

Predictors of Early Termination in a University Counseling Training Clinic

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Despite the existence of counseling dropout research, there are limited predictive data for counseling in training clinics. Potential predictor variables were investigated in this archival study of 380 client files in a university counseling training clinic. Multinomial logistic regression, predictive discriminant analysis, and classification and regression trees converged on the use of a 4-predictor model (client age, income, perceived difficulty, and functional impairment) for classifying counseling dropouts. Implications for research and practice are discussed.

Premature or early termination of psychotherapy and counseling is a common and significant problem in clinical practice. Published estimates of dropout rates range between 30% and 60% of clients (Reis & Brown, 1999). In a meta-analysis of early termination, the average outpatient rate was 47% (Wierzbicki & Pekarik, 1993). Several studies have found up to 65% to 80% of clients will end treatment before the 10th session, a percentage that can be even higher for youth and people of color (Garfield, 1994). Reported dropout rates also vary as a function of the definition used for the term *dropout* (Hatchett & Park, 2003; Wierzbicki & Pekarik, 1993).

Research on predictors of early termination in a variety of clinical settings, and for a variety of therapeutic approaches and clinical populations, has yielded mixed and inconsistent results (Garfield, 1994; Reis & Brown, 1999). Methodological differences and weaknesses in such research may have contributed to the problem of mixed findings. Consistent predictors of dropout are limited to a few variables, such as racial minority and lower socioeconomic status (SES [Garfield, 1994; Reis & Brown, 1999; Wierzbicki & Pekarik, 1993]). The inconsistency of the dropout literature from a variety of settings, treatments, populations, and research methods has made the interpretation of these findings particularly difficult (Garfield, 1994; Reis & Brown, 1999). As a result, dropout research findings and their implications might be better considered as site specific and generalized to new settings only with caution. Given the near absence of dropout studies for university-based counseling training clinics (Todd, Kurcias, & Gloster, 1994), the purpose of this study was to extend this research to this type of setting.

Recent studies have explored the reasons given by clients and therapists for ending treatment (both premature and agreed on) in training settings (Hunsley, Aubry, Verstervelt, & Vito, 1999; Renk & Dinger, 2002; Todd, Deane, & Bragdon, 2003). However, only three training clinic studies focused on identifying predictors of different types of termination. Everson (1999) examined selected variables as predictors of dropout in a psychological training clinic with clinical psychology trainee therapists. In this client sample that consisted predominantly of university students (72%), clients with lower scores on the Anxiety and Somatic Complaints scales of the Personality Assessment Inventory were more likely to drop out of treatment.

In another archival study, Hilsenroth, Handler, Toman, and Padawer (1995) compared early terminators with clients who completed at least 6 months and 24 treatment sessions of long-term psychodynamic psychotherapy provided by advanced doctoral students in clinical psychology. No differences were found on the Minnesota Multiphasic Personality Inventory–2 variables, but the two groups differed on three Rorschach variables: Dropouts were less aggressive, had less need for a therapeutic relationship, and were more capable of cooperative relationships than were treatment continuers.

In a third archival study, Richmond (1992) used discriminant function analysis to identify client demographic and diagnostic variables that distinguish treatment completers from three types of premature terminators (intake dropouts, evaluation phase dropouts, and therapy dropouts). He found that clients who dropped out after intakes, compared with completers, were more frequently (a) new to the clinic, (b)

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people of color, (c) other referred, (d) less educated, and (e) younger. Diagnostically, these clients were more symptomatic (e.g., suicidal, hostile, and psychotic) but also less distressed, guilt ridden, or willing to cooperate with treatment. Later therapy dropouts, like the intake dropouts, were more frequently people of color, less educated, less guilt ridden, and not cooperative with treatment. They were also more likely to be highly distressed, grandiose, and somatic. Richmond's findings provide insight into the nature of early termination in a nonprofit, outpatient training clinic, which is somewhat similar to the clinic studied in the present research. However, as with Hilsenroth et al. (1995), Richmond's clinic differs from the present clinic in that the therapists were predoctoral interns in clinical psychology and worked within a psychodynamic approach with well-educated clients. The training clinic also used a three-session evaluation procedure and specialized in treating domestic violence (Richmond, 1992). To date, there have been no systematic studies of dropout predictors in a counseling training clinic.

The goal of the present study was to identify client predictors of premature termination in a university-based counseling training clinic, where student counselors range in experience from their first master's practicum to advanced doctoral training. We aimed to identify predictors of intake dropouts. This group is considered to be distinct because their early termination signifies failure to initially bond and engage in counseling (Hatchett & Park, 2003; Kokotovich & Tracey, 1987; Richmond, 1992; Trepka, 1986). We also aimed to examine predictors of counselor-identified dropouts during the treatment phase, which is considered to be another distinct group. The distinction between early and late dropouts is supported by research that suggests a continuum in clinical improvement for early dropouts, late dropouts, and appropriate terminators (Pekarik, 1986). Furthermore, the use of counselor judgments to identify noncompleters is perhaps the most commonly used and recommended method for defining premature termination (Hatchett & Park, 2003; Wierzbicki & Pekarik, 1993).

Given that client demographic and treatment data are frequently collected in training clinics (Stephenson & Norcross, 1985), our goal was to identify client predictors of dropout that could be used to derive inferences about comparable counseling training clinics (see Myers, 1994; Todd et al., 1994). In this process, we tested different models to determine the best fit of the available data in a natural setting. After verifying our findings with different statistical methods, we hope that the study can be replicated and tested for use in similar clinical settings using available data. The objectives of this study fall within the framework of effectiveness and clinical utility research (Beutler & Howard, 1998; Lampropoulos et al., 2002; Whiston, 1996), in which training clinics are not only well suited but also ethically obliged to engage in outcome evaluation and practice-relevant research (Neufeldt & Nelson, 1998; Stephenson & Norcross, 1985).

Method

Training Clinic

Data for this study were collected in a university-based training clinic located in the counseling and counseling psychology department of a large midwestern university. This outpatient clinic provides the local community with low-cost counseling services. It serves as a training facility for novice to advanced master's- and doctoral-level graduate students. Clients are referred to the clinic from physicians, private practitioners, other mental health agencies, or self-referral. An initial telephone screening is used to refer to other community mental health settings callers who are acutely suicidal or homicidal, have predominant alcohol or substance abuse issues, or have psychotic symptoms. An initial intake session is conducted, typically by a doctoral student, after which clients are assigned to a counselor. All sessions are videotaped and observed via two-way mirrors. Clients paid a nominal fee of \$5 per counseling session.

Trainee Counselors

Approximately 50 trainee counselors provide counseling services in the clinic each semester. Half of them are enrolled in a terminal master's program in counseling (mental health, community, school, and vocational rehabilitation tracks) and see clients as part of their first or second practicum. The other half hold master's degrees in counseling or related fields and are enrolled in a doctoral program in counseling psychology accredited by the American Psychological Association. Mean age of trainee counselors is 28.08 years ($SD = 6.28$, range 22 to 46), with a female-to-male ratio of 3:1. Approximately 20% of counselors are minority students. Counselor trainees work within various theoretical frameworks and carry client cases for a variable number of sessions, under the supervision of a licensed faculty psychologist.

Participants

Demographic variables. The archival files of 380 clients (65% female and 35% male) who had sought counseling services in the clinic between 1995 and 1999 were examined. Seventeen percent were either university students or relatives of university employees, with the remaining 83% being outpatients from the community. Clients' ages ranged from 17 to 82 years ($M = 32.7$, $SD = 10.35$). In terms of educational level, 0.8% of the clients had a less than eighth-grade education, 12.6% had finished some high school, 38.4% were high school graduates, 28.9% had some college education, 14.2% were college graduates, and 5% had some graduate education. (In the Participants section, percentages may not equal 100% because of rounding.) Almost half (47.4%) of the clients were married, 18.5% were never married, 7.4% were cohabiting, 12.1% were separated, 12.4% were divorced, and 2.4% were widowed. Fifty-four percent lived with children (40.8% one

child, 38.3% two children, and 20.9% three or more children). The majority (78.2%) of the clients were employed, 5.8% were unemployed less than 6 months, and 5.8% were unemployed more than 6 months. The remaining clients were students or were not seeking employment (10.3%). Fourteen percent of the clients reported a family income of less than \$10,000 per year. The majority (63.2%) reported an annual family income of less than \$30,000. Although no data on client race or ethnicity were collected, the majority of clients seen in the clinic were Caucasian. Furthermore, most of the clients (82.3%) were seen for the first time. Almost 38% had never been in counseling before, 22.9% had counseling within the last year, and 39.2% reported counseling more than a year ago. Twenty-one percent of the clients were self-referred to the clinic, whereas 79% were referred by others. Almost half (45.5%) of the clients reported using medication for a medical or a mental health problem.

Diagnostic variables. Interviewers (advanced doctoral students) recorded their perceptions of client presenting problems on a list of 24 predetermined clinical categories. They recorded an average of 3.0 ($SD = 1.47$) presenting problems per client. The most common were depression (41.6%), marital (45.5%), interpersonal (31.8%), self-esteem (20.8%), family (19.2%), intrapersonal (16.6%), guilt (16.1%), anxiety (15.3%), dating relationships (14.2%), decision making (12.4%), grief (11.8%), and occupational or vocational (11.1%) problems. Intake interviewers rated the perceived difficulty working with intake clients as low (54.5%), medium (38.2%), or high (7.4%). They also rated the urgency of client cases at the intake as a crisis (i.e., must see counselor right away; 21.6%) and noncrisis (78.4%).

Primary Axis I diagnoses from the American Psychiatric Association's (1994) *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*), were the following: partner relational problem (39.8%), major depressive disorder (11.9%), adjustment disorder (11.6%), other affective disorders (e.g., dysthymic disorder; 8%), anxiety disorders (6.9%), and other relational problems (5.6%). On Axis II, 72.3% of the clients received no diagnosis, 23.8% received a deferred diagnosis, and 3.9% received a personality disorder diagnosis. These initial tentative diagnoses were formed by the advanced doctoral students who conducted the intake interviews. Clients were assessed on the Global Assessment of Functioning (GAF) Scale (Spitzer, Gibbon, Williams, & Endicott, 1996), with an average score of 64.04 ($SD = 11.28$, range = 31 to 95). This scale has a range of 1 to 100, with higher scores indicating better functioning.

Treatment variables. Clients were primarily provided individual counseling (63.2%) or couples counseling (24.2%). However, data were not available for 16.3% of the cases. (Of the clients receiving treatment, total percentages were greater than 100 because clients may have received more than one type of service.) Less frequently used counseling formats included family counseling (1.1%), cocounseling (5.3%),

vocational counseling (1.1%), or other counseling (5.3% of cases). Approximately 16% of the clients dropped out after the first visit (intake), and 34.5% (cumulatively) terminated unilaterally by the end of the third visit. These rates are comparable with those reported by Richmond (1992) in a similar training setting (19% and 36.5%, respectively). Early termination rates after the intake for this sample fall in the lower range of rates generally reported from many different settings (13% to 57%; Garfield, 1994; Reis & Brown, 1999). Treatment length for this sample averaged 6.74 sessions ($SD = 7.09$) after the intake interview, with a median number of visits after the intake of 5 (range = 1 to 54). These numbers fall within the commonly reported mean range of 2–13 and median numbers of sessions, which cluster around 6, in a variety of settings (Garfield, 1994; Hansen, Lambert, & Forman, 2002; Reis & Brown, 1999).

Measures

Intake form. This form was completed by the intake counselors after the intake interview. As a standard clinic procedure, selected client variables from this form were coded and entered into an archival database. The variables were client age, gender, town of residence, education, living situation, marital status, number of children, number of children in the family unit, employment status, family income, occupation, source of referral, physical impairments or limitations, current medications, previous counseling, old or new client, case urgency, date of intake, client presenting problems, severity of problems, perceived difficulty working with the client, counseling modality recommended, and *DSM-IV* (American Psychiatric Association, 1994) diagnoses.

Termination/referral report. When a therapeutic relationship ended, the counselor recorded termination-related information, from which the following variables were routinely entered into the computerized archival database: termination date, total number of sessions, therapeutic modalities used, problems worked on in counseling, and client disposition. Only clients in three types of termination were included in the analyses: (a) clients who failed to return to treatment after the initial intake appointment (*intake dropouts*), (b) clients who ended treatment beyond the initial intake session but did not complete counseling (*therapy dropouts*), and (c) clients for whom their counselor ended treatment (*completers*). Clients referred to another agency or within the clinic to continue treatment (usually because of therapists finishing their practicum) were considered a logistical termination and excluded from analyses.

Results

The goal of this study was to establish which among a set of potential predictor variables would be useful in discriminating among the three groups of clients based on the time and manner in which the client–counselor relationship was ended: intake dropouts, therapy dropouts, and completers. Of the

380 client cases examined, 61 (16.1%) were categorized by their counselors as intake dropouts, 218 (57.4%) as therapy dropouts, and 101 (26.6%) as completers. (Percentages do not equal 100% because of rounding.) These results were consistent with those obtained in other training clinics (Renk & Dinger, 2002; Richmond, 1992). As expected, completers ($M = 10.26$, $SD = 9.68$) on average attended more counseling sessions than did therapy dropouts ($M = 5.14$, $SD = 4.76$), $t(305) = -6.21$, $p < .001$, Cohen's $d = .67$. A number of potential predictor variables were investigated: age, education (seven levels, ranging from eighth grade or less to beyond a master's degree), annual family income (six levels, ranging from under \$10,000 to \$30,000 and higher), number of children in the client's living unit, number of the client's presenting problems, perceived client difficulty (low, medium, high), GAF Scale score, prior treatment (never, more than a year ago, less than a year ago), gender, employment status (four levels: not applicable, currently employed, unemployed less than 6 months, and unemployed more than 6 months), case urgency (crisis, noncrisis), and referral source (self, other).

Three types of analysis were conducted: multinomial logistic regression, predictive discriminant analysis (PDA), and classification and regression trees (CARTs). Multinomial logistic regression was the only analysis that included statistical tests; the remaining two analyses were used to both confirm and further elucidate the results of the multinomial logistic regression.

Multinomial logistic regression was used because it allows for both continuous and categorical predictor variables. However, because cell sizes on the categorical variables varied markedly in the multinomial logistic regression (from $n = 22$ to $n = 298$, where $N = 380$), there was some concern that the analysis might not yield trustworthy results. Because the CART has no assumption regarding the cell sizes on multinomial variables, the results of the CART were compared with the results of the multinomial logistic regression. As can be seen, the CART and multinomial regression results complement each other, thus lending support to the belief that the drastic differences in cell sizes in the multinomial logistic regression did not adversely affect results. A more detailed discussion of the CART is forthcoming.

The tests of the assumption of linearity for the logits of the continuous variables (those with measurement levels of ordinal or scale) indicated that the assumption was met (no logit-by-continuous-variable interaction tested statistically significant at $\alpha = .05/21 = .0024$). Goodness-of-fit statistics indicated that observed cell frequencies did not differ significantly from expected cell frequencies, Pearson $\chi^2(726) = 780.137$, $p = .080$, $\alpha = .05$, thereby lending general support to the full model for predicting type of termination. However, examination of the parameter estimates yielded no statistically significant predictors ($\alpha = .05/12 = .0042$). There were two sets of parameter estimates; for both sets, the referent group was completers. The first set compared the group intake dropouts with completers, and the second set compared therapy dropouts with completers.

The effect size for the aforementioned chi-square test was $w = 27.93$, where $w_{\max} = \infty$ and an effect of $w = .5$ is considered "large" according to Cohen (1988). In the context of the current study, this effect size might be attributed to the pronounced difference of therapy dropouts as compared with both intake dropouts and completers. Furthermore, as is evident from the results of all three types of analyses used in this study, the fact that all models examined were most useful for predicting therapy dropouts attests that $w = 27.93$ might be suitably termed a *large effect*.

In determining the statistical significance of parameter estimates, we used the adjustment of $\alpha = .05/12 = .0042$ following the suggestion of Tabachnick and Fidell (2001) for interpreting the significance of parameter estimates. However, the parameter estimates identified in the logistic regression as having p values of .051 or smaller were also identified in the CART as the most influential for dividing individuals into groups on the grouping variable termination type. These influential parameters were client age, annual income, perceived client difficulty, and the GAF Scale.

The full, 12-predictor model mentioned earlier was most useful for predicting the termination type therapy dropouts, yielding a 91.7% accuracy rate. However, this model was not useful for predicting the outcome categories intake dropouts (13.1% accuracy rate) and completers (19.8% accuracy rate). The overall classification accuracy of the full model was 60%. The effect size index for across-group (overall) hit rate indicated a modest effect, with $I = .06$ (maximum chance criterion used because of drastic differences in prior probabilities [Huberty, 1994; Huberty & Lowman, 2000]). The four predictor variables identified as influential in the CART were further examined using multinomial logistic regression and PDA. The addition of PDA allowed for further verification/understanding of the results yielded by both the multinomial logistic regression and the CART. It should be noted that use of the PDA at this point was possible because all predictor variables retained in the 4-predictor model were continuous (PDA does not accommodate categorical predictors).

The multinomial logistic regression analysis for predicting client case disposition via the four predictors (age, income, difficulty, and GAF Scale) was tested as useful, with observed cell frequencies not differing significantly from expected cell frequencies, Pearson $\chi^2(720) = 744.09$, $p = .259$, $\alpha = .05$, $w = 27.28$. This finding lends general support to a four-predictor model for predicting client case disposition. Based on the adjusted $\alpha = .05/4 = .0125$, as suggested in Tabachnick and Fidell (2001), only one of the parameter estimates was statistically significant (GAF Scale, distinguishing completers, and therapy dropout groups based on Wald's test, $\chi^2[1] = 8.78$, $p = .003$, $\alpha = .05$, $w = 2.96$). (See Table 1.) Table 1 contains two sets of parameter estimates; for both sets, the referent group is completers. Thus, the first set compares the group intake dropouts with completers, and the second set compares therapy dropouts with completers. Table 2 contains the log likelihood tests for the four predictors, two of which are statistically significant at adjusted $\alpha = .0125$: income and the GAF Scale.

TABLE 1

**Parameter Estimates for the Reduced Model
(Four Predictors) for Predicting Termination Type**

Termination Type	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>p</i>
Intake dropouts					
Intercept	0.09	1.50	0.00	1	.951
Age	-0.04	0.02	6.00	1	.014
Income	-0.23	0.09	5.96	1	.015
Difficulty	0.73	0.29	6.19	1	.013
GAF	0.01	0.02	0.20	1	.654
Therapy dropouts					
Intercept	3.08	1.07	8.30	1	.004
Age	-0.02	0.01	2.31	1	.128
Income	0.09	0.07	1.69	1	.193
Difficulty	0.16	0.22	0.51	1	.477
GAF	-0.04	0.01	8.78	1	.003

Note. GAF = Global Assessment of Functioning Scale score.

As was true for the full model, the four-predictor model represented in Table 1 was most useful for predicting the termination category therapy dropouts, yielding a 95.4% accuracy rate (see Table 3). Moreover, like the full model, this reduced model was not useful for predicting the outcome categories intake dropouts and completers. The overall classification accuracy of the four-predictor model was 58.9% (effect for across-group hit rate was moderate to small, $I = .04$ [Huberty & Lowman, 2000]).

Because the model containing four predictors yielded only one parameter that tested statistically significant based on the suggested adjusted alpha level (the predictor GAF Scale), the multinomial logistic regression model containing this single predictor was examined, Pearson $\chi^2(88) = 99.37, p = .191, \alpha = .05, w = 9.97$, indicating that the single-predictor model using the GAF Scale to predict client case disposition was useful. This single-parameter estimate tested statistically significant for separating the group therapy dropouts from the group completers, $\chi^2(1) = 10.46, p = .001, \alpha = .05, w = 3.24$, but not for separating the group intake dropouts from the group completers, $\chi^2(1) = 1.2, p = .273, \alpha = .05, w = 1.09$. As expected, the single-variable predictor model was useful

TABLE 2

**Likelihood Ratio Tests for the Reduced Model
(Four Predictors) for Predicting Termination Type**

Effect	-2 LLRM	χ^2	<i>df</i>	<i>p</i>
Intercept	691.70	10.97	2	.004
Age	687.51	6.79	2	.034
Income	695.60	14.88	2	.001
Difficulty	687.57	6.84	2	.033
GAF	694.48	13.75	2	.001

Note. The chi-square statistic is the difference in -2 log likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0. -2 LLRM = -2 Log Likelihood of Reduced Model; GAF = Global Assessment of Functioning Scale score.

TABLE 3

**Classification Accuracy of the Reduced Model
(Four Predictors)**

Observed Category	Predicted Category			% Correct
	Intake Dropouts	Therapy Dropouts	Completers	
Intake dropouts	5	55	1	8.2
Therapy dropouts	4	208	6	95.4
Completers	1	89	11	10.9
Overall %	2.6	92.6	4.7	58.9

exclusively for predicting the client case outcome therapy dropouts (accuracy rate = 99.1%) and was less accurate than were previous models for predicting the remaining categories, intake dropouts (accuracy rate = 0%) and completers (accuracy rate = 5%). Overall accuracy of the single-predictor model differed only slightly from that of the previous models (overall accuracy = 58.2%; across-group effect was small, $I = .02$ [Huberty & Lowman, 2000]).

At this juncture, the 4-predictor model was selected over the single-predictor model because its usefulness was verified by the nonparametric procedure, CART (Brieman, Friedman, Olshen, & Stone, 1984; Finch & Schneider, 2004, 2006). The CART analysis was conducted using all 12 predictor variables; during the course of the CART analysis, predictor variables are retained that are determined to be useful in separating individuals into the groups to which they belong on the dependent variable. Furthermore, initial classification rates are set as proportional to group size, which is an important condition in this study because the therapy dropouts group is much larger than the intake dropouts and completers groups. The CART output is reported in the form of a dendrogram, with the specific criteria for division reported above each division. If the criterion for a particular division is satisfied, one follows the division to the left; if the said criterion is not satisfied, one follows the division to the right. In order to determine the number of nodes (i.e., terminal points) to the dendrogram, one examines a plot of the number of nodes by the residual mean deviance. Based on such an examination for this analysis, the number of terminal nodes was set at eight.

Figure 1 contains the dendrogram produced in the CART analysis. The four retained predictor variables were used to set the conditions prior to each division. Of the eight terminal nodes, six classified individuals into Category 2 (therapy dropouts), an outcome that paralleled the multinomial logistic classification accuracy of most individuals in the therapy dropouts category. The advantage of CART over multinomial logistic regression is that CART provides the details (i.e., conditions) of reclassification. For this analysis, the classification accuracy of the CART was similar to that of the multinomial logistic regression (CART classification accuracy = 59.21%). Initial probabilities for group classifica-

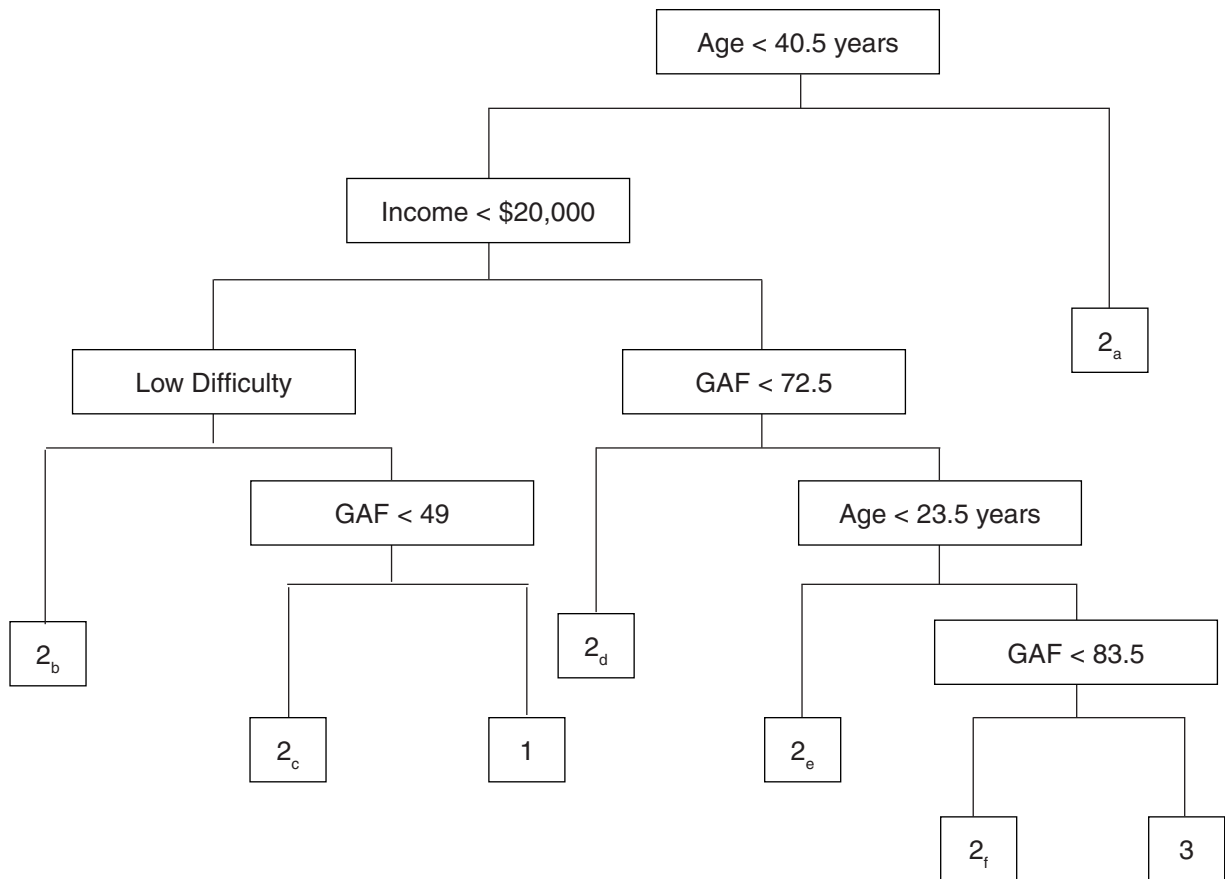


FIGURE 1

Dendrogram Produced in the Classification and Regression Tree (CART) Analysis for Reclassifying Individuals Into Their Respective Groups on the Dependent Variable

Note. Numbers 1 through 3 represent the eight terminal nodes. 1 = intake dropouts; 2 = therapy dropouts; 3 = completers; Low Difficulty = low perceived difficulty working with client; GAF = Global Assessment of Functioning Scale. Summary explanation of client classification in CART terminal nodes: 1 = clients < 40.5 years old, with income < \$20,000, with moderate/high perceived difficulty, and with GAF Scale score > 49 were more likely to be intake dropouts. 2_a = clients > 40.5 years old were more likely to be therapy dropouts. 2_b = clients < 40.5 years old, with income < \$20,000, and with low perceived difficulty were more likely to be therapy dropouts. 2_c = clients < 40.5 years old, with income < \$20,000, with moderate/high perceived difficulty, and with GAF Scale score < 49 were more likely to be therapy dropouts. 2_d, 2_e, and 2_f = clients < 40.5 years old, with income > \$20,000, and with GAF Scale score < 83.5 were more likely to be therapy dropouts. 3 = clients between 23.5 and 40.5 years old, with income > \$20,000, and with GAF Scale score > 83.5 were more likely to be therapy completers.

tion were .16053, .57368, and .26579 for intake dropouts, therapy dropouts, and completers, respectively.

Interpretation of the CART dendrogram is as follows: The first division was based on the client's age. Clients whose ages equaled or exceeded 40.5 years were more likely to fit the therapy dropouts category (probability, $p = .57003$). A client who was younger than 40.5 years with an annual income less than \$20,000 and a low level of perceived difficulty was also most likely to belong to the therapy dropouts category ($p = .42188$), as were clients of the same age and annual income with both (a) a higher level of perceived difficulty and (b) a GAF Scale score less than 49 ($p = .80$). In contrast, a client younger than 40.5 years with an annual income less than \$20,000, a perceived difficulty level of moderate to high, and a GAF Scale greater than 49 was more likely to fit the intake

dropouts category ($p = .43636$). If the client is younger than 40.5 years of age, has an annual income equal to or exceeding \$20,000, and a GAF Scale score less than 72.5, the individual likely fits the therapy dropouts category ($p = .70149$). Clients younger than 23.5 years with an annual income equal to or exceeding \$20,000 and whose GAF Scale scores exceed 72.5 were likely classified as therapy dropouts ($p = .85714$). A client equal to or older than 23.5 years with an annual income equal to or exceeding \$20,000 and whose assessed GAF Scale score was less than 83.5 was likely classified in the therapy dropouts category ($p = .59259$). Finally, a client equal to or older than 23.5 years (but younger than 40.5) with an annual income equal to or exceeding \$20,000 who has a GAF Scale score equal to or greater than 83.5 is likely to belong to the completers category ($p = .7$).

As a final step for analyzing this data, PDA was used to further elucidate the CART results and confirm the multinomial logistic regression results. For the PDA analysis, the four-predictor model was analyzed using a Statistical Analysis System (SAS), with prior group membership in the population set as proportional to that of the sample, just as it was in CART. (Initial probabilities were .16053, .57368, and .26579 for intake dropouts, therapy dropouts, and completers, respectively. For multinomial logistic regression, odds are based on sample proportions, so there is no need to set prior probabilities.) Homogeneity of covariance matrices was also tested in the SAS using an algorithm by Morrison (1976) involving calculation of V and rho statistics, where the null approximates $\chi^2(df = .5[k - 1] p[p + 1])$. The result was statistically significant, $\chi^2(20) = 30.113352, p = .068, \alpha = .10, w = 5.4876$. Therefore, the separate, within-covariance matrices were used in the discriminant function. The drastic difference in cell sizes in the multinomial logistic regression could have been especially problematic because of violation of this assumption. However, the classification results produced using PDA complement the results obtained from both the multinomial logistic regression and CART procedures. Therefore, violation of the homogeneity assumption appears to have had little impact on the multinomial logistic regression.

Two classification summaries are available in PDA, the resubstitution summary and the cross-validation summary, with the resubstitution summary being the more data specific of the two. Thus, the cross-validation summary produces the more realistic classification result. PDA classification accuracy rates for the three groups in the resubstitution summary were 91.3% for therapy dropouts, 18% for intake dropouts, and 18.8% for completers. The overall classification accuracy of the four-predictor model was 60.3% (arguably moderate overall effect size, $I = .07$, using maximum chance criterion). In the cross-validation summary, PDA classification accuracy rates were 89% for therapy dropouts, 8.2% for intake dropouts, and 14.9% for completers. The overall classification accuracy of the four-predictor model was 56.3% (no apparent overall effect, $I = .00$).

There is the question of whether a linear rule would be better than a quadratic rule in the PDA. The commonly used test of homogeneity, Box's M , is highly sensitive in general and particularly sensitive to nonnormality (Stevens, 2002; Tabachnick & Fidell, 2001). Although Box's M was not used to test homogeneity in this study, it is possible that the test for homogeneity was still too sensitive. Thus, for the sake of comparison, a linear solution was examined. Overall classification accuracy increased slightly for the linear versus quadratic solution, with the overall classification via resubstitution equal to 63.2% (quadratic rule, 60.3%; arguably large overall effect size for linear resubstitution result, $I = .13$) and overall classification via cross-validation equal to 61.9% (quadratic rule, 56.3%; arguably large overall effect size for linear cross-validation result, $I = .11$). In the linear resubstitution summary, PDA classification accuracy rates

were 99.3% for therapy dropouts, 3.1% for intake dropouts, and 5.4% for completers. As for the linear cross-validation summary, accuracy rates were 98.6% for therapy dropouts, 0% for intake dropouts, and 3.6% for completers.

PDA provides information not provided in CART, namely, the proportion of individuals correctly classified into each group given that prior probabilities are proportional. Whereas one must be cautious when comparing results across types of analyses, one has a general idea of the correct classification-rates-per-group in the CART by examining such rates in PDA, because both analyses used proportional probabilities for group membership, both the CART and PDA produced a general "hit" rate of approximately 60%, and both classified the same individuals on the same variables. It may be that the prior probabilities are proportional for the multinomial logistic regression; however, the procedure is not specific on this point. The fact that all three procedures (multinomial logistic regression, PDA, CART) produced comparable classification results supports the idea that the multinomial regression procedure assumes that observed probabilities for group membership reflect population probabilities.

In summary, for the data set in question, it seems that 4 predictor variables are most useful for predicting client case disposition among the original set of 12 potential predictors: client age, annual income, perceived difficulty working with the client, and the GAF Scale score. Overall classification accuracy was approximately 60%, with the termination category therapy dropouts most accurately classified ($\geq 90\%$). The classification results were verified using three analytical procedures: multinomial logistic regression, PDA, and CART. Of the three procedures, the CART procedure provided the most readily interpretable results.

Discussion

In addition to the fact that classification procedures in general are data driven, one of the caveats regarding the use of classification procedures with unbalanced groups concerns the propensity for the determined classification rule to be biased—toward the larger group, in this case (Finch & Schneider, 2004). Thus, it is not surprising that the most accurate group classified in this study is by far the largest group, therapy dropouts. One may conclude, then, that the four predictors of termination types retained in the model, age, income, perceived client difficulty, and the GAF Scale, are most useful for determining clients who might prematurely terminate the counseling relationship beyond the intake session. The reader is cautioned to avoid using the predictive model outlined here for classification of intake dropouts and completers because correct classification of these two groups is worse than chance (see Table 3). Therefore, discussion chiefly concerns the use of the four-predictor model for classifying clients who select to end counseling beyond the initial session but prior to counselor-advised completion (therapy dropouts).

Given that the most accurately classified group is therapy dropouts, verification of the four potential predictors via multiple methods (nominal logistic regression, descriptive discriminant analysis, CART) lends strong support for the usefulness of these four predictors for determining membership in a specific termination type group: individuals who are likely to terminate before the end of treatment. Because of its ease in interpretation, the CART result will be the focus of this discussion.

The results of the CART procedure take identifying these four predictors a step further by providing a more detailed account than just a list of the variables themselves. The dendrogram nature of the CART results identifies a number of contingencies among the predictor variables, with the outermost variable being client age. For the data used in this study, clients 40.5 years or older were most likely to terminate early no matter their income level, perceived difficulty, or GAF Scale score. Therefore, age was the primary determinant of therapy noncompletion.

Following (and contingent on) client age, the next influential predictor of termination type was income, with perceived client difficulty being contingent on income: For individuals younger than 40.5 years who earned more than \$20,000 annually, perceived difficulty was not a predictor of termination type. Perceived client difficulty was a useful predictor for clients younger than 40.5 years who also earned less than \$20,000 per year. In this case, clients low in perceived difficulty were likely to terminate early. The contingency continues with the addition of the GAF Scale: Clients determined to be of moderate or high difficulty were likely to terminate early only if they also had a GAF Scale score < 49. Therefore, it is not enough to say that clients perceived as being more difficult would terminate prematurely; such a statement does not reflect the complex interrelatedness of the predictor variables. Indeed, clients perceived as more difficult were more likely to terminate early only if they were also functioning at lower levels as determined via GAF Scale scores.

An interesting finding here, one perhaps seemingly counter to Richmond's (1992) results, is that individuals perceived as low in difficulty were likely to terminate early. The reader should keep in mind the remainder of the contingency. A better means of phrasing is to say that the client who was younger than 40.5 years, who earned an annual income of less than \$20,000 per year, and who was low in difficulty was likely to terminate the counseling relationship early. The question of whether such a result contradicts Richmond's findings cannot be answered via examination of his discriminant analysis results, because discriminant analysis does not provide for examination and interpretation of all possible interactions (i.e., contingencies) among predictors. That is, one should be careful in making simple comparisons with other dropout predictors in the literature based on the results of CART, a procedure that allows for understanding complex interrelationships among predictors. Thus, although the first main finding

of this study is that age is the primary dropout predictor if clients are older than 40.5 years old, the second conclusion is that the four predictors form a complex relationship when clients are 40.5 years old or younger.

Consequently, although two variables (perceived difficulty working with the client and the GAF Scale) of the four-predictor model for predicting therapy dropouts were also predictive of dropout in Richmond's (1992) study (i.e., "uncooperative" client and GAF Scale score), and the third variable (income) has also been identified as a consistent dropout predictor in the literature (Wierzbicki & Pekarik, 1993), direct comparisons with the literature in terms of the direction of our findings are difficult to make. The same applies to the fourth dropout predictor (age) in our study, for which most of the literature shows a younger age to be associated with higher dropout rates. However, the literature on age as a predictor of dropout is mixed, and the findings are generally weak (Reis & Brown, 1999; Wierzbicki & Pekarik, 1993). Unlike Richmond's findings and those of the general dropout literature, the current study did not find educational level and gender as useful predictors of noncompletion of therapy. Prior treatment, referral source, employment status, number of children living with client, number of client problems, and case urgency were also not predictive of dropout in this study. Research findings in the general dropout literature about the first three predictors are mixed (Reis & Brown, 1999), although we are not aware of dropout studies that have studied the latter three predictors.

Implications for Clinical Practice

Potential implications of our findings center on clinical practice in similar settings. Counselors who see clients with similar demographics to this study can use these results to be alert about the potential outcome of their treatment and modify it accordingly. These findings could also be used for counselor training and client assignment to counselors. For example, clients older than 40 years could potentially drop out of treatment in this setting because of the relative young age and lack of experience of counselors in the training clinic. Although research on therapist experience as a predictor of client dropout is inconclusive (Reis & Brown, 1999), therapist's age and the match between client-therapist age or the client's perceived experience of the therapist could potentially affect dropout rates. For example, at least two studies have shown that therapists who are more than 10 years younger than their clients have worse outcomes compared with client-therapist dyads similar in age (Beck, 1988; Dembo, Ikle, & Ciarlo, 1983). Thus, assigning older clients to more experienced and older counselor trainees could be a potentially useful strategy to reduce counseling dropouts. Another useful strategy could be emphasizing training in the treatment of older clients (Zarit & Knight, 1996). Similarly, additional training and appropriate assignment to more experienced therapists could be used for younger, more impaired clients and clients with lower incomes. For example, clients with lower SES

may have different expectations for the length and focus of treatment, and counselors should tailor treatment to the specific characteristics, expectations, and concerns of this group (Reis & Brown, 1999; Smith, 2000). Furthermore, pretherapy training and role preparation interviews that address expectations from counseling and educate clients could potentially reduce dropout rates for clients perceived as difficult and with low SES (Garfield, 1994; Reis & Brown, 1999). In general, maximizing client–therapist similarity and perspective convergence has been suggested to reduce counseling dropouts (see reviews of relevant research and recommendations in Garfield, 1994, and Reis & Brown, 1999). Other recent lines of clinical research have supported the use of regular progress monitoring throughout treatment as a way to identify early nonresponders and potential dropouts and improve outcome (Lambert, 2005; Lambert et al., 2003).

The issue of termination rates and outcomes in the three termination groups in this study should also be noted. As reported, termination rates are consistent with those of studies from similar training settings (Renk & Dinger, 2002; Richmond, 1992; Ward & McCollum, 2005) and those from the general dropout literature (Garfield, 1994; Reis & Brown, 1999). Also, therapy noncompleters should not be necessarily equated with treatment failures (Garfield, 1994; Pekarik, 1992b). In a study with a partially overlapping sample from the same clinic, counselors of both therapy dropouts and completers reported substantial gains for their clients on posttreatment, single-item measures (Lampropoulos & Spengler, 2003). In that study, completers had better outcomes compared with therapy dropouts, a finding that supports the discriminability of the two groups. However, the reported treatment gains for therapy dropouts indicated that this group should not be considered as treatment failures. This is consistent with results from other studies that suggest considerable gains for clients who do not complete treatment but who attend a number of sessions (Cahill et al., 2003; Klein, Stone, Hicks, & Pritchard, 2003; Pekarik, 1983, 1992a; Ward & McCollum, 2005). For example, clients who dropped out had statistically significant symptom reduction in objective outcome measures in one study (Klein et al., 2003), and 70% of therapy noncompleters achieved reliable improvement in another study (Cahill et al., 2003). However, research also shows outcome superiority for therapy completers compared with those who drop out (Cahill et al., 2003; Pekarik, 1986; Ward & McCollum, 2005). Further research and clinical training is recommended to increase client retention in therapy, because it is associated with greater treatment benefits.

Last, the complex interactions found between client variables in predicting dropout categories in the CART may be useful in future research in differentiating further between subtypes of therapy dropouts. For example, there is preliminary research that shows that some clients may drop out of treatment primarily because they have improved enough in therapy, whereas others may drop out because of dissatisfaction with their therapy/therapist (Pekarik, 1992b). It is pos-

sible that some of the eight terminal nodes identified in CART reflect such different therapy dropout subtypes. For example, it can be reasonably hypothesized that younger clients (< 40.5 years old), with low annual income (< \$20,000), high difficulty to work with, and lower functioning (GAF Scale score < 49) are perhaps more likely to be therapy dropouts because of dissatisfaction. On the other hand, clients who are between 23.5 and 40.5 years old, with income more than \$20,000 per year, and higher functioning (GAF Scale score between 72.5 and 83.5) are perhaps more likely to be therapy dropouts because of improvement. Clinicians should be vigilant to identify such potential distinctions, which could be further elucidated in future research.

Strengths and Limitations

This study assessed for the first time several client variables to predict group membership in three types of treatment termination in a representative setting of graduate training in counseling/counseling psychology, using a large archival sample. Of the 12 client predictor variables studied, 3 (number of children living with client, number of client problems, and case urgency) have not been examined before in the dropout literature. Additional strengths of the study included the use of the most common and valid method (therapist judgment) to measure termination (Hatchett & Park, 2003; Pekarik, 1985; Wierzbicki & Pekarik, 1993), the use of complementary multivariate analyses that yielded converging results, and the use of a complex analysis (CART) to assess complex relationships between 4 predictor variables (client age, income, perceived difficulty, and level of functioning). Study limitations included the retrospective nature of the archival research design, which did not allow for the evaluation of any therapist variables, interpersonal dyadic variables (client–therapist), or client personality variables as predictors of dropout. Such variables have shown promising results and should be included in future prospective studies of counseling dropout (Garfield, 1994; Reis & Brown, 1999; Wierzbicki & Pekarik, 1993).

In conclusion, this archival study contributed to the dropout literature by assessing the predictive utility of certain client variables in a less studied setting (counseling training clinic). Dropout rates and predictors may vary in different clinical settings (Garfield, 1994; Reis & Brown, 1999) as a function of many client, therapist, and treatment variables. Therefore, it is advisable that clinical recommendations are based on data from comparable clinical environments. The findings of this study could be used with caution in similar settings, which should also study dropout predictors from their available databases in the spirit of clinically meaningful counseling research (Beutler & Howard, 1998; Sexton, Whiston, Bleuer, & Walz, 1997; Whiston, 1996).

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