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## The Delphi Method

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## CHAPTER 13

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# The Delphi Method

LINDA STONE FISH  
DEAN M. BUSBY

### BACKGROUND

Dear Reader,

We would like to ask your help in a research study of considerable significance for family therapy researchers and clinicians. The present study is designed to compare and contrast the various research methodologies in the field by examining the opinions of prominent family therapists. The completion of the three questionnaires that will make up this study will require a total of no more than 1½ hours of your time. In appreciation of your participation, a complete summary of the findings and a list of the other panelists will be sent to you.

This study will employ the Delphi technique, a widely used method of gathering group consensus from a panel of knowledgeable persons. The Delphi technique assures anonymity of responses, reduces group pressure for conformity, and takes less time for panelists than traditional methods of pooling opinion. As an expert in the field of family therapy, your participation in the present research will be greatly appreciated.

With your help, this research will help clarify various research methodologies and their role in the family therapy field. We look forward to working with you in the weeks to come.

Respectfully,

*Linda Stone Fish, PhD*

*Dean M. Busby, PhD*

Sound interesting? This is the way Delphi research often begins. Researchers are curious about a particular topic in the field. They may perceive the seeds of an idea germinating in the soil of family therapy (e.g., feminist-informed family therapy in the 1980s), or they may perceive discrepancies in ideas that are fueling theory and practice (e.g., how structural and strategic therapies are similar vs. different). Or they may have an opinion about a particular topic relevant to the field and want to know how expert colleagues around the country think about the same things (e.g., the strengths and weaknesses of families at the present time). Regardless of the idea, the researchers want to pool experts on the subject. The researchers want to structure communication

about the idea so that consensus can be reached. They do not have the financial resources to pay all the experts to meet in one place. The Delphi method provides researchers with a way to gather consensus without face-to-face interaction. They do not want to do traditional surveying, because then they would just gather everyone's opinions without the benefit of participants' receiving feedback from other survey participants. They want more of a dialogue about ideas, and the Delphi method allows this type of dialogue to take place.

### Philosophical Assumptions

The Delphi method is based on the philosophical assumption that “*n* heads are better than one” (Dalkey, 1972). It is a procedure designed to sample a group of knowledgeable persons in order to gain a consensus of opinion on a particular topic. The Delphi method structures the communication of individuals in a way that allows a group of individuals to deal with complex problems (Linstone & Turoff, 1975).

The Delphi structures the communication by providing a forum in which participants are able to express their opinions anonymously, gather feedback from the group about their views, access other views of the same ideas, and have an opportunity to revise their views. How a researcher designs and implements the Delphi technique is not as important as the philosophical assumption underlying its usage. The Delphi method rests on the idea that it is possible and often quite valuable to reach consensus through a collective human intelligence process (Linstone & Turoff, 1975). The view that truth is relative underlies the attempt to gather myriad opinions on a particular topic. Mitroff and Turoff (1975) explain the underpinnings of the Delphi by utilizing different components of the philosophies of Locke, Leibniz, Kant, Hegel, and Singer. They are quick to suggest, however, that we must be careful not to rigidly define the philosophical assumptions underlying the Delphi:

We certainly no longer seem able to afford the faulty assumption that there is only one philosophical base upon which a technique can rest if it is to be “scientific.” Indeed if our conception of inquiry is “fruitful” (notice, not “true” or “false” but “productive”) then to be “scientific” would demand that we study something (model it, collect data on it, argue it, etc.) from as many diverse points of view as possible. (Mitroff & Turoff, 1975, p. 36)

Scheele (1975), another Delphi method specialist, utilizes the ideas of Merleau-Ponty to define the assumptions underlying the philosophical base of the Delphi method. According to Scheele,

the Merleau-Pontyean is concerned with the particular reality created by the “bracketing” of an event or idea out of the great din of experience, rather than explicating a pragmatic reality that can be used to define possible actions. Truth to the Merleau-Pontyean is agreement that enables action by confining or altering “what is normal” or to be expected. (p. 43)

The Delphi method attempts to negotiate a reality that can then be useful in moving a particular field forward, planning for the future, or even changing the future by forecasting its events. The philosophical underpinnings of the Delphi are thus more concerned with the application of useful knowledge than with the attempt to define the truth.

## Historical Roots and Development

The Delphi method was named after the Greek town of Delphi. The ancient Greeks believed that Apollo—son of Zeus and god of light, purity, the sun, and prophecy—killed the dragon Python in Delphi. The temple in Delphi then contained the famous oracle, Pythia, whom Apollo chose to speak through to predict the future. She would turn around in frenzy and utter strange sounds, which would then be used for prediction. The Delphi method that is used today, based in a more rational, scientific paradigm, had its first usage in attempting to predict the future.

Although Quade (1967) reports the Delphi method's earliest use in the prediction of horse race outcomes, other leading Delphi specialists argue that the method originated at the Rand Corporation and had its first application in defense and military matters (Dalkey & Helmer, 1963). The first Rand Corporation utilization of the Delphi, "Project Delphi," was an attempt to forecast the probability of a particular event. The Air Force was interested in what U.S. experts believed the Soviet Union thought was the optimal U.S. industrial target and how many A-bombs it would take to reduce the munitions output (Linstone & Turoff, 1975). Had the research team attempted to study this idea with extant research practices, they would have had to use extremely difficult computer programs for the 1950s and would have had to estimate much of the input subjectively. Instead, they decided to gather a consensus of opinion as a means to identify the "truth."

Although defense practices were the first subject for the Delphi technique, it did not receive much publicity until Gordon and Helmer (1964) utilized it to forecast long-range trends in science and technology and their impact on society. This study—coupled with a monograph by Helmer and Rescher (1960) entitled *On the Epistemology of the Inexact Sciences*, both done through the Rand Corporation—were used as catalysts for many other researchers to utilize the Delphi technique (Linstone & Turoff, 1975). The methodology proliferated in the 1960s and 1970s and continues to find applications in fields dealing with other complex problems that face society, such as the environment, health, education, and transportation. The Delphi technique is also commonly used in psychology, sociology, and political science.

The Delphi technique found its way into family therapy through Sam Cochran of East Texas State University. Cochran utilized his experience as part of the Rand Corporation to bring the Delphi to the psychology department. He became a committee member for Wayne Winkle's family therapy dissertation. Under the advisorship of Fred Piercy, Winkle used the Delphi to reach a consensus of opinion about a model family therapy curriculum in the late 1970s (Winkle, Piercy, & Hovestadt, 1981). Family therapy researchers have been using the Delphi since the early 1980s, although most of the research utilizing this approach has been archived in dissertation abstracts. Whereas the general field of psychotherapy has seen a number of studies utilizing the approach (e.g., Goplerud, Walfish, & Broskowski, 1985; Kaufman, Holden, & Walker, 1989; Norcross, Alford, & DeMichele, 1992; Thomson, 1990), the family therapy field has only seen a limited number of published articles using this technique.

The traditional Delphi technique has been used in five family therapy research articles since the publication of Winkle and colleagues' article in 1981. First, Stone Fish and Piercy (1987) used the Delphi to examine the similarities and differences between structural and strategic family therapies. In the second article, Stone Fish (1989) compared the results of the Stone Fish and Piercy (1987) study with those of an unpub-

lished Delphi poll conducted by Wheeler (1985), which explored the differences between extant family therapy practices and feminist-informed family therapy. In the third study, Rago and Childers (1990) used the Delphi to survey family therapists about revisions in family therapy theories that might better accommodate the changing U.S. family. Stone Fish and Osborn (1992) also used the Delphi to survey family therapy experts about the current strengths and weaknesses of family life in the United States. The final traditional Delphi study published in the family therapy literature to date surveyed panelists on their conceptual and practical ideas of the reflecting team approach to family therapy (Jenkins, 1996).

A more recent trend in the family therapy literature is to use a modified version of the Delphi technique. There have been five studies using modified versions of the technique in the family therapy literature since Winkle and colleagues' (1981) study. In the first such study, Nelson and colleagues (Nelson & Figley, 1990; Nelson, Heilbrun, & Figley, 1993) surveyed a large group of family therapists about basic family therapy skills. In the second, White, Edwards, and Russell (1997) modified the traditional Delphi to identify the principal components necessary for successful outcomes in marriage and family therapy. Blow and Sprenkle (2001) also used a modification of the Delphi to identify common factors across marriage and family therapy theories. Hovestadt, Fenell, and Canfield (2002) modified the Delphi technique to survey rural mental health service providers about effective marriage and family therapy in rural settings. Lastly, Nelson, Piercy, and Sprenkle (in press-a) modified the Delphi to survey family therapy experts about Internet infidelity.

## METHODOLOGY

### Research Questions

As a field undergoing continual transformation and encountering constant theoretical and practical challenges, family therapy is well positioned to find the Delphi method useful. The family therapy research questions that are best answered by this methodology are those in which researchers are trying to reach some consensus of opinion about a particular area. An additional use of this method is to develop policy issues for a field or profession regarding a relatively new phenomenon (e.g., AIDS in the early 1990s). Often what occurs is that particular ideas or series of thoughts are germinating in the literature. The Delphi technique is available to help researchers reach a consensus about such ideas or to predict the future of these ideas in the field.

A good example of the utility of the Delphi method occurred in the early 1980s. Structural and strategic family therapies, two of the most popular approaches at the time, lacked both conceptual and practical clarity. There was much confusion in the field about whether to integrate the two approaches. It was often difficult to differentiate them because of overlap in both theory and practice. Clinicians throughout the country were calling themselves "structural/strategic family therapists," and outcome research combined the two schools into the same category (Stanton, Todd, & Associates, 1982). On the other hand, many leading theoreticians in the field (de Shazer, 1984; Fraser, 1982; MacKinnon, 1983; Rohrbaugh, 1984) believed that it would be a grave mistake to integrate the two approaches. A need existed to define both the structural and strategic approaches to family therapy, as well as their similarities and differences.

Although family therapy theorists (e.g., Beavers, 1981; Liddle, 1980; Sprenkle, 1976) were suggesting that the best family therapy practices are linked to some research base, it was proving difficult to research a therapy approach that lacked theoretical clarity. A consensus of opinion from a panel of expert structural and strategic therapists as to the similarities and differences inherent in these two approaches would help clarify the therapies and move the field forward. The Delphi method proved to be an excellent vehicle for researching this dilemma.

### Sampling and Selection Procedures

Panel selection is a critical element in the Delphi method. Dalkey (1969) reports that panelists' knowledge of the subject matter at hand is the most significant assurance of a high-quality outcome when the Delphi method is used. Therefore, Delphi panelists are chosen for their expertise rather than through a random process. The researcher selects the panelists based on their knowledge of the subject matter of interest. It is also possible to contrast opinions from an expert panel with those from a panel of nonexperts.

In the Delphi research comparing structural and strategic therapists, panelists were selected who met three of the following criteria: They (1) had published at least two articles or books on structural or strategic family therapy, (2) had at least 5 years of clinical experience in structural or strategic family therapy, (3) had at least 5 years of experience teaching structural or strategic family therapy, (4) had made at least two national convention presentations on structural or strategic family therapy, and (5) possessed a qualifying degree in a mental health discipline. A list of panelists was generated by perusing family therapy journals and books, and selecting authors who wrote about structural and strategic therapies. Those panelists from this first list who were asked to participate were also asked to provide the names of other family therapists who met the criteria listed above. These latter therapists were then sent letters asking them to participate. A short demographic questionnaire was sent with the Delphi to confirm the panelists' expertise in the subject matter. Of the panelists who were selected for the structural/strategic study, the 32 panelists who agreed to participate and completed the three rounds of the Delphi were quite expert in the field. Twenty-six were educators in the field. The average panelist had more than 8 publications and 10 national presentations

### Data Collection Procedures

Data collection utilizing the traditional Delphi technique involves a three-part questionnaire. Delphi experts agree "that a point of diminishing returns is reached after a few rounds. Most commonly, three rounds proved sufficient to attain stability in the responses; further rounds tended to show little change and excessive repetition was unacceptable to the participants" (Linstone & Turoff, 1975, p. 229). According to Linstone and Turoff (1975), data collection undergoes four distinct phases. First, the subject is explored by the participants, and each panelist gives as much input as he or she would like about the topic under study. The second phase is characterized by pulling together the individual information and understanding how the group views the subject. The third phase deals with the disagreements encountered among panelists

with differing views. The final phase occurs after the initial information has been fed back to the individuals for their analysis. How these phases are accomplished is left up to the research team. Most important is the opportunity for panelists to express their opinions about the subject matter and for the research team not to prematurely close off disagreements among members. Usually the team designs a questionnaire that is sent out to a large group of expert panelists. The research team then pools the responses and sends them out again (at least once) to the panelists, so that they can re-evaluate their answers based on group responses. The research team attempts to reach a consensus of opinion about the initial responses during the last phase of the Delphi.

The Delphi technique, according to Dalkey (1972), has overcome the following drawbacks of the traditional methods of pooling opinion: (1) the influence of dominant individuals, (2) irrelevant and biasing communication, and (3) group pressure for conformity. Anonymity in the Delphi technique reduces the effect of dominant individuals; controlled feedback reduces irrelevant communication; and the use of statistical procedures reduces group pressure for conformity (Dalkey, 1972). It allows greater participation from panel members with economy of time and expense, avoids the pressures of face-to-face contacts, and aids the formation of opinion consensus.

The Delphi technique that was employed in the structural/strategic study involved three questionnaires designed by the research team (Stone Fish, Piercy, Sprenkle, and Constantine) and sent to each participant. Delphi Questionnaire I (DQI) was an open-ended form with major category headings supplied by the team to stimulate and guide participants' thinking (see Figure 13.1). The major headings asked the panelists to associate authors with structural therapy or strategic therapy; to identify major theoretical assumptions and techniques, how change occurs, and the major goals of therapy; and to discuss the differences and similarities inherent in the two approaches.

The completed DQI was returned to the primary researcher, who compiled every panelist's responses, creating Delphi Questionnaire II (DQII) (see Figure 13.2). DQII was sent to panelists with a 7-point scale next to each item. The structural DQII had 213 items, and the strategic DQII contained 271 items. Every panelist was asked to rate each item in regard to its importance in defining either strategic or structural family therapy, and to return these ratings to the primary researcher. A rating of 1 indicated complete disagreement with the item's being important in defining the different approaches, whereas a rating of 7 indicated complete agreement (see Figure 13.2). The ratings from DQII were analyzed by computing the median, quartiles one and three, and the interquartile range for each item. This statistical information, a new 7-point scale, and each respondents' ratings of DQII items were combined to form Delphi Questionnaire III (DQIII; see Figure 13.3). In light of this new information, DQIII asked the respondents once again to rate the items on a 7-point scale indicating disagreement-agreement and return them to the primary researcher.

For the final profile of the strategic and structural questionnaires, medians and interquartile ranges were computed in the fashion of previous Delphi studies in family therapy (e.g., Redenour, 1982; Winkle et al., 1981). A high level of consensus and agreement was set in accordance with Binning, Cochran, and Donatelli (1972), to ensure that those items that became part of the final profile were those considered most important by the panelists. Those items that received a median of 6.00 or above and an interquartile range of 1.50 or less were selected as items on the final profile of strategic and structural family therapies (see Table 13.1).

Please complete this questionnaire. It is designed to compile a composite profile of structural family therapy. Please answer all the questions, using the reverse side of the paper if necessary. Feel free to make any other major categories or statements you feel would add to an understanding of structural family therapy.

Name: \_\_\_\_\_

What authors do you associate with structural family therapy?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

What are five major theoretical assumptions underlying structural family therapy?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

What are the differences between structural and strategic family therapies?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**FIGURE 13.1.** A sample Delphi Questionnaire I (excerpts).

### Data Analysis Procedures

Delphi data are analyzed by calculating medians and interquartile ranges, to identify the rates of group agreement and consensus for each item that a panelist makes as a statement. Medians provide information on the central tendency of responses, indicating where most items fall on the disagreement–agreement scale. A “median” is a measure that divides the distribution into two equal parts if the distribution is a normal bell curve. Another term for the median is the “50th percentile,” or the point below which 50% of the cases fall. However, when the distribution of responses is skewed toward the high or low ends of a scale—as it is in many of the questions from a Delphi study, where an attempt is made to obtain consensus—the median will often be close to the highest or lowest possible score. An example of a frequency distribution for an item from a Delphi study is presented in Table 13.2. The results in Table 13.2 are com-



Please circle one number for each item, indicating the degree of importance it assumes in the final profiles of structural family therapy.

What authors do you associate with structural family therapy?

Disagree—Agree

- |   |   |   |   |   |   |   |                           |
|---|---|---|---|---|---|---|---------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1. Harry Aponte           |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 2. Lynn Hoffman           |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 3. Salvador Minuchin      |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 4. Ron Liebman            |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 5. Braulio Montalvo . . . |

What are the major theoretical assumptions underlying structural family therapy?

Disagree—Agree

- |   |   |   |   |   |   |   |  |
|---|---|---|---|---|---|---|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 6. Families are hierarchically organized with rules for interacting across subsystems. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 7. Family structure is defined by family transactional patterns (rules).               |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8. Family structure determines the effectiveness of family functioning.                |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 9. Family members relate to each other in patterned ways that are observable.          |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 10. Conflict is not to be avoided but used for change . . .                            |

What are the differences between structural and strategic family therapies?

Disagree—Agree

- |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 11. The goals and techniques are the same. The degree that each is emphasized is different. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 12. Strategic therapy focuses more on the presenting problem.                               |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 13. Strategic therapy focuses more on the rules that maintain the problem.                  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 14. The strategic therapist utilizes more direct reliance on paradox.                       |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 15. Strategic therapists do not use family maps . . .                                       |

**FIGURE 13.2.** A sample Delphi Questionnaire II (excerpts).

Please reconsider your responses to each item on Delphi Questionnaire III in light of the new information presented.

The new information summarizes the responses of all other panelists to each item. The information is reported in terms of the median (MDN) and the interquartile range (IQR). The median is the point below which 50 percent of the responses fell. The interquartile range contains the middle 50 percent of the responses. Its size gives an indication of how widely the responses differed from one another. Your previous answers to each item on Delphi Questionnaire II are given for you to compare. The following is an example.

What authors do you associate with structural family therapy?

Delphi Questionnaire		III Delphi Questionnaire II (Your previous response)	
Disagree–Agree	MDN IQR	Disagree–Agree	
1 2 3 4 5 6 7	6.83 0.92	1 2 3 4 5 6 7	1. Harry Aponte
1 2 3 4 5 6 7	3.00 3.50	1 2 3 4 5 6 7	2. Lynn Hoffman

In the example above, the median for Item 1 is 6.83, indicating strong agreement. The interquartile range is 0.92, which is narrow and indicates a high degree of consensus among panelists. Your response on DQII to Item 1 was 7.

The median of Item 2 is 3.00, indicating moderate disagreement. The large interquartile range of 3.50 indicates that there is not strong consensus on this item. Your response on DQII to Item 2 was 4.

Please reconsider each item carefully and present new ratings in the scale under Delphi Questionnaire III. Remember to rate each item and to circle only one number for each item.

**FIGURE 13.3.** A sample Delphi Questionnaire III (excerpts).

**TABLE 13.1. A Sample of the Final Results of a Delphi Study**

Median	Interquartile range	
<u>Authors associated with structural family therapy</u>		
7.00	0.50	Salvador Minuchin
6.96	0.54	H. Charles Fishman
6.87	0.64	Harry Aponte . . .
<u>Major theoretical assumptions of structural therapy</u>		
6.80	0.82	Families are hierarchically organized with rules for interacting across and between subsystems.
6.73	0.85	Insight is not sufficient for change.
6.60	0.90	Normal developmental crises can create problems within a family.
6.67	0.99	Inadequate hierarchy and boundaries maintain symptomatic behavior . . .
<u>Differences between structural and strategic therapies</u>		
6.33	1.17	Different approaches to resistance.
6.30	1.32	Strategic therapists focus more on between session change.
6.07	1.05	The strategic therapist utilizes more direct reliance on paradox . . .

**TABLE 13.2. A Sample Frequency Distribution of a Delphi Item**

What authors do you associate with structural family therapy?

Disagree–Agree

1 2 3 4 5 6 7 Harry Aponte

<u>Response</u>	<u>Frequency</u>	<u>Cumulated frequency</u>
1	0	0
2	0	0
3	1	1
4	3	4
5	5	9
6	13	22
7	18	40

*Note.* Mean = 6.1; median (50th percentile) = 6.85; 25th percentile = 6.08; 75th percentile = 7; interquartile range = 0.92.

mon for many items obtained in Delphi studies. The median is 6.83, which is almost equal to the highest possible score of 7. This indicates that the distribution is skewed toward the high end of the scale.

The degree to which panelists have reached a consensus of agreement on a particular response is determined by the “interquartile range.” Interquartile ranges provide information about the variability in the data without being affected by extreme scores. Interquartile ranges are calculated by taking half the difference between the “upper quartile,” or the point in the distribution below which 75% of the cases lie (the 75th percentile), and the “lower quartile,” the point below which 25% of the cases lie (the 25th percentile). This type of statistic provides information about the range of scores that lie in the middle 50% of the cases, and in doing so provides information about the consensus of response on a particular item.

Table 13.2 contains results that are common for the interquartile range of high-consensus items. The upper quartile (75th percentile) is 7, and the lower quartile (25th percentile) is 6.08. The interquartile range is calculated by subtracting the upper quartile from the lower quartile (7 – 6.08), which equals 0.92. This is a small interquartile range, indicating high consensus from the panelists.

An attractive aspect of the Delphi method is that most researchers can calculate all of the necessary statistics by hand, using simple formulas. The formulas for calculating the 25th, 50th, and 75th percentiles are as follows (Nachmias & Nachmias, 1981):

$$25\text{th percentile} = Li + \frac{(n/4 - \text{CumF})Wi}{Fi} \text{ or the minimum score}$$

$$50\text{th percentile} = Li + \frac{(n/2 - \text{CumF})Wi}{Fi}$$

$$75\text{th percentile} = Li + \frac{(3n/4 - \text{CumF})Wi}{Fi} \text{ or the maximum score}$$

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where  $L_i$  is the lower real limit of the interval containing the desired percentile;  $n$  is the number of cases;  $CumF$  is the accumulated sum of the frequencies of all intervals preceding the interval containing the desired percentile;  $F_i$  is the frequency of the interval containing the desired percentile; and  $W_i$  is the width of the interval containing the desired percentile.

An example using the data from Table 13.2 follows. To obtain the median, the numbers from Table 13.2 can be inserted into the formula for the 50th percentile. It is necessary to know how many people are in the sample; in Table 13.1, there are 40. The researcher then knows that the median will fall in the interval containing the 20th case—in this instance, the response choice of 6. The 25th percentile will fall in the interval containing the 10th case—in this instance, the response choice of 6. The 75th percentile will fall in the interval containing the 30th case—in this instance, the response choice of 7.

$$\text{50th percentile} = 6 + \frac{(40/2 - 9)1}{13} = 6 + \frac{20 - 9}{13} = 6.84$$

$$\text{25th percentile} = 6 + \frac{(40/4 - 9)1}{13} = 6 + \frac{(10 - 9)}{13} = 6.07$$

$$\text{75th percentile} = 7 + \frac{(3 \cdot 40/4 - 22)1}{18} = 7 + \frac{(30 - 22)}{18} = 7.44 \text{ or } 7$$

The 75th percentile cannot be any higher than the maximum score, so although the formula produces a score of 7.44, the answer is 7.

## Reporting

Delphi studies are typically reported in the literature as research articles, and are commonly published in refereed journals. A review of the literature about the content of the report is followed by a methodology section, which describes both the Delphi method in general and the particular application of the method in the research study. Findings are reported both in narrative form and in tables. Conclusions are usually drawn about the results in a discussion section following the results. The discussion section also includes the idiosyncratic and interesting challenges that have occurred throughout the research process. For example, in one Delphi study, Stone Fish and Osborn (1992) asked family therapists to express their views about family life in the United States. In the discussion section, they reported:

There is a final profile of the U.S. family with which family therapy panelists from diverse backgrounds are able to reach consensus. There were, however, great misgivings by many, when asked to reach a consensus about U.S. family life. Panelists wrote on the edges of their surveys and on additional pieces of paper. The content of these misgivings had to do with the panelists' reluctance to make general statements about all families today when families are so diverse, depending both on the culture they are embedded in and their own shape and size. (p. 414)

## DISCUSSION

### Strengths and Weaknesses

The Delphi approach is particularly well suited for examining emerging areas of inquiry and for building consensus among a group of experts. When it is used for these purposes, few weaknesses exist. Still, there are several pitfalls that researchers should be aware of when conducting a Delphi study.

#### *Regression to the Mean*

It is common for respondents to change their answers to become more similar to the group mean if too many iterations are conducted. In other words, after three questionnaires are administered, the only significant change that occurs in the responses is that they begin to cluster closer to the mean. This problem is most easily avoided by only sending out one questionnaire in which respondents are aware of the group means. This is usually the last questionnaire.

#### *Minimization of Diversity*

In most instances, the researchers are searching for consensus from a sample of very diverse people. Because the final items that are selected are often dependent on small interquartile ranges, diversity is sacrificed for consensus. It is possible to report the outlying responses or to allow bimodal distributions in which groups of experts split into different camps if the researchers are flexible enough to relax the standard of tight interquartile ranges. A scatterplot is particularly useful for determining whether bimodal or other types of unusual distributions exist in the data.

#### *Time Commitment*

The respondents, if they take the time to think carefully about their answers, can often expend several hours on completing the questionnaires. Because panels of experts are typically surveyed and experts are usually very busy people, there is an immediate difficulty in obtaining an adequate sample. However, some people respond to being called “experts” and will complete the surveys just to be included in the expert group. In other instances, financial incentives can be used, or shorter questionnaires can be constructed.

#### *Narrow Perspectives*

With increasing time in the field, experts can become more and more specialized. This can produce a perspective that is too narrow to be useful or one that is impossible to mesh with others’ views. If researchers are interested in opinions about issues that are likely to involve complex systems, it is questionable whether specialized experts are the best persons to provide useful opinions.

#### *The “So What” Factor*

Finding out that most experts think that families are important has little practical value, even though high consensus can be reached. If the questionnaire is not con-

structured creatively, or if responses are grouped together into categories that are too broad, significance can be sacrificed for consensus. One of the first indicators that the questionnaires are not useful is a low response rate. Additional indicators of poorly constructed questionnaires are small numbers of unique responses on the first questionnaire and uncharacteristically high levels of consensus on the second questionnaire.

### Reliability and Validity

Traditional types of reliability and validity are not easily obtained or applicable to the Delphi approach. Because the questionnaires are open-ended and general in nature, it is probably not useful to conduct typical reliability estimates. The issue of test-retest reliability could be explored by having the same group of experts complete the same questionnaire twice. However, experts are likely to be less tolerant of this repetition than are freshmen students in an introductory psychology class. An estimation of reliability between the first and second questionnaires can be estimated by exploring the consensus rates of the respondents. If a reasonable level of consensus is produced on many items on the second questionnaire, it is likely that a researcher has adequately summarized the meaning behind the responses of the first questionnaire.

The issue of validity is directly related to the selection of the panel of experts. Consensus of opinion is easily obtained with most samples; the important question is whether the experts fit the area of inquiry. If the criteria for selection of the experts are evaluated for content validity by several professionals in the field, this can go a long way toward ensuring some level of validity. Whenever an open-ended approach is used, a researcher takes a bigger risk in the area of validity. Validity asks the question "Am I really measuring what I set out to measure?" Because the panel of experts is only given general topics to follow, it is possible that many of the experts may diverge from the topic of interest into their own pet issues. As with qualitative studies, it is possible that the end product will reflect a different topic from that of the beginning research question. The only solution to wandering is to tightly define the area of interest. This may improve validity, but most experts will show a surprising ability to break free from restrictions on their freedom of expression. An example of this was evidenced in Stone Fish and Osborn's (1992) study, where the experts simply used the margins and other pieces of paper to freely express their opinions that did not fit into the predefined categories.

### Skills

The Delphi method does not demand special statistical skills or clinical expertise. Medians and interquartile ranges can be computed by hand or with a calculator. Some creativity is necessary to capture the interest of the experts and to sell the idea of the research project. One study has demonstrated that the number of words needed to describe a topic area or event is related to the amount of information and the consensus rates that are obtained (Linstone & Turoff, 1975). This finding suggests that authors need to avoid using too few or too many words when constructing Delphi questionnaires if they hope to elicit accurate responses and build consensus.

## Bridging Research and Practice

The characteristics of the Delphi make it particularly well suited for bridging the gap between research and practice. This approach does not demand large samples, statistical expertise, or a great amount of financial resources. As a result, clinicians can use the Delphi method to survey “expert” clients, expert referral sources, or any other group of individuals whose opinions are important. It is especially useful for developing policies about new problems that can crop up in agency work. When offered the choice of completing a few short questionnaires or attending several committee meetings that are likely to produce endless dialogue, most practitioners would elect to complete the questionnaires.

The results from the Delphi questionnaires are presented in the language of the respondents, rather than shrouded in excessive theory or statistical jargon. This attribute alone can help bridge the gap between research and practice, in that the interest level is usually higher when readers can speak the same language as the authors.

## Future Directions

As the helping professions continue to struggle with populations that are increasingly diverse and a delivery system that is experiencing dramatic changes, opinions of leaders in the field will be helpful for developing new programs and policies. It is likely that the Delphi approach will become as common in all fields of psychotherapy as it is in education and political science. It is surprising how few studies there are in marriage and family therapy that use this technique. In order for this approach to become more commonplace in the field, students must be exposed to it in the early stages of their training. It is a method of inquiry that could easily fit the skills and interests of graduate students who are attempting to complete dissertations and theses.

Since the publication of the first edition of this book, a new trend in Delphi research has gained popularity in the marriage and family therapy field: Using a modified version of the Delphi technique is now more popular than using the traditional version. The modification has been either to use fewer rounds and/or different analysis (Hovestadt et al., 2002; Nelson & Figley, 1990; Nelson et al., 1993; White et al., 1997), or to add a qualitative and/or an Internet component to the survey data (Blow & Sprenkle, 2001; Nelson et al., in press-a). In place of the third round of questionnaires traditionally used by Delphi researchers, Blow and Sprenkle (2001) qualitatively interviewed six panelists about discrepancies in the data. Nelson, Piercy, and Sprenkle (in press-b), modified the Delphi and surveyed panelists in seven phases. They surveyed panelists, then created vignettes to comment on, and also gave panelists the option to respond directly to a website (providing a qualitative iteration to the Delphi). The use of qualitative interviews and access to the Internet as adjuncts to or substitutes for the traditional questionnaires may change the face of the Delphi method in the field of family therapy. Researchers who want to use multiple methodology for study into unexplored phenomena, and/or who want to experiment with using the Internet in survey research, may find the modified Delphi a useful tool.

## REFERENCES

- Beavers, W. R. (1981). A systems model of family for family therapy. *Journal of Marital and Family Therapy*, 7, 299–307.
- Binning, D., Cochran, S., & Donatelli, B. (1972). *Delphi panel to explore post-secondary needs in the state of New Hampshire*. Manchester, NH: Decision Research.
- Blow, A., & Sprenkle, D. (2001). Common factors across theories of marriage and family therapy: A modified Delphi study. *Journal of Marital and Family Therapy*, 27, 385–402.
- Dalkey, N. (1969). Experimental study of group opinion. *Futures*, 1, 408–426.
- Dalkey, N. (1972). *Studies in the quality of life*. Lexington, MA: Lexington Books.
- Dalkey, N., & Helmer, O. (1963). An experimental application of the Delphi method to the use of experts. *Management Science*, 9, 458–467.
- de Shazer, S. (1984). Fit. *Journal of Strategic and Systemic Therapies*, 3, 34–37.
- Fraser, J. S. (1982). Structural and strategic family therapy: A basis for marriage or grounds for divorce? *Journal of Marital and Family Therapy*, 8, 13–22.
- Goplerud, E. N., Walfish, S., & Broskowski, A. (1985). Weathering the cuts: A Delphi survey on surviving cutbacks in community mental health. *Community Mental Health Journal*, 21, 14–27.
- Gordon, J., & Helmer, O. (1964). *Report on a long-range forecasting study*. Santa Monica, CA: Rand Corporation.
- Helmer, O., & Rescher, N. (1960). *On the epistemology of the inexact sciences*. Santa Monica, CA: Rand Corporation.
- Hovestadt, A., Fennell, D., & Canfield, D. (2002). Characteristics of effective providers of marital and family therapy in rural mental health settings. *Journal of Marital and Family Therapy*, 28, 225–231.
- Jenkins, D. (1996). A reflecting team approach to family therapy: A Delphi study. *Journal of Marital and Family Therapy*, 22, 219–238.
- Kaufman, K. L., Holden, E. W., & Walker, C. E. (1989). Future directions in pediatric and clinical child psychology. *Professional Psychology: Research and Practice*, 20, 148–152.
- Liddle, H. A. (1980). On teaching a contextual or systemic therapy: Training content, goals, and methods. *American Journal of Family Therapy*, 8, 58–69.
- Linstone, H. A., & Turoff, M. (Eds.). (1975). *The Delphi method: Techniques and applications*. Reading, MA: Addison-Wesley.
- MacKinnon, L. (1983). Contrasting strategic and Milan therapies. *Family Process*, 22, 425–437.
- Mitroff, I. I., & Turoff, M. (1975). Philosophical and methodological foundations of Delphi. In H. A. Linstone & M. Turoff (Eds.), *The Delphi method: Techniques and applications* (pp. 17–36). Reading, MA: Addison-Wesley.
- Nachmias, D., & Nachmias, C. (1981). *Research methods in the; social sciences* (2nd ed.). New York: St. Martin's Press.
- Nelson, T., & Figley, C. (1990). Basic family therapy skills: III. Brief and strategic schools of family therapy. *Journal of Family Psychology*, 4, 49–62.
- Nelson, T., Heilbrun, G., & Figley, C. (1993). Basic family therapy skills: IV. Transgenerational theories of family therapy. *Journal of Marital and Family Therapy*, 19, 253–266.
- Nelson, T., Piercy, F., & Sprenkle, D. (in press-a). Internet infidelity: A multi-wave Delphi study. *Journal of Couple and Relationship Therapy*.
- Nelson, T., Piercy, F., & Sprenkle, D. (in press-b). Internet infidelity: A multi-wave Delphi study. In F. Piercy, K. Hertlein, & J. Wetchler (Eds.), *Handbook of infidelity treatment*. New York: Haworth Press.
- Norcross, J. C., Alford, B. A., & DeMichele, J. T. (1992). The future of psychotherapy: Delphi data and concluding observations. *Psychotherapy*, 29, 150–158.
- Quade, E. S. (1967). *Cost-effectiveness: Some trends in analysis*. Santa Monica, CA: Rand Corporation.



- Rago, A. M., & Childers, J. H. (1990). Perceived changes in theories of family therapy in response to the changing American family. *TACD Journal*, 18, 23–45.
- Redenour, C. (1982). *A Delphi investigation of alternative futures for Texas marriage and family therapists*. Unpublished doctoral dissertation, East Texas State University.
- Rohrbaugh, M. (1984). The strategic systems therapies: Misgivings about mixing models. *Journal of Strategic and Systemic Therapies*, 3, 28–32.
- Scheele, D. S. (1975). Reality construction as a product of Delphi interaction. In H. A. Linstone & M. Turoff (Eds.), *The Delphi method: Techniques and applications* (pp. 37–71). Reading, MA: Addison-Wesley.
- Sprenkle, D. H. (1976). The need for integration among theory, research, and practice in the family field. *The Family Coordinator*, 25, 124–127.
- Stanton, M. D., Todd, T. C., & Associates. (1982). *The family therapy of drug abuse and addiction*. New York: Guilford Press.
- Stone Fish, L. (1989). Comparing structural, strategic, and feminist-informed family therapies: Two Delphi studies. *American Journal of Family Therapy*, 17, 303–314.
- Stone Fish, L., & Osborn, J. (1992). Therapists' views of family life: A Delphi study. *Family Relations*, 41, 409–416.
- Stone Fish, L., & Piercy, F. P. (1987). The theory and practice of structural and strategic family therapies: A Delphi study. *Journal of Marital and Family Therapy*, 13, 113–125.
- Thomson, B. R. (1990). Appropriate and inappropriate uses of humor in psychotherapy as perceived by certified reality therapists: A Delphi study. *Journal of Reality Therapy*, 10, 59–65.
- Wheeler, D. (1985). *The theory and practice of feminist-informed family therapy: A Delphi study*. Unpublished doctoral dissertation, Purdue University.
- White, M., Edwards, S., & Russell, C. (1997). The essential elements of successful marriage and family therapy: A modified Delphi study. *American Journal of Family Therapy*, 25, 213–231.
- Winkle, W. C., Piercy, F. P., & Hovestadt, A. J. (1981). A curriculum for graduate-level marriage and family therapy education. *Journal of Marital and Family Therapy*, 7, 201–210.