent framework (Trochim, 1989b). It is a process that involves a series of structured and discrete steps to arrive at a pictorial representation, in the form of a map, of the interrelationships among ideas. The process is guided by a facilitator, whose job it is to lead a focus group through the various steps in the process. The focus group, generally consisting of 10–20 persons, generates responses to a focal question, organizes the thoughts, and interprets the results. In his seminal work, Trochim (1989b) has clearly defined and described six steps involved in this process. These steps are preparation, generation of statements, structuring of statements, representation of statements, interpretation of maps, and utilization of maps.

The preparation step involves the selection of the focus group participants and the development of the focal question. The participants are individuals who have a relevant role regarding the purpose for which concept mapping is being conducted. In the second step the group generates statements in response to the focal question in a ‘brainstorming’ session. Structuring of statements, the third step, involves the determination of the relationships among the statements and the ratings of the statements along a dimension that is established during the preparation step. Working individually, each focus group participant sorts the statements into conceptually similar piles and ascribes a rating of importance or significance to each statement. These individual data are then combined into a group similarity matrix based upon the sorts and descriptive statistics derived from the ratings.

The fourth step, representation of statements, involves the application of the multivariate statistical techniques of multidimensional scaling and hierarchical cluster analysis. Multidimensional scaling is a method for presenting the group similarity matrix developed in the previous step as points in n -dimensional space. For ease of visualization, concept mapping almost always represents these points in two dimensions. The distance between any two points in this two-dimensional plot reflects the degree to which the statements represented by the points were seen as conceptually similar by the group, and thus sorted into the same pile by the individuals in the group.

Hierarchical cluster analysis, which is a method for organizing the individual statements on the map into meaningful groups, is then used. The analyst’s job is to determine the most appropriate number of clusters to constitute the cluster solution. With the development and availability of the Concept System computer software to structure the concept mapping process, analysts typically use a solution that includes approximately five statements per cluster, which is the default used by the program, as the starting point for consideration (Trochim, 1993). Possible solutions involving either more or fewer clusters, with a correspondingly fewer or greater number of statements in each, are successively examined. At each point, a decision is made as to whether the splitting or merging of clusters makes conceptual sense. The final task in the representational step is to incorporate the ratings. The ratings can be represented on the map as a third dimension. The results are thus depicted in the form of a map of clusters of statements, each ostensibly representing some underlying concept, with the height of the points or the clusters representing their relative ratings.

The maps generated in step four, along with the list of statements generated in the second step, are then used for the interpretation step. The focus group participants examine the statements that have been grouped in each of the clusters, present and discuss their ideas for a descriptive phrase that captures the essence of the cluster, and reach a consensus on the cluster names. These names are superimposed on the cluster maps. The group members are asked whether the visual structure of the map makes conceptual sense, understanding that clusters that are in close proximity to one another should be more similar to one another than those that are farther apart. Meaningful groupings of clusters, or regions, may then be identified and named.

In the final step, the group must determine the specific ways that the concept maps will be utilized to accomplish the original purpose for engaging in its construction. The individual ideas, their conceptual organization, and the associated ratings should be considered in arriving at the plan of action. For instance, if the purpose of the exercise was to identify gaps in the mental health service system, the concept map could be used to guide program planning and development. Programmatic areas or particular target populations might be represented through the clusters. The items comprising the clusters might suggest specific service needs or intervention strategies. Finally, if the items were rated as to the importance of the need, these ratings can be used to prioritize the focus of program development or to determine the distribution of limited resources.

Concept mapping has a number of strengths that it

brings to planning and evaluation tasks. The structured process keeps participants on task and fosters group cohesion, the results are expressed in the language of the participants and are easily understood, and the graphic representations depict concepts, their relationships, and the ratings ascribed to them in a parsimonious way (Trochim, 1989b). There are limitations to the method, however. The results are the product of a relatively small number of individuals and thus may not reflect the views of the broader groups being represented. Reliability at each stage of the process is also a concern. Given these limitations regarding both reliability and validity, caution must be exercised to avoid the tendency to view the results as scientific truth or conceptual reality rather than as a tool to assist in research, planning, and evaluation (Trochim, 1989a).

2. Uses of concept mapping in community mental health

Trochim (1989a) presented 20 projects in order to illustrate the different purposes for which concept mapping has been used. The field of community mental health has utilized concept mapping for both program planning and program evaluation purposes. Examples from the professional literature are presented below to illustrate the breadth of these uses and the versatility of the method.

2.1. *Concept mapping as a tool for program planning*

A number of studies have used concept mapping to help guide program planning, including the two mental health studies that Trochim (1989a) described in his gallery of examples. In the first of these two examples, a committee of Board members of a Mental Health Association had hired a staff person to develop a program to train volunteers to work one-on-one with persons who had returned to the community after psychiatric hospitalization. The committee used concept mapping to structure their thoughts regarding the desired content of the training program. The new staff person was then able to design a training program that addressed the conceptual areas identified in the cluster map.

Key staff and Board members of a counseling agency conducted the second mental health project reported by Trochim (1989a). The concept map they produced displayed the types of services they were providing or might provide in the future. The process helped them to identify service gaps and provided a structure for the development of the organization's long range plan.

More recently, concept mapping has been used by an agency that provides crisis mental health services

(Wiener, Wiley, Huelsman & Hilgemann, 1994). The technique was used to organize input from key informants pertaining to the personal, community, and organizational needs that they felt the crisis service agency should meet. The clusters that resulted from the analysis became the goals for the organization's three-year plan, while individual need statements within each cluster were identified as objectives.

Biegel, Johnsen and Shafran (1997) utilized concept mapping to increase the understanding of the needs of African-American family members of persons with severe mental disabilities. The purpose of this investigation was to assist a county-level mental health authority in system-level planning and policy development. Previous studies of families of adults with severe mental disabilities had identified that they were dissatisfied with the degree of their involvement in the treatment process (Biegel, Song & Milligan, 1995). Concept mapping was used to investigate the barriers or obstacles that hinder African-American families' involvement in the treatment and support of their family member with mental illness.

The results of the study were used to develop a plan to increase and improve the involvement of African-American families in the mental health treatment process. At the conclusion of the project, a 16 member ad hoc committee composed of consumer, family, provider, and policy representatives was formed to review the results of the concept mapping study and also findings from previous family caregiving research. The committee formulated a set of recommendations that were accepted by the county's mental health authority and incorporated into its system development planning.

2.2. *Concept mapping and program evaluation*

In addition to its utility in needs assessment and planning, concept mapping has also been applied to program evaluation issues. A recent study used the technique to conceptualize views of staff of a supported employment project (Trochim, Cook & Setze, 1994). In this instance, concept mapping was used to help develop a theoretical framework regarding this particular approach to vocational rehabilitation. The map was a theoretical representation of the way the model was viewed by the persons who were delivering the service. The authors concluded that there were several key constructs interpreted from the map that should be included in any theory concerning supported employment programs and suggested that concept maps can be used to guide future empirical studies and more rigorous evaluations of vocational rehabilitation programs. The clusters could be the focus of investigation and define the constructs for evaluation, while

the individual statements within the clusters could help to operationalize these constructs.

Marquart, Pollak and Bickman (1992) used concept mapping to assess service quality, which was one of the components of the Ft. Bragg Evaluation Project. This component of the project called for an evaluation of the quality of intake assessment and case management, which were two major features of the continuum of care model that was implemented at Ft. Bragg. Assessing quality is a difficult and complex task, involving the development of an operational definition of quality. The potentially competing views of different stakeholders must be considered in this process (Marquart et al., 1992). Therefore, the investigators used concept mapping to define the necessary and sufficient dimensions of quality from the perspectives of administrators, service providers, and parents. The results of these activities were used to define the general domains of quality to be assessed and to establish quality criteria to be measured by the instrument that was being developed.

Similarly, concept mapping has been used to identify relevant domains for the focus of outcome evaluations from the perspective of a particular group of stakeholders. Because the perspective of consumers of mental health services is often omitted when the types of outcomes to be evaluated are being determined, a group of representatives of this critical group conducted a concept mapping study. The study involved the identification and conceptual organization of both individual and system outcome measures that consumers of mental health services felt should be included in the assessment of the mental health system (Trochim, Dumont & Campbell, 1993). The results of the project led to recommendations in the design of the State Mental Health Profiling System.

Shern, Trochim and LaComb (1995) have used concept mapping for a different type of evaluation. Rather than looking at the quality of a service or outcomes, they were concerned with evaluating issues of fidelity in the transfer of a particular service model. One of the six research demonstration projects funded in 1990 by the National Institute of Mental Health as part of the Stuart B. McKinney homelessness program involved a psychiatric rehabilitation model to address the needs of an urban population of homeless persons with psychiatric disabilities. While the emphasis of the study of the demonstration project was on the efficacy of the intervention, a key component was documenting how the rehabilitation model was adapted to this population and setting. Concept mapping was used to investigate the fidelity of model transfer by describing the program as it had been implemented and comparing it to the original model as conceived by its developers.

3. Adaptations of the concept mapping methodology

In addition to the range of applications in program planning and program evaluation for which concept mapping has been used in the field of community mental health, its adaptability has also been demonstrated through a number of methodological variations that have been reported in the literature. Each of the studies discussed above adapted the concept mapping methodology described by Trochim (1989b) in at least one important way. These adaptations were made in order to meet the needs of the particular purpose of the project or were responses to external constraints. The ways in which the studies under review used concept maps to accomplish the purposes for which the process was undertaken (step six) have already been discussed. Presented below are modifications to the first five steps of the methodology described by Trochim (1989b): preparation, generation of statements, structuring of statements, representation of statements, and interpretation of maps.

3.1. Preparation — selection of multiple respondent groups

Trochim (1989b) suggests that concept mapping is often best conducted in a brainstorming session with a single set of participants representing a broad range of relevant constituencies. A frequent modification of this recommended approach involves situations where the unique perspectives and conceptualizations of multiple respondent groups are desired. Each constituent group generates its own set of statements and conceptualization of these statements.

A typical application of this method can be seen in the work of Marquart et al. (1992). These investigators had administrators, clinicians, and the parents of consumers generate independent concept maps through the standard process. Each constituent group met separately to brainstorm the focus group question. At a second session, each group sorted and rated its own set of items. The third session involved the interpretation and naming of the clusters that resulted from the intervening analysis. Thus, each group went through all of the steps to arrive at a map of its conceptualization of the focus issue. The different maps could then be compared in order to arrive at a summary of ideas across all of the groups.

Marquart et al. (1992) found that there was some overlap across groups. For instance, administrators and intake assessment staff both identified the importance of attention to risk factors during the assessment process. However, the three groups also brought unique perspectives to the issue of quality. Not surprisingly, these perspectives reflected the roles of each group. Administrators tended to conceptualize quality

in terms of organizational factors, while the clinicians placed more emphasis on the characteristics of the service providers. Family members, on the other hand, were more focused on the direct and tangible supports and services they needed. It is not clear whether these differences would have emerged had representatives from all three groups participated together in one focus group. Clearly, however, important dimensions would have been omitted from the instrument that was developed to measure the quality of intake assessment and case management, without the input from these multiple stakeholders.

Shern et al. (1995) used another variation of the multiple informant group approach, motivated by the previously discussed purpose of the study. In this instance, the developers of the particular rehabilitation technology and the staff who implemented the adaptation of the model independently, in separate focus groups, went through the steps of statement generation, sorting, rating, and cluster naming. As in the previous example, the maps from the two groups could then be compared. This use of multiple respondent groups was able to reveal differences in the way in which the structure of the actual program differed from the theoretical structure of the model. Once these differences were identified, they could be investigated to determine their possible causes and impact.

The theoretical approach used by Biegel et al. (1997) also necessitated the use of multiple respondent groups. The project was grounded in general systems theory (Bertalanffy, 1969), which broadly defines a system as a complex of interacting elements that function together to manage the environment. Involvement of families in mental health care and treatment is most directly influenced by three groups of individuals: the family members themselves, their mentally ill relatives, and the mental health service providers. The local mental health authority also plays an important indirect role because of its planning and policy development responsibilities. Therefore, focus groups were separately formed to represent each of these four constituencies. As in the previous examples, there were many similarities among the various conceptualizations of the focus issue across groups. More important, however, were the unique perspectives that each group contributed to the final product.

3.2. Generation of statements

Wiener et al. (1994) also utilized multiple informants. Their methodological adaptation, however, involved the way in which the statements were generated. The study involved combining qualitative interviews with concept mapping. Service users, clients, funders, staff members, and board members were interviewed in order to assess the crisis service needs of the

community. In this instance, the key informants were individually interviewed and asked their responses to a series of open-ended questions. The focus question was the last question of the interview, and was asked individually rather than in a focus group setting. The list of all statements from all respondents was then edited to eliminate duplicate concepts. In this instance, the deviation from the standard focus group approach was the result of the logistics of the overall data collection effort. Concept mapping was part of a multi-method strategy that was designed to compliment and supplement the individual interview data. It was more efficient to gather all of the data through the single contact rather than trying to convene all of the individual respondents for a focus group meeting. This adaptation of the method for generating statements also necessitated a different approach for structuring the statements, which is discussed below.

Biegel et al. (1997) also introduced a modification to the way in which statements were generated. The first meeting of each group followed the standard format. The second focus group session, however, was designed to generate additional information based upon the products generated from the first session. The primary task in this session was to brainstorm responses to a second question concerning how the barriers or obstacles to family involvement identified in the first focus group could be addressed or overcome. The focus group approach was used, but rather than responding to a single focus question that had been determined during the preparation step, the same focus question was asked in relation to the multiple clusters that had been generated from the structuring of the original barrier statements. For instance, family members were asked ‘How can the barrier or obstacle identified as “Lack of information and guidance from providers to family caregivers” be overcome?’ The participants were directed to identify solutions to the barriers represented by the cluster name, rather than to each of the statements making up the cluster. The individual items were provided only to help exemplify and clarify the meaning of the cluster name. The brainstorming for each cluster proceeded until the group could not generate any additional solutions. This procedure was repeated until the time allotted for the task was exhausted.

3.3. Structuring of statements

As previously discussed, structuring of statements involves sorting and rating. Shern et al. (1995) incorporated a modification to the normal procedure of having the individuals who generate the statements also sort and rate them. In their study of model fidelity, they had the model developers and program implementers independently generate concept maps. In

addition to these two concept maps, a third map was introduced. In this case, the statements that were generated by the program staff were given to the developers of the rehabilitation technology, who then sorted and rated them. This adaptation revealed differences in the ways in which the same items were conceptualized and the importance that was placed upon them by the two groups.

There was significant similarity in the way in which the two groups sorted the same statements, as evidenced in the correlations between the pairs of similarity matrices and distance matrices. Once again, however, there were differences between the two groups in the ways in which the items were clustered. For instance, Case Management and Vocational Rehabilitation were much more closely associated in the map generated by the developers of the rehabilitation model than in the one generated by the project staff. Differences in ratings of importance were also found between the two groups. Staff tended to place more importance on relationships related to supervision, attitudes toward members, and member communication. The model developers, on the other hand, emphasized the elements of the map associated with rehabilitation technology and case management.

Wiener et al. (1994) also employed a modification to the structuring of statements methodology. As previously noted, the statements were generated through individual interviews and edited to eliminate duplicates from the list. This final list was then sorted and rated by a group of agency planners that included the director, two senior staff members, and 11 board members. Thus, not all of those who were involved in generating the concepts participated in the task of turning the ideas into a conceptual map.

Participants in the Biegel et al. (1997) study rated importance but did not sort the statements they generated in the second solutions-focused session, as previously described. In order to discern more meaningful patterns and trends within the solutions data across all of the various barriers that were addressed, Concept System software was used to generate a solutions cluster map for each constituent group. A method similar to that used by Wiener et al. (1994) was employed. The generated solutions were compiled across all of the barrier clusters that were addressed by the focus group. In several cases the same solution was proposed for more than one barrier. These duplicate solutions were eliminated from the sets of solutions. Prior to any discussion of these data, the solution sets were independently sorted by five members of the research team.

The data were then entered into the Concept System software, utilizing the sorting conducted by the researchers and the importance ratings provided by the focus group participants. It was felt that this procedure

was methodologically sound since the sorting and rating of statements are independent processes and are analyzed separately. In both of these studies (Biegel et al., 1997; Wiener et al., 1994), the structuring of the statements was completed by a different group of individuals than those who generated the statements. This modification resulted from the modification of the ways in which the statements were generated.

3.4. Representation of statements

Variation can also be found in the methods used to determine the final cluster solutions. This step of the process is also the least precisely defined aspect of the methodology. While Trochim (1989b) provides some guidelines for determining the 'best' cluster solution, it is largely an intuitive process. He also notes that the process would ideally involve the participants who generated and sorted the items, but practical considerations have usually resulted in this task being completed by the analysts. In many instances, the method used to arrive at the cluster solution is simply not reported in the literature.

Although studies often do not explicitly identify who determined the cluster solution, Trochim, Dumont and Campbell (1993) indicated that in their study about half of the participants informally participated in the clustering task. The group began with a relatively small number of clusters and incrementally increased the number of clusters in the solution. At each step, a determination was made as to whether the split of the cluster into two clusters was conceptually interpretable. This method is consistent with that found in Trochim (1989b), except that the original article suggested starting with a greater number of clusters and combining clusters until the most reasonable solution is determined.

Trochim, Cook and Setze (1994) did not indicate whether the individuals involved in the other steps of the concept mapping process participated in the development of the cluster solution. The procedure used to arrive at the solution, however, was described. This procedure was similar to that employed by Trochim et al. (1993), except that a solution that included approximately five statements per cluster was selected as the starting point for consideration. Possible solutions involving either more or fewer clusters, with correspondingly fewer or greater number of statements in each, were successively examined, with decisions being made as to whether the splitting or merging of clusters made conceptual sense. This method of determining the cluster solution has become the norm, due to the development and availability of the Concept System computer software to structure the concept mapping process. The software produces an initial cluster sol-

ution where the number of clusters is equal to one fifth of the total number of statements (Trochim, 1993).

3.5. Interpretation of maps

There are two major tasks involved in this step of the concept mapping process. The first is to produce descriptive names for each of the clusters and the second is to determine whether there are any groupings of clusters that constitute meaningful regions on the map. As described by Trochim (1989b), these tasks are completed by the participants who had generated the statements. Some of the more recent studies being discussed, however, have deviated from this approach.

In the study reported by Wiener et al. (1994), the individuals who participated in the sorting and rating tasks were indirectly involved in defining the concept clusters. Each person was asked to provide a label for each pile of statements that was created. The analysts used these short statements to help them name the categories that resulted from the clustering. They also used these statements to decide upon the number of clusters to be included in the final map. The resulting map with the named clusters was then presented to the board of directors of the agency for concurrence.

The analysts rather than the participants also conducted the interpretation of the maps in the Biegel et al. (1997) study. This modification in the concept mapping methodology was made as the result of a pilot test of the procedure. In this instance, the primary purpose of the second session was to generate possible solutions to the barriers that were identified in the first session. The pilot test revealed that participants could not complete both the naming of the clusters and the generation of solutions within the allotted time for the session. There were insufficient resources to allow for a third session, so the pilot group participants recommended that the researchers should propose names for the clusters and solicit feedback from the group members. Thus, the emphasis of the second session could be placed on the more critical task of identifying solutions to barriers.

As a result, the second sessions for this study were a departure from the standard procedure that was utilized in most of the previously discussed examples. Rather than having the participants review the cluster statements and name the clusters, this task was completed by the research team prior to the session. Once the optimum solution was agreed upon, the team discussed each cluster in order to reach consensus on a name for each cluster. These names, along with the individual items that made up the clusters, were shared with each group at the second meeting. The participants in each of the groups indicated that the short descriptions that had been generated by the investigators adequately captured the essence of the clusters.

This procedure was similar to that used by Wiener et al. (1994).

Once the concept maps have been drawn and the clusters have been named, investigators often conduct a higher order analysis and grouping of the results. In concept mapping, clusters that are closer together on the map should be more conceptually similar than those lying farther apart (Trochim, 1989b). Trochim suggests that participants should examine the clusters to determine whether there are any groups of clusters that are conceptually related in a meaningful way. These clusters would represent map regions that can be graphically bounded and named.

Two of the studies used the standard approach of having the participants examine the concept maps and reach consensus regarding regions (Marquart et al., 1992; Trochim et al., 1994). Wiener et al. (1994) took a slightly different approach. Their cluster map was plotted against orthogonal axes. The authors then characterized the plot as representing two dimensions: agency role (*x*-axis) and agency function (*y*-axis). The *x*-axis was conceptualized as a continuum ranging from 'expanding services' on one end to 'clarifying services' on the other. Similarly, the agency function dimension ranged from 'providing services' to 'public relations'.

The interpretation of the map generated by consumers of mental health services (Trochim et al., 1993) led to several possible groupings. While there was general agreement about the existence and definition of five regions, some individuals were more comfortable with defining dimensions running along horizontal and vertical axes. In addition, it was noted that if a diagonal line were to be drawn from the southwest to the northeast, the concepts lying below and to the right of the diagonal were central to recovery, while those above and to the left focused on empowerment.

The investigation conducted by Biegel et al. (1997) also departed from the standard procedure in this regard. Rather than examining the cluster maps to identify regions or dimensions, as was done in these other studies, the investigators utilized the overarching systems orientation of the study to define four regions: Family, Consumer, System, and Community. These four regions describe the interrelated elements of the caregiving system. Such groupings are based upon service delivery literature and help to clarify the locus of the barrier, thus focusing attention on the levels at which solutions to the obstacles might best be addressed (Biegel & Farkas, 1989).

Again, project staff reached consensus on the assignment of each cluster to one of these four regions, based upon the locus of the brainstormed statements within the clusters. This task was completed in a separate session subsequent to definition of the cluster solutions but prior to the examination of the map. The

fact that regional boundaries could be drawn from the agreed upon groupings provided empirical support and validation for the conceptualization of the data by the project staff.

4. Conclusion

4.1. The value of concept mapping in mental health evaluation, planning, and research

These examples from the community mental health literature clearly demonstrate the flexibility of concept mapping. It has been shown to be a very useful method for organizing complex qualitative data in a meaningful way that both advances knowledge about the topic and has practical implications for policy and practice. As noted by Trochim (1989b, p. 12), “The uses of the map are limited only by the creativity and motivation of the group.” It has been used for a variety of program planning and program evaluation purposes, from assessing needs to assessing the fidelity of model transfer. Depending upon the demands and constraints of the task at hand, the concept mapping methodology has been adapted to serve these purposes. These adaptations have taken a variety of forms and have involved different steps of the process, including the selection of respondent groups, the generation of statements, the determination of cluster solutions, and the displaying and interpretation of the maps.

For instance, the number and composition of the groups that are convened can be structured in order to accomplish a specific purpose. One of the appeals of focus groups is the synergistic effect of the participants on one another. This effect is enhanced when persons representing diverse perspectives are included in the group, as suggested by Trochim (1989b). There are instances, however, when it is important to understand the conceptualization of an issue by a more homogeneous group of individuals and to avoid the influence of other constituent groups.

At the same time, it may be important to get multiple perspectives in order to combine them to get a more complete picture, or to contrast them to identify significant similarities or differences. Three of the previously described studies utilized this approach (Biegel et al., 1997; Marquart et al., 1992; Shern et al., 1995). These studies provide compelling evidence for the value of the use of multiple respondent groups. For instance, Biegel, et al. (1997) found that family caregivers identified an inability of the judicial system to appropriately deal with mental health consumers and their families as their most important concern. This issue was not expressed by any of the other groups. Had a single focus group composed of representatives

of the four constituencies in this study been utilized, this finding might not have emerged. At the very least, its importance for family members would likely have been diluted in the rating process.

Thus, the use of multiple focus groups representing different constituencies should perhaps be considered first, rather than being the exception to the rule. While a single focus group composed of a variety of participants may benefit from the synergy enhanced by the diversity, careful consideration should be given to the potential loss of important group distinctions. A methodological adaptation that may be worthy of future exploration is the use of subgroup analyses of the clustering and ratings of the people representing various groups within a single focus group. Care would have to be taken, however, to ensure a sufficient number of people in each subgroup (a minimum of five) to be able to conduct the sub-analyses.

In other cases it is situational constraints, typically time and resources, which necessitate other modifications in the concept mapping approach. Such constraints have resulted in adaptations in the ways in which statements are generated, structured, and interpreted (Biegel et al., 1997; Wiener et al., 1994). For instance, by having the investigators interpret the maps from the first focus group sessions, and by modifying the way in which statements from the second session were generated and structured, Biegel et al. (1997) were able to complete their data collection in two meetings rather than four per constituent group.

Despite all of the adaptations to the standard methodology outlined by Trochim (1989b), there is one commonality that runs through the studies that have been discussed. All of the investigators attest to the value of concept mapping. It is a very efficient method for managing a great deal of information in a short period of time. More importantly, however, concept mapping provides a structure to the complexity of the ideas that is easily understood. Since the maps are a group product, the process also fosters consensus among the participants. All of these factors increase the likelihood that the results will be utilized in meaningful ways to enhance program planning, evaluation, and practice.

Acknowledgements

This research was supported by Grant No. 94.1076 from the Office of Program Evaluation and Research, Ohio Department of Mental Health and through a contract from the Cuyahoga County Community Mental Health Board.

References

- Bertalanffy, L. V. (1969). *General system theory, foundations, development, applications*. New York: G. Braziller.
- Biegel, D. E., & Farkas, K. (1989). *Mental health and the elderly: service delivery issues*. Cleveland: Monograph Series, Western Reserve Geriatric Education Center, Case Western Reserve University.
- Biegel, D. E., Johnsen, J. A., & Shafran, R. (1997). Overcoming barriers faced by African-American families with a family member with mental illness. *Family Relations*, 46(2), 163–178.
- Biegel, D. E., Song, L., & Milligan, S. (1995). A comparative analysis of family caregivers perceived relationships with mental health professionals. *Psychiatric Services*, 46(5), 477–482.
- Epstein, I. (1988). Quantitative and qualitative methods. In: R. Grinnell Jr, *Social work research and evaluation*, (3rd ed.). Itasca, IL: F.E. Peacock Publishers, Inc.
- Grinnell Jr, R. (1993). *Social work research and evaluation*, (4th ed.). Itasca, IL: F.E. Peacock Publishers, Inc.
- Marquart, J. M., Pollak, L. B., & Bickman, L. (1992). Quality in intake assessment and case management: Perspectives of administrators, clinicians and consumers. In: K. Kutash, C. Liberton, & R. Friedman, *A system of care for children's mental health. The Fifth Annual Research Conference Proceedings*. Tampa, FL: Florida Mental Health Institute, University of South Florida.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Newbury Park, CA: Sage Publications.
- Shern, D. L., Trochim, W. M. K., & LaComb, C. A. (1995). The use of concept mapping for assessing fidelity for model transfer: An example from psychiatric rehabilitation. *Evaluation and Program Planning*, 18(2), 143–153.
- Trochim, W. M. K. (1989a). Concept mapping: Soft science or hard art? *Evaluation and Program Planning*, 12, 87–110.
- Trochim, W. M. K. (1989b). An introduction to concept mapping for planning and evaluation. *Evaluation and Program Planning*, 12, 1–16.
- Trochim, W. M. K. (1993). *The concept system*. Ithaca, NY: Concept Systems.
- Trochim, W. M. K., Cook, J. A., & Setze, R. J. (1994). Using concept mapping to develop a conceptual framework of staff's views of a supported employment program for individuals with severe mental illness. *Journal of Consulting and Clinical Psychology*, 62(4), 766–775.
- Trochim, W., Dumont, J., & Campbell, J. (1993). A Report for the State Mental Health Agency Profiling System: Mapping mental health outcomes from the perspective of consumers/survivors. In: *Presented at the National Conference on Mental Health Statistics, Center for Mental Health Services, June 6–9, Washington, DC*.
- Wiener, R. L., Wiley, D., Huelsman, T., & Hilgemann, A. (1994). Needs assessment: Combining qualitative interviews and concept mapping methodology. *Evaluation Review*, 18(2), 227–240.