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The Clinician's Illusion and the Psychotherapy Practice: An Application of Stochastic Modeling

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The caseload of practicing clinicians tends to be unrepresentative of the population of psychotherapy patients. This results from the fact that, although the majority of patients use relatively few treatment sessions, the majority of a clinician's time is spent with longer term cases—a minority of patients consume the majority of services. Here, a stochastic model is used to describe the development of caseloads under 4 different treatment regimens. It is shown that a psychotherapy practice will reach a steady state (a stable case mix) in relatively short time and at that this will limit the open appointment slots available each week to serve new patients. Implications for training and clinic staffing are discussed.

Stochastic modeling is a technique that has been used successfully by operations researchers in business and industry to predict the steady state outcome of a transitioning process. For example, using this technique, an operations researcher can predict the number of bank tellers needed to serve customers with business transactions of various execution times. Additionally, stochastic modeling informs the operations researcher whether such transactions are best served by a single line leading to multiple tellers or by a separate queue for each teller. The purpose of this study is to show how stochastic modeling can be useful in clinical research, specifically, in predicting how the case mix of a professional practice or clinic caseload will change over time.

Clinician's Illusion

Practicing clinicians tend to have expectations of treatment needs for psychological and emotional disorders and to make predictions of treatment duration on the basis of the characteristics of the patients in their practice. This tendency leads clinicians to view clinical disorders as more severe and enduring than epidemiological evidence warrants, and it results in predictions of lengthier treatment than actual therapy use data reveal. Cohen and Cohen (1984) have labeled such expectations the "*clinician's illusion.*"

The clinician's illusion arises when a therapist assumes that his or her practice caseload is a representative sample of all patients. In fact, practice samples are not representative because they are duration dependent; that is, although the majority of patients are individuals with milder, more episodic disorders of shorter duration, patients experiencing severe problems of longer duration dominate the caseloads of more experienced clinicians. Thus, although the majority of psychotherapy patients stay in therapy for a relatively short time, therapists spend the majority of their time with longer term cases.

The clinician's illusion influences the training of the psychotherapists. Supervisors of psychotherapy trainees generally are selected from among the more experienced clinicians, and these clinicians tend to have mature practices. The current practice caseload of supervisors, which includes a predominant proportion of patients with longer term treatment durations, influences the treatment duration expectations of psychotherapy supervisees; that is, supervisees are taught, at least tacitly if not overtly, that successful therapy involves keeping patients in therapy for the theoretically correct duration of the treatment. For psychodynamic psychotherapy, this usually translates into engaging the patients in a relatively long-term treatment contract. Patients who drop out before achieving long-term status often are considered failures, and these failures to engage the patient are usually attributed to supervisee inexperience (i.e., failure to achieve an adequate therapeutic alliance). In fact, expectations of patient treatment duration on the basis of the current practices of supervisors are not relevant to the practices of the vast majority of beginning therapists and are not even representative of the mix of patients who present themselves to experienced therapists for treatment.

Frequency Distribution of Treatment Durations

The frequencies of treatment duration, whether measured in number of sessions or intervals of sessions, are asymmetrically distributed with a positive skew so that the bulk of patients make few visits and only a small proportion make many visits (Horgan, 1985; Howard, Davidson, O'Mahoney, Orlinsky, & Brown, 1989; Knesper, Pagnucco, & Wheeler, 1985; Phillips, 1988; Taube, Goldman, Burns, & Kessler, 1988). For example, Knesper et al. (1985) obtained reports from 5,170 practicing psychiatrists, psychologists, and social workers for a sample of patients just ending therapy. The cumulative frequency distribution of the number of visits of a single terminated patient (selected at random from each respondent) revealed that over 50% of the patients made under 15 visits, 75% completed under

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Table 1
Distribution of Treatment Durations for 854 Patients Entering Individual Psychotherapy

No. of sessions	Frequency	%
1–4 sessions	157	18.4
5–8 sessions	135	15.8
9–26 sessions	224	26.2
27–52 sessions	179	21.0
53+ sessions	159	18.6

Note. From *Patterns of Individual Psychotherapy Utilization: A Survival Analysis of Length of Treatment* by K. P. Brown, 1989. Reprinted by permission.

35 visits, and only 15% completed over 50 visits. Brown (1989) examined the length of treatment of 854 patients in a psychotherapy clinic and found a similar distribution of therapy use (Table 1). These distributions represent the likely treatment durations of the population of patients presenting themselves for psychotherapy.

The clinician's illusion was clearly demonstrated in the expectations of the Knesper et al. (1985) sample of clinicians regarding the length of treatment for a randomly selected patient recently beginning treatment. Practicing clinicians predicted that a patient just entering their practice would attend more total visits before termination than an estimate derived from reports of the number of sessions attended by a patient randomly selected from among their recently terminated patients (25 expected versus 15 actual for psychiatrists; 16 expected versus 12 actual for psychologists; and 20 expected versus 10 actual for social workers). These discrepancies between current predictions and termination results demonstrate the expectations of longer treatment held by clinicians and illustrate the illusions created by observations of a current practice caseload.

Implications for the Psychotherapy Caseload

The cumulative effect of replacing terminating patients with incidence-sample patients is that a practice gradually fills with longer duration patients. An example of the distribution of treatment durations for a mature practice (Howard et al., 1989) is presented in Table 2. This distribution is negatively skewed so that a plurality of patients are longer term and only a few of the patients in the caseload are short term. The contrast of this distribution with that of the distribution of treatment session intervals in Table 1 illustrates how a practice sample is not representative of presenting patients.

Table 2
Distribution of Session Utilization For the 10,749 Sessions Utilized by 405 Patients Who Had Completed Individual Psychotherapy

Duration of treatment	No. of sessions utilized	% sessions utilized
1–4 sessions	236	2.2
5–8 sessions	426	4.0
9–26 sessions	1,838	17.1
27–52 sessions	2,215	20.6
53+ sessions	6,034	56.1

Note. From "Patterns of Psychotherapy Utilization" by K. I. Howard, C. V. Davidson, M. T. O'Mahoney, D. E. Orlinsky, and K. P. Brown, 1989, *American Journal of Psychiatry, 146.* Copyright 1989. Reprinted by permission.

Consider the example of an experienced psychotherapy supervisor who sees 6 patients in a typical day, 30 in a week. Twelve of the 30 are long-term patients who have been in therapy for at least 9 months. Nine patients have been in therapy for approximately 6 months, six patients have been in therapy for 3 months, and three have had less than 12 sessions. Given the turnover of patients predicted by the presenting treatment duration distribution (see Table 1), the clinician actually will see 40 to 45 different patients in a year. In contrast, the beginning psychotherapist who sees six patients in a typical day will have mostly short-term patients for the first year. As predicted by the presenting treatment duration distribution, only about one of the six will become a long-term case. The high rate of turnover among the other five patients will result in the therapist seeing 85 to 90 different patients in the course of a year. This means that the treatment duration distribution of the practice sample of a beginning psychotherapist is more similar to the incidence sample of patients presenting for treatment than is the treatment duration distribution of the current practice of the supervisor.

Stochastic Modeling of the Psychotherapy Caseload

The length of time for a practice (or clinic) to achieve maturity (i.e., have a stable case mix) is dependent on the distribution of treatment durations in the incidence sample of presenting patients. With knowledge of the frequency distribution of presenting treatment durations, the steady state distributions of mature practices can be predicted with stochastic modeling processes. If the distribution of treatment lengths for a sample is assumed to be representative of the true distribution of treatment lengths encountered by a therapist in a practice, then the probability of encountering a patient who will have a particular treatment duration is the same as the proportion of cases in the sample who had that number of sessions at termination. Thus, we can treat the proportion of cases with a particular treatment duration as the probability of that type of patient presenting for treatment.

The changing nature of a practice can be analyzed with a Markov Chain. A Markov Chain (Çinlar, 1975) is a system that randomly transitions between a defined number of states. The distinguishing feature of a Markov Chain is that the next state to which the system transitions is dependent only on the system's present state and not at all dependent on how the system got to where it is. In statistical terms, a system is a Markov Chain if the future is conditionally independent of the past given the present.

For the present application, system is defined as a single treatment slot in a clinician's weekly schedule. If slots of therapy are assumed to be independent of each other (i.e., the type of patient in one slot of therapy does not affect the type of patient in a different slot), the behavior of more than one slot can be analyzed using a multinomial distribution. Type (of patient) is defined by the number of weeks a patient will be in therapy. For purposes of analysis, we assume here that type is predetermined (i.e., each entering patient is going to attend a specific number

Table 3
Transitional Probability Matrix

State *i*	State *j* (1, 1)	(2, 1)	(2, 2)	(3, 1)	(3, 2)	(3, 3)
(1, 1)	1/3	1/3	0	1/3	0	0
(2, 1)	0	0	1	0	0	0
(2, 2)	1/3	1/3	0	1/3	0	0
(3, 1)	0	0	0	0	1	0
(3, 2)	0	0	0	0	0	1
(3, 3)	1/3	1/3	0	1/3	0	0

Note. The states are defined by the numbers in parentheses. The first number in the parentheses represents the type of patient; the second number represents the number of the visits he or she has made. The numbers in the matrix represent the probabilities of going from State i (the rows) to State j (the columns).

of sessions). For example, there are $x\%$ one-session patients, $y\%$ two-session patients, $z\%$ three-session patients, and so forth. Furthermore, we assume that the type of patient coming into therapy is independent of the type of patient that has just left therapy and opened a slot in the therapist's schedule.

Finally, we assume that the probabilities of the patients waiting to receive therapy do not change over time. In other words, if 5% of the patients entering therapy at this time will attend 14 sessions, 2 years from now 5% will still be 14-session patients waiting to fill an open slot. Thus, probabilities refer to the likelihood that a particular slot will be filled by a type of patient whose treatment length is, by assumption, known.

Having made these assumptions, the next step is to define every possible state to which the system can transition and to build a transitional probability matrix that contains the probabilities of going from any of the states to each of the other states.

Suppose there are only three types of patients in the universe of psychotherapy patients: one-, two-, and three-session patients. Suppose also that there are equal numbers of each of the patient types waiting to enter therapy. Therefore, whenever a therapy slot opens, the probability is one third that the next patient will be a one-session patient, one third that the patient will be a two-session patient, and one third that the patient will be a three-session patient. For these three types of patients, the system can be in six possible states. At any time point, a therapist could be seeing a one-session patient, a two-session patient for the first time, a two-session patient for the second time, and so forth. The transitional probability matrix would appear as shown in Table 3.

The states are defined by the numbers in parentheses. The first number in the parentheses represents the type of patient, and the second number represents the number of the visits he or she has made. The numbers in the matrix represent the probabilities of going from State *i* (the rows) to State *j* (the columns).

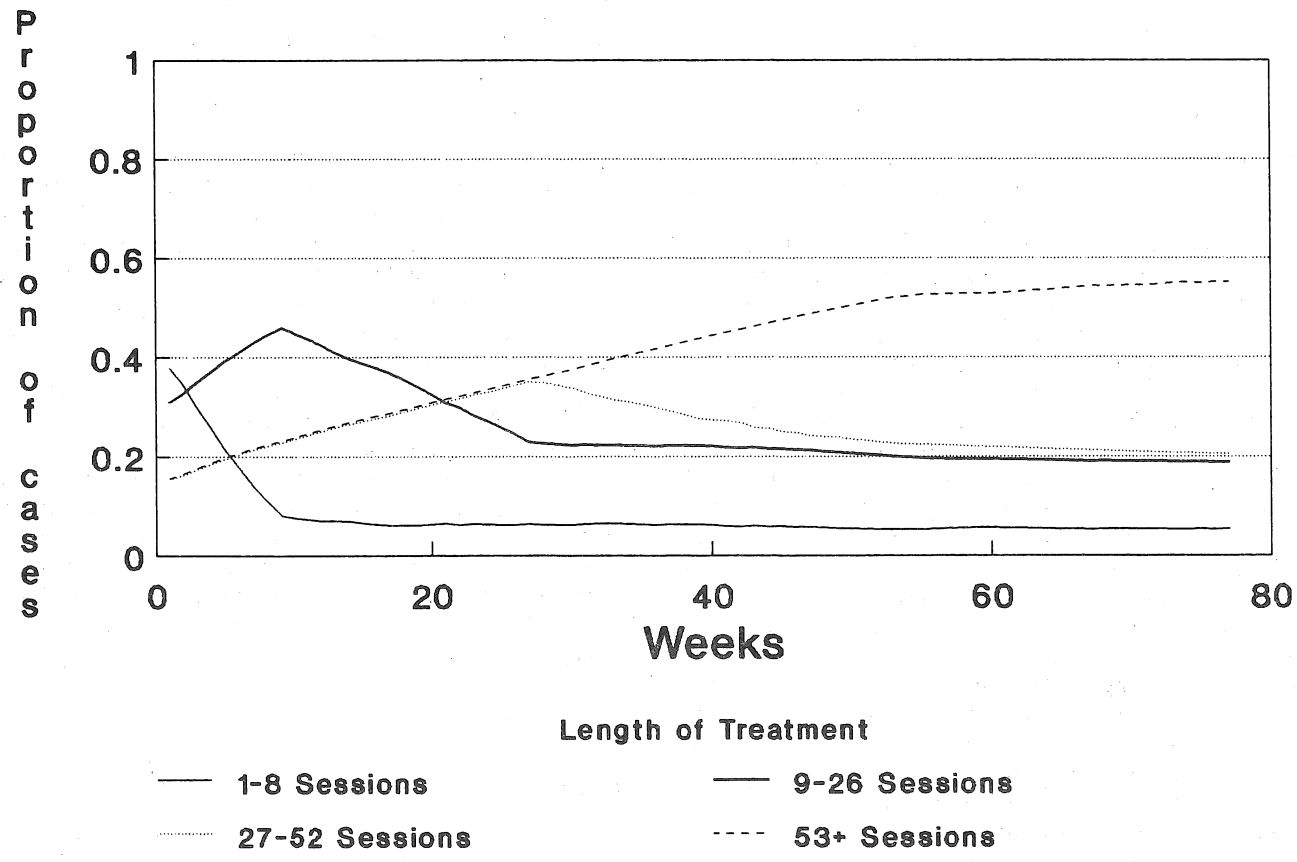

Figure 1. Case mix of individual psychotherapy patients over the course of time based on Sample 1 (from Northwestern University—outpatient psychotherapy).

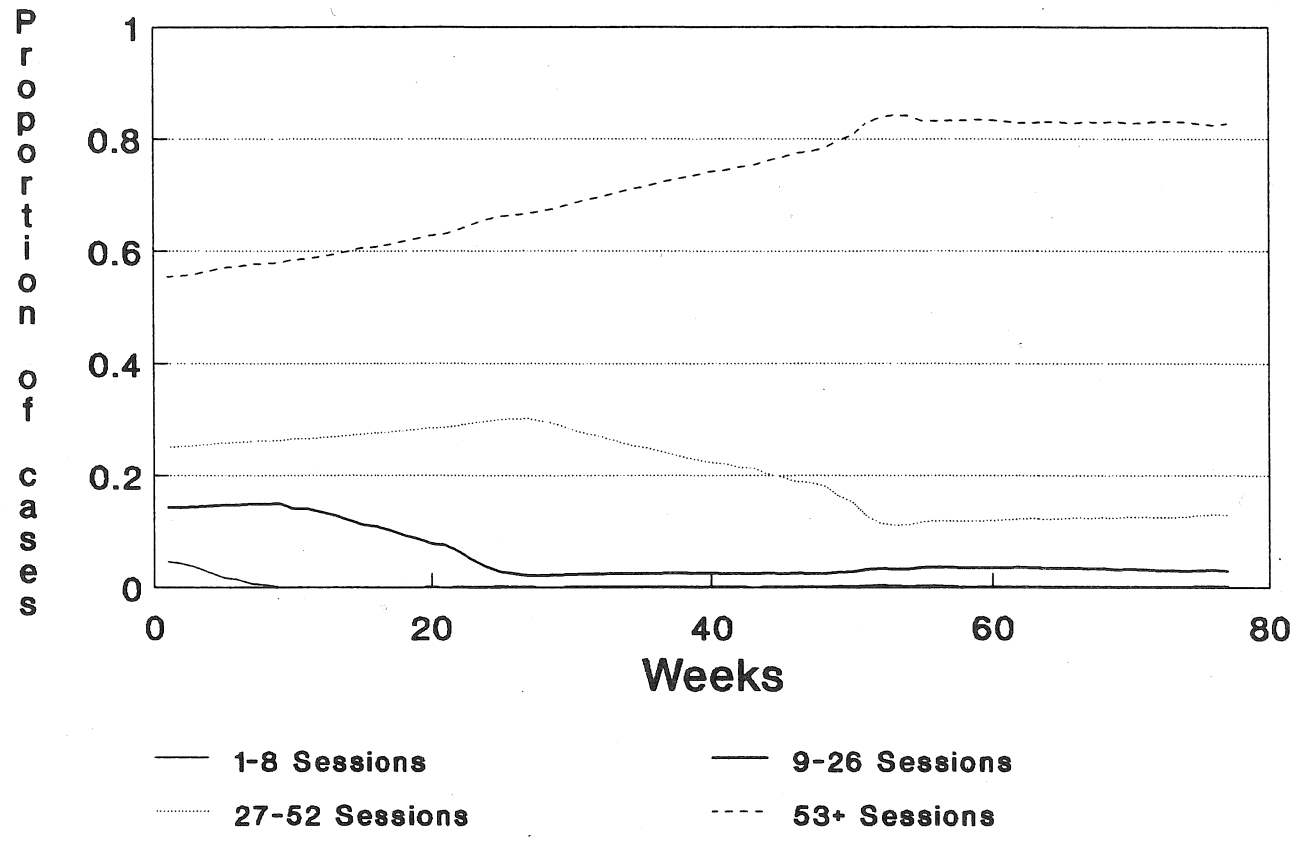

Figure 4. Case mix of individual psychotherapy patients over the course of time based on Sample 4 (University of Ulm—psychodynamic psychotherapy).

1 would change in its mix of patients over time. At the very beginning of the practice, the caseload would reflect the proportions of treatment lengths in the Sample 1 psychotherapy pool; namely, (approximately) 34% brief, 26% short-term, and 21% intermediate-term, and 19% long-term patients. Three months into the practice, the case mix would be approximately 10% brief, 40% short-term, 25% intermediate-term, and 25% long-term patients. On its first anniversary, about 50% of the caseload would consist of long-term patients, 25% intermediate-term cases, 20% short-term cases, and only about 5% brief cases. At maturity, which is reached around 80 weeks after inception, the practice would consist of 55% long-term, 20% intermediate-term, 20% short-term, and 5% brief cases. Once this type of practice has stabilized, 4% of the treatment slots will be available each week for new patients, on the average.

Figure 2 shows the development of a practice based on Sample 2, (the "counseling" sample). At the beginning of this practice, the case mix would be 70% brief, 25% short-term, 4% intermediate-term, and, 1% long-term patients. On its first anniversary, the case mix would be 35% brief, 40% short-term, 14% intermediate-term, and 11% long-term patients. At maturity (80 weeks), the case mix would be 40% brief, 35% short-term, 12.5% intermediate-term, and 12.5% long-term patients. Once the practice has stabilized, 12% of the treatment slots will be available each week, on the average, for new patients.

Figure 3 shows the development of a practice based on Sample 3 (the "brief psychotherapy" sample). At the beginning of this practice, the case mix would be 24% brief, 42% short-term, 28% intermediate-term, and 6% long-term patients. On its first anniversary, the case mix would be 7% brief, 31% short-term, 48% intermediate-term, and 14% long-term patients. At maturity (80 weeks), the case mix would be 6% brief, 30% short-term, 48% intermediate-term, and, 16% long-term patients. Once this type of practice has stabilized, 4% of the treatment slots will be available each week, on the average, for new patients.

Figure 4 shows the development of a practice based on Sample 4 (the "psychodynamic psychotherapy" sample). At the beginning of this practice, the case mix would be 5% brief, 14% short-term, 24% intermediate-term, and 57% long-term patients. On its first anniversary, the case mix would be 0.5% brief, 2.5% short-term, 17% intermediate-term, and 80% long-term patients. At maturity (80 weeks), the case mix would be 0.5% brief, 2.5% short-term, 14% intermediate-term, and 83% long-term patients. Once the practice has stabilized, only 1% of the treatment slots will be available each week, on the average, for new patients.

Discussion

This use of stochastic modeling provides empirical support for the assertions made earlier. The bias, which is at the root of the clinician's illusion, of using a mature practice to make predictions of treatment length is obvious. The steady state of the mature psychotherapy practice is not representative of the

mix of patients waiting to receive therapy. Although empirical support of the bias of the clinician's illusion is provided, the results of the stochastic modeling qualify Cohen and Cohen's (1984) initial explication by focusing the clinician's illusion on parameters of a mature practice. Assumptions of the representativeness of the practice sample made in the initial transitional period, while the practice is being built, are likely to be more veridical (in the sense of reflecting patient needs and use patterns) and less subject to practice sample bias.

This bias, or illusion, does not result from a therapist actually having a large number of patients who have already been in treatment for 1 year or more. Many of the patients who will have more than 52 sessions are still in an early phase of treatment. The bias here affects the therapist's ability to accurately assess whether a patient who is, for example, in the third therapy session will make a few more or many more visits. Because more overall time has been spent with patients who eventually do stay in treatment for a longer time, the therapist with a mature practice is likely to systematically overestimate the probability that a given short-term patient will eventually become a long-term patient.

The results of the stochastic modeling highlight the features of a growing professional practice. Psychotherapists often begin their employment in an institutional setting such as a clinic or hospital, where patients are provided. When a therapist decides to establish a private practice, he or she will "take" some of these patients into the new practice. We can see that these patients are likely to be longer term and that they will provide a stable base for the new practice.

The results of the stochastic modeling are also useful in understanding the patient mix of a psychotherapist working in a practice setting that strictly mandates a limited length of treatment. For example, a mature practice with an eight-session limit will include approximately 20% true brief therapy (i.e., under eight sessions) patients, 40% true short-term (i.e., 9–26 sessions) patients, and 40% true longer term (i.e., more than 6 months of therapy) patients. The value of limited length treatments can be more accurately assessed if such treatment–duration mix is kept in mind.

However, one must not read too much into the assumption that treatment duration is known and fixed. As was stated earlier this was an assumption necessary for modeling a practice. We do not intend to imply that patients entering therapy actually have a known or fixed number of sessions that they will use. We merely make use of the fact that when the distribution of treatment durations of patients leaving therapy are examined, some durations are substantially longer than others. Therefore, it seems a logical conclusion that some future patients entering therapy will attend substantially more sessions than will others. In other words, regardless of therapist characteristics or expectations, a certain proportion of patients will leave therapy sooner rather than later, and this proportion is probably much bigger than most therapists would conclude on an examination of their current caseload.

The assumptions inherent in the use of stochastic modeling represent a subtle but important shift away from expectations regarding the therapist's responsibility for treatment duration. Specifically, the length of treatment becomes a patient factor rather than a therapist factor. In our analyses, treatment duration defines the type of patient. This shift recognizes an important finding emerging from empirical investigations (Howard et al., 1989; Phillips, 1988) on the characteristics of treatment duration; namely, therapist characteristics do little to alter the shape of the distribution of treatment use.

By extension, the clinician's illusion, based on the mix of patient types in the mature caseload, can easily lead to unrealistic expectations for beginning therapists. The claim that beginning therapists have difficulty engaging their patients in psychotherapy simply may be an artifact. The case mix of a beginning therapist should contain a majority of shorter term patients, because these patients represent the majority of people awaiting therapy.

Stochastic modeling also has other promising applications in mental health treatment. For example, a supervisor of child abuse case managers overburdened with long-term cases could model the impact of adding several new positions to the existing pool of caseworkers. Another application may involve the prediction by a corporate health benefits officer of the mix of short-term, intermediate-term, and long-term benefits to be paid out at different time points after the initiation of a new mental health benefits program. Applied to psychotherapy, we see that a practice matures about 18 months after its beginning. At maturity, a 40 hr/week practice will be able to accept about two new patients each week.

In summary, stochastic modeling is a useful procedure for understanding the steady state features of a mature system and reveals the length of time required to reach maturity. Moreover, the danger of using a mature caseload to make inferences about the universe of people needing mental health treatment is cogently illustrated.

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