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Dose–Effect Relationships in Brief Therapy Based on a Nationwide College Counseling Center Sample

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Abstract

This study is a service evaluation of short-term therapeutic effectiveness and progress in therapy for participants seeking help at 42 different counseling centers across the nation. To examine the dose-effect relationship between the number of sessions (dosage) and the therapeutic outcome, 1,698 subjects were monitored through their therapy process as part of a large, nationwide counseling center research consortium. Participants were selected on the basis of having completed at least one, and no more than ten, sessions of therapy. Patterns of improvement varied depending on the number of sessions clients attended. There was a positive relationship between the outcome of therapy and the number of sessions the clients attended. This study, which relies upon naturalistic data, indicates that it is possible to make an argument for the partial effectiveness of brief psychotherapy.

Dose–Effect Relationships in Brief Therapy Based on a Nationwide College Counseling Center Sample

Several studies in the 1950s and 60s examined the relationship between the number of sessions clients attended and the amount of gain they achieved, finding that the greater number of sessions a client attended, the greater the amount of gain the client experienced (Seeman, 1954; Standal & Van der Veen, 1957; Johnson, 1965). More recent studies have verified these early findings concluding that length of treatment is positively and reliably associated with improvement and therapeutic benefit (Orlinsky, Grawe & Parks, 1994; Kadera, Lambert, & Andrews, 1996).

In recent years, the dose-response metaphor borrowed from pharmacology research has gained prominence in psychotherapy outcome research (see Jones, Bigelow, & Preston 1999 for example). One of the major contributions to this type of research is the influential meta-analysis performed by Howard, Kopta, Krause and Orlinsky (1986) who proposed a dose-effect model linking the dosage of therapy sessions attended to the improvement clients experienced due to attending to each session. The log of the number of sessions became the *dose* and the normalized probability of improvement was defined as the *effect* using probits as the unit of analysis. They constructed their dosage model by probit analysis of 15 previous outcome studies, some dating as far back as 1950, and computed the predicted improvement session by session. Their results verified that the longer patients remain in therapy, the greater their gains. They found that 15% of patients improve between intake and the first session (presumably due to spontaneous remission and the ameliorative effects of having sought treatment), while 50% improve after eight sessions, and 75% improve after 26 sessions. Inspired by these results, other researchers began to analyze the dose effect for different diagnoses and levels of acute or chronic distress (Barkham, Rees, Stiles, & Shapiro, 1996; Kopta, Howard, Lowry & Beutler, 1994).

Criticisms of this research surfaced after these articles were published. One critic, Phillips (1988), contends that earlier research failed to provide a sufficient data base for determining a valid dose-effect relationship due to vague definitions of reliable improvement, while others pre-date the use of repeated measure designs thus obscuring session-by-session patterns of improvement. Other critics questioned the previous research that grouped clients by diagnosis, given that patients with a specific diagnosis and similar symptoms do respond differently to treatment (Kadera, Lambert & Andrews, 1996; Kopta, Howard, Lowry, & Beutler, 1994). And other researchers point out that some previous research was well-controlled, with researchers influencing the number of sessions clients could attend, rather than observing what naturally occurred in various treatment settings (Kadera, Lambert, & Andrews, 1996).

Observing what improvement naturally occurs in the session-by-session process of therapy has become much easier with the development of brief outcome measures such as the Outcome Questionnaire 45 (OQ45), a measure designed to be used not just at the beginning and end of therapy, but throughout the course of treatment (Lambert, Lunnen, Umphress, Hansen, & Burlingame, 1994). By utilizing measures such as the OQ45 to track the progress of groups of clients session-by-session naturally without setting up experimental controls, researchers can begin to examine questions not just about efficacy, but about the effectiveness of treatment in these natural settings as well (Howard, Moras, Brill, Martinovich, & Lutz, 1996).

Researchers may also begin to further examine the effectiveness of counseling under a managed-care model, one utilized by some college counseling centers and not thoroughly researched from a dose-effect paradigm (Johnson & Shaha, 1996). Further examination of the dose-effect relationship in these centers is warranted, given that some critics contend that current managed-care accountability procedures are inappropriate because they emphasize usage rather than effectiveness curves, and that a more appropriate method may involve determining the session-to-session effect in therapy and setting those curves to build models for treatment (Herron, Eisenstadt, Javier & Primavera, 1994).

Developing effectiveness curves in natural settings like counseling centers is particularly important because researchers have not always found a positive relationship between the number of sessions and the amount of improvement in other settings. On the one hand, some researchers found that their studies supported prior dose-effect findings, although they needed qualification when examining acute, chronic and characterological components of depression, for example (Barkham, Rees, Stiles & Shapiro, 1996). On the other hand, some researchers, while examining the dose-effect relationship with children in the context of behavioral health organizations (BHO's), found no evidence for a general dose-effect relationship (Salzer, Bickman & Lambert, 1999). Many of these studies are controlled, however; and such controls may limit their concurrent and external validity when compared to what is actually going on in treatment settings across the country. One study, for example (Barkham, Rees, Stiles & Shapiro, 1996), did focus on very time-limited therapy (8 or 16 sessions). Unfortunately, that study was so well-controlled that it did not focus on what actually happens in a real treatment setting, namely that clients, counselors, or both together often decide how many sessions clients will attend, within the constraints of the agency's limits of treatment.

Some counseling centers have opted for brief therapy models, which are surrounded by controversy. Some research indicates that brief therapies are ineffective and longer-term models are needed, while others argue that long-term therapy is unethical (Whitaker, 1994; Austad, 1996). Others appear to demonstrate both the viability of brief therapy models and some of the disadvantages within the managed-care setting (Cummings, Budman, & Thomas, 1998; Dziegielewski, 1997).

This study provides the first analysis of dose-response relationships using a large nationwide sample of university counseling centers. This study examines only brief, time-limited therapy due to sample constraints (ten sessions or fewer). Based on the recommendations of Kadera, Lambert and Andrews (1996), this study tracked the progress of clients who came in for counseling on their own without posing artificial session controls on the therapists' and clients' decisions around how many sessions of therapy to attend, thereby overcoming the shortcomings of previous research.

Methods

The Research Consortium

The Research Consortium of Counseling and Psychological Services in Higher Education (hereafter referred to as the Research Consortium) was founded in 1990 to further research efforts into counseling processes. This consortium comprises 42 universities, primarily state-supported, with approximately nine being private institutions. Enrollment ranged from 2,000 to 48,000 with most schools in the range of 15,000 to 25,000. These counseling centers contributed data on 4,679 clients, with varying degrees of completeness. Based on the counseling survey sent out to these centers, the vast majority (95%) utilize a brief therapy model, i.e., fewer than ten sessions.

Participants

The sample of 1,698 participants was selected for this study out of 4,679 clients who participated in an outcome study that the Research Consortium conducted during the 1997-1998 academic year. The four criteria for selecting participants were: (1) attending at least one session of counseling after intake; (2) filling out the intake questionnaire which asked about demographic information and signing a consent form to participate in this study; (3) filling out enough of the OQ45 measures for the researchers to use the manual's guidelines for dealing with missing data to reach criterion validity, and (4) having sufficient numbers to be grouped in varying dosage levels (i.e. greater than 20 in a group).

Of the 4,679 clients who sought counseling,1,698 of these subjects met the criteria for this research. Of the original number, 1,582 either did not return after intake, or did not fill out any intake or OQ measures; 1,336 of the potential participants declined to follow through with the study or did not fill out any demographic information or enough of the questionnaires to meet the criteria for validity. The OQ45 manual states that to deal with missing data and have a valid measure, a mean substitution procedure can be employed if the client fills out 75% or more of the measure. In this study, the researchers made the criteria slightly more stringent to better insure the validity of their effectiveness data by moving the threshold to 80% or more of completion. By this criteria, 1,761 participants offered adequate data for analysis. Of these, 1,698 participants were selected for this sample since only 63 indicated that their therapy lasted more than 10 sessions, leaving the groupings very small for each termination group (in most cases the groups consisted of either no participant who met the criteria or only one, even by sessions fifteen and sixteen).

Although the initial goal of this project was to perform an effectiveness study by gathering enough data to offer a dose-effect model for clients regardless of the number of sessions they attended during the data gathering period, only 1,698 clients met the criteria of validity previously established and listed above. For this sample the average number of times a client saw a counselor was 3.3 (S.D. 2.4). The large number of clients with few sessions is due in part to the short-term model adhered to by most of the counseling centers in the consortium. This indicates that the sample used in this research is true to the nature of the counseling centers from which the data were gathered.

Ten groups were formed out of the 1,698 clients depending on the session in which they terminated. Those who terminated after the first session were put in group one, while those who terminated after the tenth session were put in group ten, for example. The differences in group size were quite large, with 381 clients terminating at the first session, while only 32 clients terminated at the tenth session. Each group was used as a discreet group (for example, the 32 clients in group ten are not part of the 381 in group 1). The researchers were concerned that the reason for the great decrease in participants from Group 1 to Group 10 may have been due to the differential severity of clients' symptoms at intake (with those having more total sessions possibly indicating greater severity of symptoms at intake). A one-way ANOVA was performed, comparing those clients who terminated therapy at sessions one through ten, and found no statistically significant difference on the intake measure of symptomatology, [F (9, 1698) = .749, $p < .664$]. The mean OQ score for each of the ten groups at intake can be seen in Table 1.

See Table 1

All participants were college students, and other demographic characteristics of the sample indicate that the subjects are predominantly young, female, advanced undergraduates and Caucasian, with subjects from each academic classification represented. Predominantly, the subjects were juniors, seniors, and graduate students making up 1250 subjects in this sample. A summary of demographics is presented in Table 2.

See Table 2

The counseling centers in this consortium employed primarily psychologists with some psychiatrists, licensed professional counselors, and clinical social workers, along with trainees in psychology and social work. The counselors in the study also came from diverse backgrounds culturally, ethnically, and professionally, with a mean age of 41. The majority of counselors were female and Caucasian, although a significant minority of the therapists were male (37%). Of the approximately 360 therapists and counselors who participated in this research study, many different field specializations were represented, but the largest single group were counseling psychologists. Within the therapist group, 230 were professional staff who saw 1330 clients, while student trainees accounted for 130 therapists who saw approximately 368 clients in this sample. The largest single group of trainees were psychology interns (45%), but psychology practicum students represented a significant minority (25%).

Measures

For this study, the participants filled out several different measures, including information about demographic characteristics and their presenting concerns. The demographics collected covered such variables as age, race, gender, academic classification, major, and GPA.. A questionnaire

about specific presenting problems was also added to give the therapists a tool with which to begin exploring their clients' issues.

The primary measure of therapeutic outcome used in this study was the Outcome Questionnaire 45 (OQ45) developed by Lambert, Lunnen, Umphress, Hansen, and Burlingame (1994), which has been found to be particularly useful in examining the efficacy of psychotherapy (Kadera, Lambert, & Andrews, 1996). The OQ45 consists of 45 items in a Likert-type five-point scale. The total scale also contains three sub-scales: those measuring symptom distress, social-role functioning and interpersonal relationships. The symptom distress sub-scale taps into emotional and lifestyle stressors such as depression, anxiety, stress, and substance abuse. The social role sub-scale taps into issues that arise in clients' work relations and leisure activities. The interpersonal relationship sub-scale taps into the clients' satisfaction with interpersonal relationships, especially marital and family relationships and friendships (Lambert, Lunnen, Umphrees, Hansen & Burlingame 1994; Kadera, Lambert & Andrews, 1996). Although previous research indicates that the three sub-scales may not be as distinct as the developers originally hoped, these sub-scales are useful in clinical applications (Muller, Lambert & Burlingame, 1998). The researchers in this study particularly focused on the sub-scales, given the step-wise recovery in psychotherapy and the arguments by other researchers concerning the multi-dimensional nature of client's concerns and recovery (Howard, Lueger, Maling & Martinovich, 1993; Kopta, Howard, Lowry & Beutler, 1994). Previous research, for example, found that distress symptomatology remitted most quickly in psychotherapy, whereas characterological traits and problems remitted more slowly (Kopta, Howard, Lowry & Beutler, 1994).

Reliability and validity studies indicate that the OQ45 is a reliable and valid instrument which distinguishes well between clinical and non-clinical subjects (Umphress, Lambert, Smart, & Barlow, 1997). Previous psychometric testing revealed internal consistency levels of .93 and test-retest reliability of .84. Concurrent validity with other measures ranges from .53 to .88 (Umphress, Lambert, Smart, & Barlow, 1997; Kadera, Lambert & Andrews, 1996). Due to the nature of the all-client sample in this study (Mean = 71.17, SD = 25.02), the researchers relied upon previous research performed with the OQ to determine clinical and non-clinical cutoff scores based on the formula developed by Jacobsen and Truax, and used by Lambert and others (Jacobson & Truax, 1991; Kadera, Lambert & Andrews, 1996; Lambert, Lunnen, Umphrees, Hansen & Burlingame, 1994: Wells, Burlingame, Lambert & Hoag, 1996). Based on the formulas previously established, the researchers placed those participants who scored 63 or higher on the intake OQ in the "clinical" category, while those who scored below 63 were put in the "non-clinical" category. Previous research by Kadera, Lambert and Andrews (1996), indicated that due to the test-retest reliability of this measure, subjects needed to improve at least 15 OQ points to reach the reliable change index of 1.96, which indicates the subjects' improvement is statistically significant as well as reliable.

Procedure

Participants were given the OQ45 to complete before each weekly psychotherapy session, with their first OQ filled out before their initial intake. Only the data from those centers that had the clients fill out the questionnaires before each session and the intake were included. Clients filled

out the OQ forms in a manner consistent with the instructions which asked them to answer the questions "Looking back on the past week including today" (Lambert, Lunnen, Umphress, Hansen & Burlingame, 1994). Participants were given the OQ prior to each appointment, and completed their questionnaire in the waiting room before they were called in to their session. Only questionnaires that were filled out before the sessions were used, as no questionnaires were given out after the sessions.

The researchers in this study relied on the criteria outlined in previous research to determine whether clients were clinical or non-clinical at intake, and whether recovery, improvement, or no change occurred for both groups (Kadera, Lambert & Andrews, 1996; Jacobson & Truax, 1991). In this study, 62.6% were classified as clinical (scoring a 63 or higher at intake), while 37.4% were classified as non-clinical (scoring below 63).

Recovery, clinically significant change, and no change were determined by several criteria. First, if the subjects started in the clinical category and by the end of therapy scored in the non-clinical category, with a difference greater than 15 between the scores, they were classified as "Recovered." If the clinical subjects demonstrated reliable improvement (a 15 point drop in their score), but their total score did not fall below 63, they were classified as "Improved Clinical." If the non-clinical subjects also reliably improved (i.e. a 15 point drop in OQ scores in pre- and post-measures), they were classified as "Improved Non-Clinical." If either the clinical or non-clinical samples demonstrated a reliable increase in total score (a 15-point increase), they were classified as "Deteriorated Clinical" and "Deteriorated Non-Clinical" respectively. If, however, the subjects did not demonstrate enough of a difference in scores to be determined reliable (less than a 15-point drop), they were classified as "No Change." Regardless of their improvement or digression session by session, in order for the subjects to meet the previously listed criteria, they must have made those differences by the last (termination) session in order to be classified according to the criteria above.

Results

First the researchers tested for significant differences between professional and trainee therapists and their clients' mean intake and termination OQ45 scores. No significant difference was found between these therapist groups on their clients' intake OQ 45 scores [F (4, 1416) = 0.29, p *ns*], nor was there a significant difference on their clients' termination OQ 45 scores [F (4, 1415) = 0.84, p *ns*].

Classification of each subject by recovery status is listed in Table 3, categorized by their termination session grouping.

See Table 3

Improvement classification varied greatly by termination session, with the percent of subjects in the Improved category (collapsing Recovered, Improved Clinical and Improved Non-Clinical), and the Deteriorated category (collapsing Deteriorated Clinical and Deteriorated Non-Clinical) changing by termination session. Table 4 presents the breakdown of this pattern.

See Table 4

The pattern of improvement as indicated by the actual mean OQ scores session by session is indicated in Table 5, demonstrating an overall trend of improvement.

See Table 5

The pattern of therapeutic change did demonstrate some variability across groups when each of the ten termination groups are examined. Figure 1 shows the progress of each of the ten different termination groups.

See Figure 1

Discussion

The general dose-effect relationship determined in this study demonstrates that brief, time-limited psychotherapy is partially effective according to the reliable change criteria and the cutoff scores established by previous research using the OQ 45. When the established fifteen-point criterion for reliable improvement, and the established cutoff scores between "clinical" and "non-clinical" are considered, only three of the termination groups (four, six, and ten) demonstrate reliable improvement by those criteria. This is in line with other research which demonstrates that clients will show more improvement by some session dosage and not others (Kadera, Lambert, & Andrews, 1996; Salzer, Bickman, Lambert, 1999 for examples); but when examining the relationship between number of sessions attended and improvement on the OQ score, each group did demonstrate some improvement on average, including the group that only attended one session of therapy. By the OQ criteria alone, it seems that short-term psychotherapy is only partially effective. But when examining the patterns of change in general, however, each group showed some improvement indicating that brief psychotherapy was helpful on average.

This general relationship between dosage of therapy and recovery category at termination demonstrates a pattern of peaks and valleys, although the relationship tends to be linear, with each group improving regardless of how many sessions were attended. The largest group in this sample, namely those that terminated after one session or no-showed for sessions after the first, demonstrated little improvement (3.7 OQ points) with greater improvement occurring for the next two groups, those who terminated at the second and third sessions (10.7 and 11.6 OQ points respectively). The groups that terminated in sessions four, six, or ten had the highest percentage

of clients in the Recovered and Improved categories, while the three groups who terminated in sessions five, seven, or eight showed less improvement or recovery. In fact, there is an increase in the number of clients whose scores deteriorated in the groups that terminated in sessions seven and eight, demonstrating that progress in treatment may not be fully linear. In general, the number of sessions a client had was related to the amount of improvement until session seven, where there is a decrease in the amount of improvement these groups showed. The trend toward improvement continues upward, however, at the ninth session, so that the group that terminated in session ten showed the most improvement and recovery. In general, this trend further indicates that the larger the number of sessions a group had the better the improvement.

In this sample, the largest single category across most termination groupings was "No Change," meaning that clients did not meet the requirements for statistically reliable improvement on the OQ45. The percentage that did show reliable improvement by OQ criteria, however, is similar to what other research has found, roughly 50% (Kadera, Lambert & Andrews, 1996).

As far as the relationship between the number of sessions the clients have and the differences in sub-scale OQ scores, once more the research reveals a general positive trend, with some dips and valleys similar to previous research (Howard, Kopta, Krause & Orlinsky, 1986; Kadera, Lambert & Andrews, 1996; Kopta, Howard, Lowry & Beutler, 1994). In general, the more sessions a client has before termination, the larger the pre-post OQ45 difference, with an exception for group eight, when improvement did not follow the same trend. Most of the improvement that was seen is due to changes in the Symptom Distress sub-scale which accounts for the majority of the OQ score differences, while the Interpersonal and Social Roles sub-scales show little improvement or variability across termination groups. However, it must be noted that the scores on the Interpersonal and Social Roles sub-scales were low to begin with, so less effect could be seen with those two sub-scales than on the Symptom Distress sub-scale through the course of therapy.

In general, these data demonstrate that brief therapy is partially effective (by established OQ criteria) in this nationwide college center sample for those clients who had between one and ten sessions including intake, in contrast to other studies which found brief therapy to be less effective (Salzer, Bickman, & Lambert, 1999). Several cautions must be offered, however. Since session limits were not established by the researchers, the average number of sessions attended was quite small (3.3), so no groupings large enough could be formed for those clients who attended more than ten sessions. Although missing data were dealt with in a fashion that insured the validity of the measures, this still required participants to fill out a large percentage of the measure each time, which some participants were unwilling or unable to do. Therefore, interpretation and generalization should be undertaken with care.

Some may be concerned that client data from trainees were included in this study, especially considering that this study focuses on the effectiveness of therapy. This research parallels previous research which indicates that both trainees and professionals are efficacious in therapy (Speer, 1994; Stein & Lambert, 1995). This particular study found no differences in either intake or termination OQ scores across trainee and professional groups. Hence, for the purposes of this study and for the sake of generalizeability, a diverse mixture of therapists and trainees found in

this nationwide counseling consortium is an advantage rather than a hindrance, especially for generalizeability to other university counseling centers.

One drawback to this study is the fact that no diagnosis was collected for the subjects, which may have played a role not only in the dose-effect relationship, but in termination timing as well. There are many other factors, such as race, gender, and readiness for change, that may also contribute to the differential presenting intensity of symptoms, as well as to the differential rates of improvement across these groups. In future research, other measures besides a single self-report instrument should be included. For example, therapists' diagnosis and perceived improvement of a client's symptoms may play a role in the timing of the clients' termination, which will also affect the dose-effect relationship. Personality measures, particularly those measuring interpersonal personality characteristics, may also prove informative in examining the dose-effect relationships. However, if too many measures are added, the instruments may prove difficult for both therapist and client. But such information would offer a clearer picture of what factors impact the dose-effect relationship.

Despite the methodological problems with this study, there is one major advantage. According to previous research, it is desirable for research to examine the dose-effect process in a naturalistic way, one that does not artificialize the therapy process (Kadera, Lambert & Andrews 1996). This study, by not controlling the natural processes that affect length of stay in therapy or the amount of gain made by clients, attempted to accomplish this. Although the data gathering was uncontrolled, it does offer a glimpse into the effectiveness of counseling center therapy outcome by using a large, nationwide sample.

Based on this research, two implications for university counseling centers become apparent. First, clients demonstrate, on average, improvement in OQ scores at various points in the treatment process, with the greater number of sessions being associated with the greatest amount of improvement. If possible, a larger number of sessions will lead generally to better outcome. Second, the progress of therapy has some non-linearity, implying therapists need to be prepared to attend to fluctuations in the client's well-being. Additional research on the progress and effectiveness of therapy in counseling centers is warranted which includes additional features such as diagnosis, ethnicity, gender, and readiness for change.

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Table 1

Average Intake OQ Score by Termination Group

Termination Group	**Intake OQ**
One	70.6
Two	70.6
Three	70.2
Four	73.1
Five	69.5
Six	69.8
Seven	71.1
Eight	68.0
Nine	74.5
Ten	70.6

Table 2

Client Gender, Race, Academic Classification, & Age

	n	**Percent**
Gender		
Male	558	31.8
Female	1195	68.2
Race		
African-American	82	4.6
Asian-American	98	5.5
Hispanic-American	180	10.0
Native-American	9	0.5
Caucasian	1333	74.3
International	93	5.2
Classification		
Freshmen	268	14.3
Sophomore	330	17.6
Junior	419	22.3
Senior	446	23.8
Graduate	385	20.5
Special	29	1.5
Age		
Minimum: 16		
Maximum: 61		
Mean: 23.1		
SD: 5.6		

Table 3

Percentage of Clients in Each Recovery Category by Total Counseling Sessions Received

Category	**Termination Session**									
	1	2	3	4	5	6	7	8	9	10
1=Recovered	13.4	19.4	22.7	28.2	22.1	26.3	20.4	25.0	23.5	39.4
2=Improved Clinical	11.1	10.6	10.7	10.2	14.0	9.5	13.6	5.9	9.8	3.0
3=Improved Non-	4.5	8.0	5.5	9.0	10.3	13.7	8.7	5.9	7.8	12.1
4=Detriorated Clinical	6.0	5.8	8.9	4.5	5.9	6.3	3.9	8.8	7.8	3.0
5=No Change	64.2	54.8	50.9	45.8	46.3	43.2	49.5	50.0	45.1	36.4
6=Deteriorated Non-	0.7	0.5	4.4	2.3	1.5	1.1	3.9	4.4	5.9	6.1
Total n	381	375	287	176	134	94	101	67	51	32

Table 4

Percent Improved, Deteriorated, and No Change by Termination Session

Category	**Termination Session**										
	Total	1	2	3	4	5	6	7	8	9	10
Improved	38.2	29.0	37.9	38.8	47.5	46.3	49.5	42.7	36.8	41.2	54.5
Deteriorated	7.8	6.7	6.4	10.3	6.8	7.4	7.4	7.8	13.2	13.7	9.1
No Change	54.0	64.2	55.7	50.9	45.8	46.3	43.2	49.5	50.0	45.1	36.4

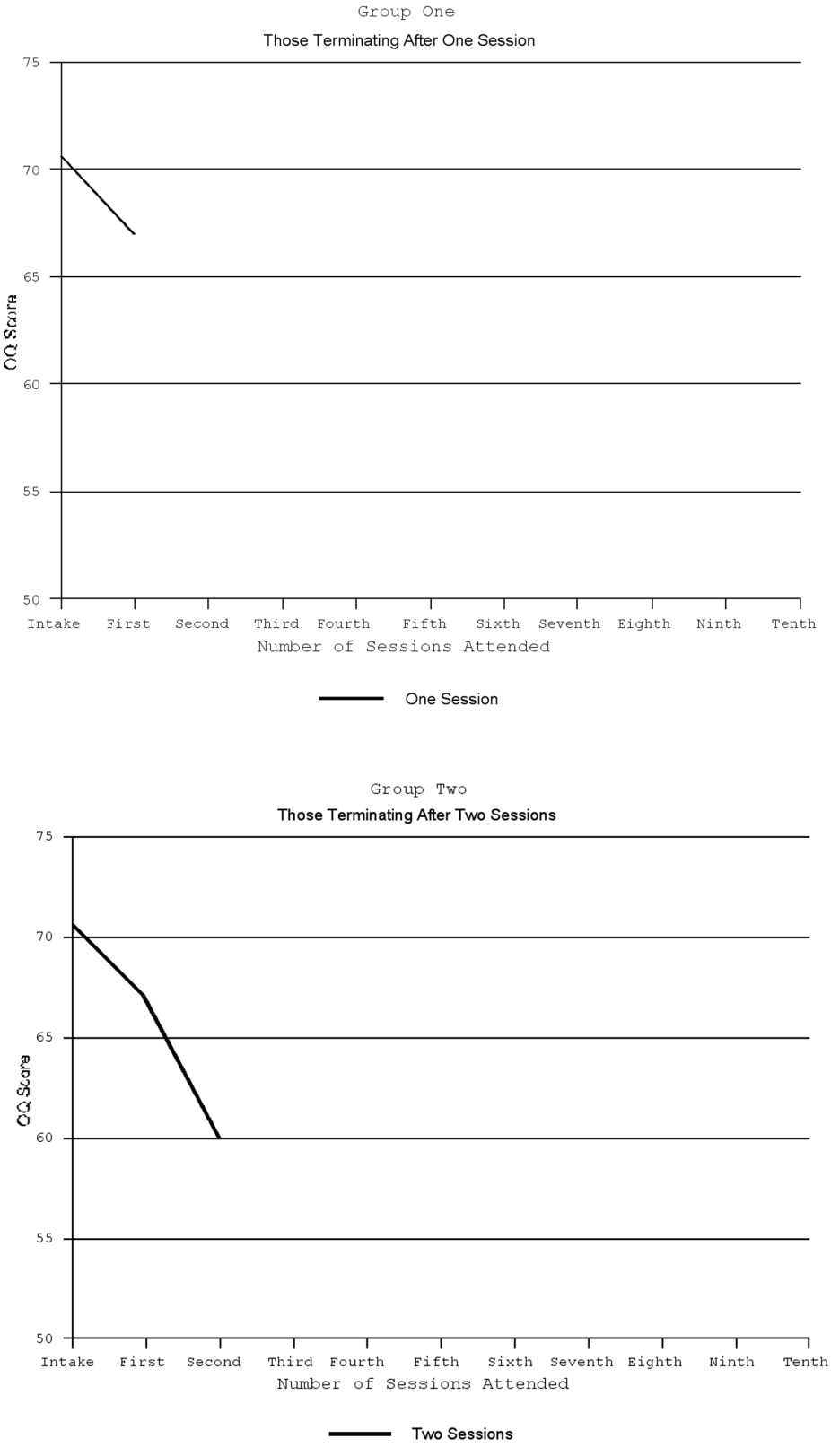
Table 5

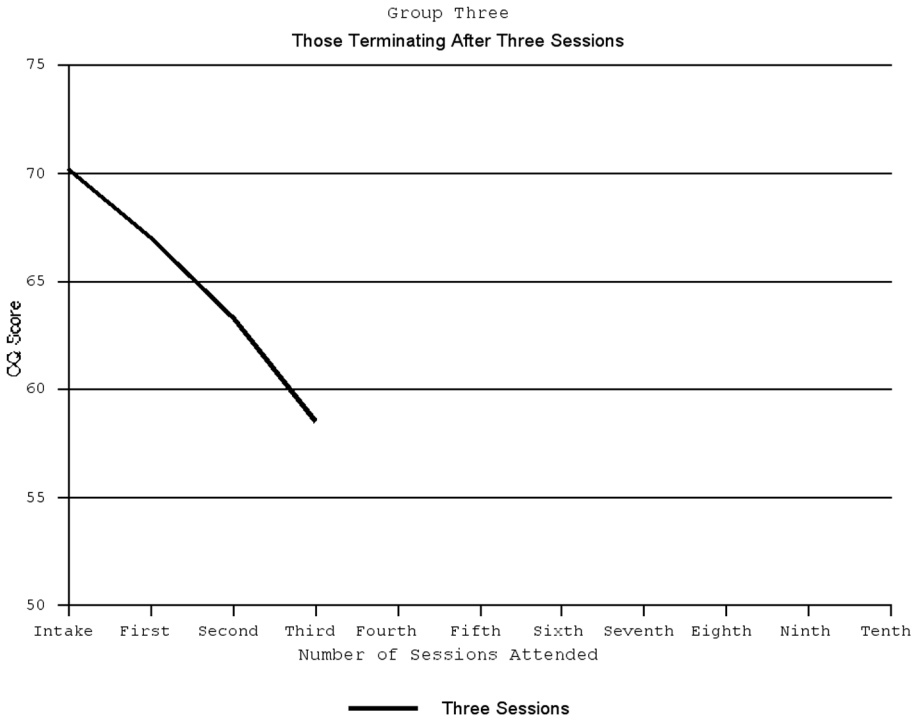
Point Difference Between Intake and Final OQ by Termination Session, and Subscales

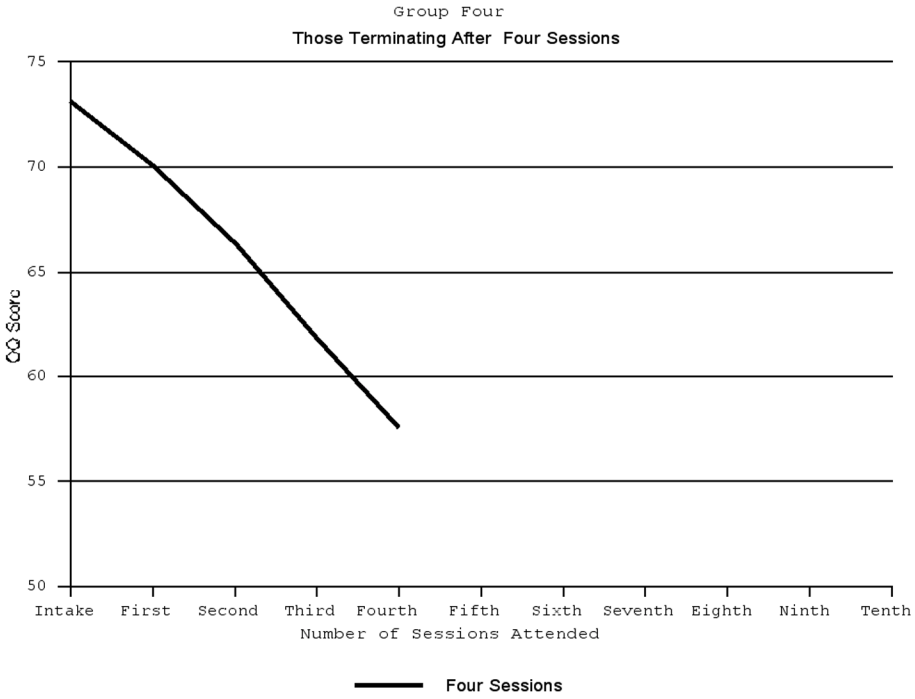
Scale	Total	1	2	3	4*	5	6*	7	8	9	10*
OQ Total	10.9	7.1	11.8	11.8	15.3	13.4	15.5	14.2	8.4	13.4	18
Symptom	7.7	5.1	8.8	8.8	10.1	9.9	9.8	10.7	5.7	10.5	11.7
Interpersonal	1.8	1.2	1.4	1.4	3.1	1.4	3.3	2.3	1.7	0.5	3.2
Roles	1.5	0.7	1.6	1.6	2.1	2.1	2.4	1.2	0.7	2.4	3

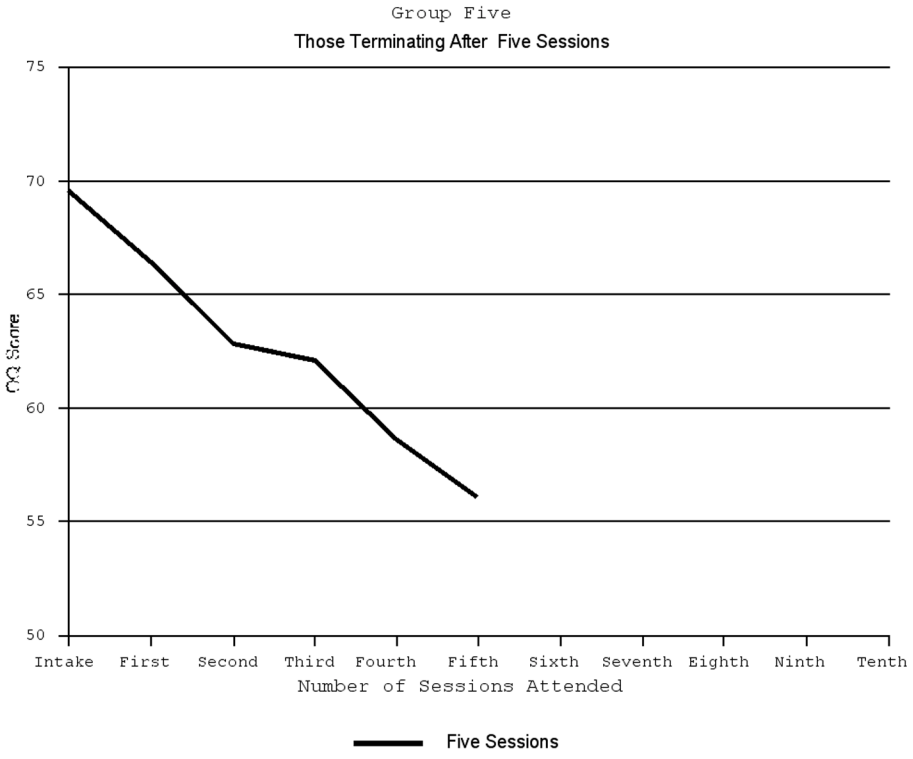
*Demonstrates reliable improvement by OQ Criteria

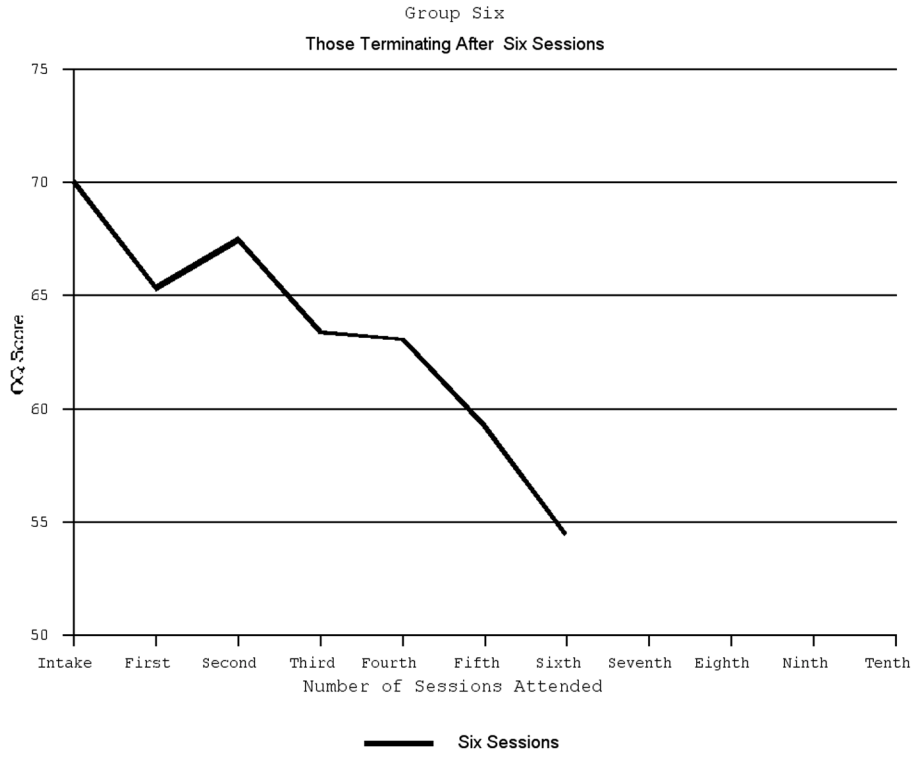
Figure 1. Longitudinal progress in therapy for each of the termination groups in this sample. Each group demonstrates improvement through therapy

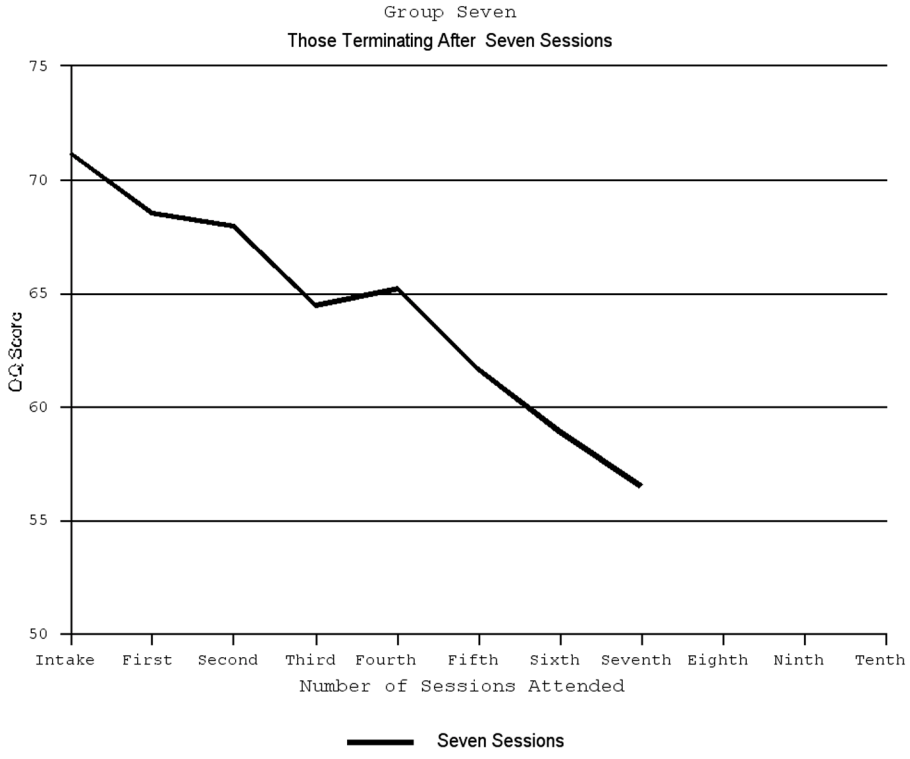


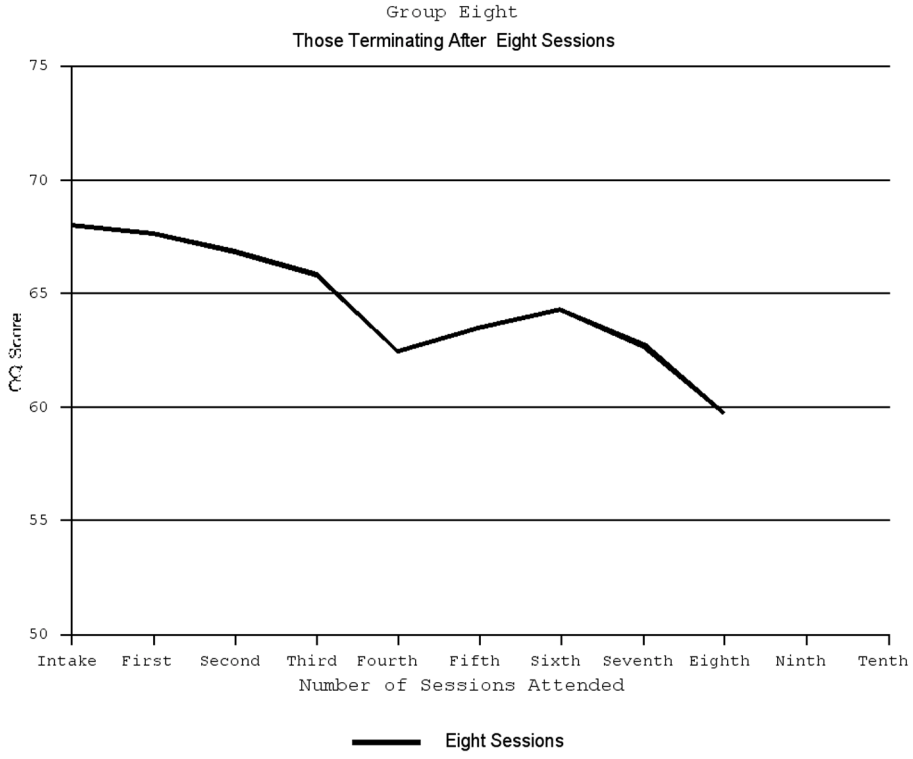

Group Three
Those Terminating After Three Sessions
75
70
65
60
55
50
CQ Score
Intake
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eighth
Ninth
Tenth
Number of Sessions Attended
Three Sessions

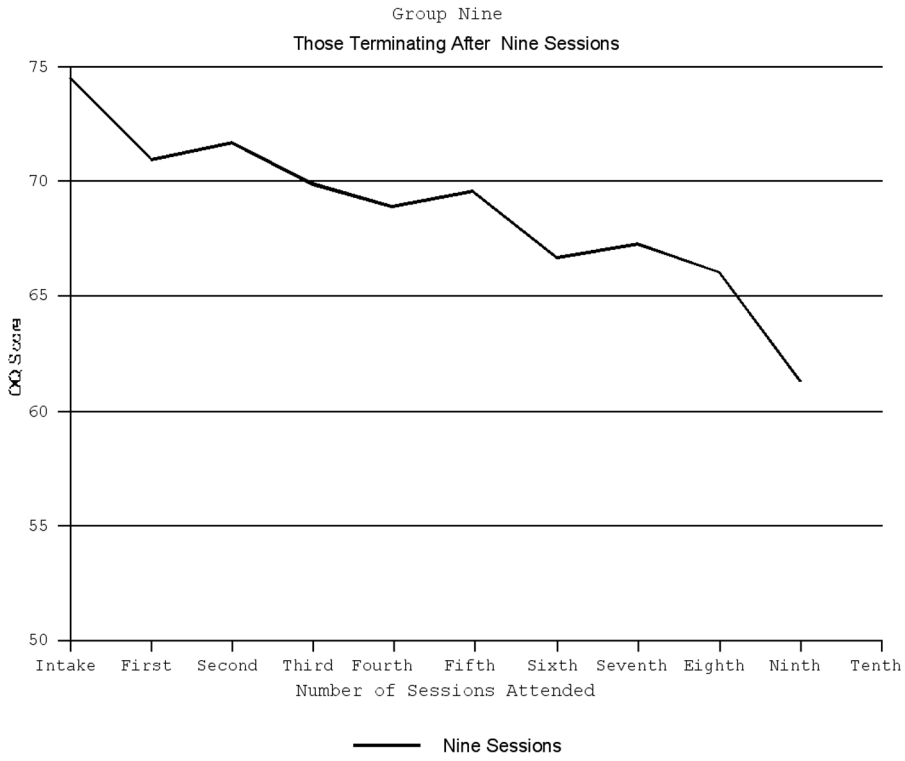

Group Four
Those Terminating After Four Sessions
75
70
65
60
55
50
CQ Score
Intake
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eighth
Ninth
Tenth
Number of Sessions Attended
Four Sessions

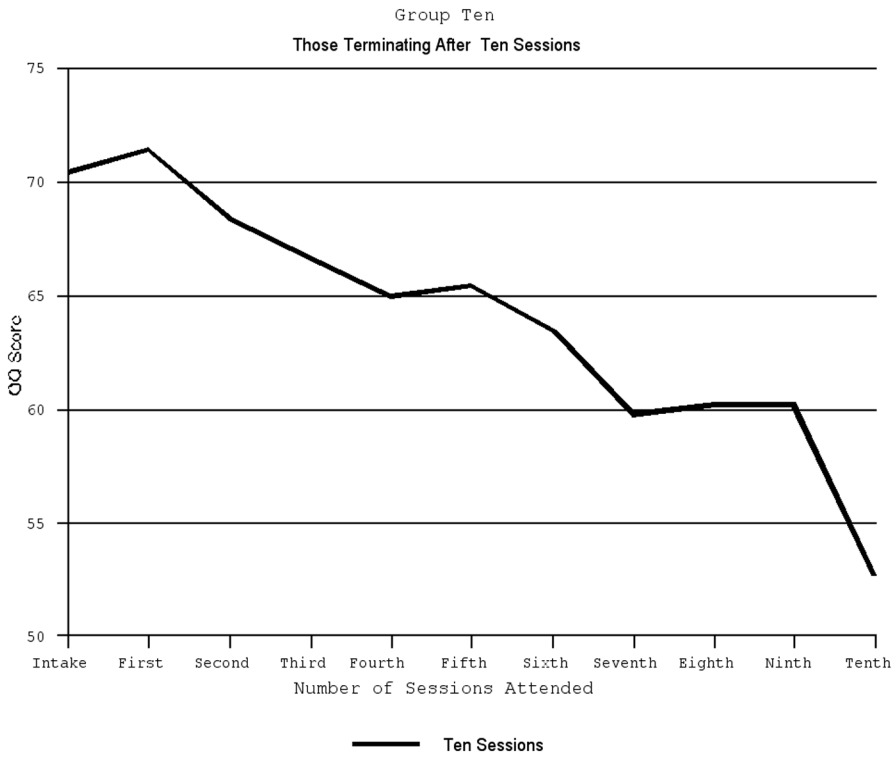

Group Five
Those Terminating After Five Sessions
75
70
65
60
55
50
OQ Score
Intake
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eighth
Ninth
Tenth
Number of Sessions Attended
Five Sessions


Group Six
Those Terminating After Six Sessions
75
70
65
60
55
50
OQ Score
Intake
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eighth
Ninth
Tenth
Number of Sessions Attended
Six Sessions


Group Seven
Those Terminating After Seven Sessions
75
70
65
60
55
50
CAQ Score
Intake
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eighth
Ninth
Tenth
Number of Sessions Attended
Seven Sessions


Group Eight
Those Terminating After Eight Sessions
75
70
65
60
55
50
CAQ Score
Intake
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eighth
Ninth
Tenth
Number of Sessions Attended
Eight Sessions


Group Nine
Those Terminating After Nine Sessions
75
70
65
60
55
50
OQ Score
Intake
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eighth
Ninth
Tenth
Number of Sessions Attended
Nine Sessions


Group Ten
Those Terminating After Ten Sessions
75
70
65
60
55
50
OQ Score
Intake
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eighth
Ninth
Tenth
Number of Sessions Attended
Ten Sessions