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Attrition In Psychotherapy: A Survival Analysis

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Abstract

Attrition is a common problem in outpatient mental health care settings, and can be understood as situations in which clients end treatment before achieving a clinically significant response. This archival study used a longitudinal method to look at the nature of attrition in an outpatient clinic, utilizing data for 3,728 clients, using the *OQ 45.2*. A Cox regression proportional hazards model was used in order to better understand who is likely to attrit when considering: (1) demographic groups, (2) diagnostic categories, and (3) process variables (e.g. overall and recent symptom change), using hazard ratios. A pattern emerged, with younger clients and those reporting less education and lower incomes tending to be more likely to end treatment. Consistent with the large scale STAR*D treatment of depression study, clients with more social and economic challenges demonstrated more risk. Adults diagnosed with a substance or OCD-related disorder showed the most elevated risk. Clients who demonstrated overall improvement and, in particular, a recent status change were more likely to remain. Engagement strategies are discussed, with the goal of better supporting recovery. Findings suggest that attrition is something that can be anticipated, identified, and reduced.

Introduction

Attrition, defined broadly as ending treatment prior to optimal benefit, continues to be a significant problem in outpatient psychotherapy. A recent meta-analysis summarizing 669 studies and 83,834 clients pointed to attrition rates ranging from 18% when measured by a predetermined number of sessions to nearly 40% when measured by clinician report (Swift & Greenberg, 2012). Authors of the "Sequenced Treatment Alternatives to Relieve Depression," or STAR*D Report, a national, federally funded study with 4,041 participants noted this phenomenon (Warden, et al. 2009) and Corning & Malofeeva (2004) concluded "premature termination appears to be a relatively frequent occurrence with broad consequences" (p. 354).

The STAR*D study explored this problem particularly in relation to major depression. Regardless of demographics examined in STAR*D, remission rates for depressed adults were found to be lower for those who dropped out of treatment prematurely. This was demonstrated also by Curren, et al. (2002) where major depressive disorder was similarly associated with early termination from intensive outpatient substance abuse treatment in a Veterans Administration (VA) program for adult participants. This latter study specifically called for attention to early identification and management of depression and for more research into better understanding earlier versus later attrition as perhaps distinct phenomena.

Defining what constitutes attrition has been a challenge as well. However, Allison's (2010) survival analysis offers a relevant statistical approach. Corning & Malofeeva (2004) applied this method to psychotherapy termination, concluding, "Psychotherapy termination is a longitudinal process and, as such, its data are best represented longitudinally." (p. 355).

The following study sought to weigh in not only on prior, inconclusive findings regarding demographics that may be important in understanding attrition, but gave explicit attention to the strength of their relative contributions. It also gave attention to the potential role of *process variables* (e.g. recent status changes such as clinically reliable improvement or deterioration, defined as a clinically significant worsening of symptoms), using a Cox proportional hazards model of survival analysis. Authors such as Warden, et al. (2009) have spoken to the potential importance of such process variables, noting that a number of "potentially meaningful predictors, however, can or do vary over the course of therapy, for example, symptom level, relationship quality with therapist, medication adherence, ability to pay for sessions, and number of sessions already attended" (p. 355). This study was able to give attention to the potential role of some of these variables that may offer benefit to clinicians practicing in outpatient mental health settings. Similarly, sources such as Harvard University's Institute for Quantitative Social Science have pointed to the recent "movement of quantification" across disciplines (Shaw, 2014, p. 30) and to the importance of statistically and visually mapping larger data sets in this way.

Literature Review

Attrition

Dropping out of treatment, also referred to as "premature discontinuation" (Swift & Greenberg, 2012, p.547), "premature termination" (Corning & Malofeeva, 2004, p.354) or attrition, has been identified by current literature as a common occurrence that both introduces a significant barrier to the delivery of effective psychotherapy (Barrett, Chua, Crits-Christoph, Gibbons, & Thompson, 2008; Reis & Brown, 1999), and reduces the likelihood of recovery (Anderson & Lambert, 2001; Warden, et al., 2009). Additionally, it appears that attrition impacts more than client outcomes (Reis & Brown; Swift & Greenberg, 2012), as drop-out also

influences mental health agencies themselves, by way of underutilization (Swift & Greenberg) and by "wasting limited mental health resources" (Barrett, et al., p.248). Society as a whole is burdened by attrition as others in need are denied access to treatment (Barrett, et al.; Swift & Greenberg), and by submitting to the "continued impairment" (Swift & Greenberg, p.547) of its members.

In one of the earliest and more comprehensive studies surrounding attrition, Baekland & Lundwall (1975) sought to closely examine the "vexing" (p.738) predicament of attrition among clients who underwent a broad spectrum of treatments, including inpatient and outpatient therapy for chronic psychological and medical conditions. The authors estimated that between 20-57% of all clients across populations and settings discontinued treatment before receiving the benefits of an effective intervention (Barrett, et al., 2009; Swift & Greenberg, 2012). More recent studies surrounding premature discontinuation indicate that somewhere between 30-60% of clients terminate psychotherapy prematurely across settings, populations, and therapeutic modalities (Corning & Malofeeva, 2004; DuBrin & Zastowny, 1988; Reis & Bown, 1999; Romans, et al., 2009; Warden, et al., 2009; Wierzbicki & Pekarik, 1993). A recent meta-analysis (2012) revealed that therapists report 40% of clients discontinue psychotherapy prematurely, with dropout estimates at 17% in efficacy studies and 26% in effectiveness studies respectively (Swift & Greenberg, 2012).

Predicting Attrition

Difficulty in predicting who will attrit has been consistently reported in the literature (Barrett, et al., 2009; DuBrin & Zastowny, 1988; Reis & Brown, 1999). In their 1975 study, Baekland & Lundwall concluded that the probability of client dropout increased based on both

specific client demographics (younger, female, non-white, lower educational attainment, lower socioeconomic status), and *therapist characteristics* (less experienced, male, ethnocentric). However, due to the large scope and "unusually ambitious" (Garfield, 1977, p. 306) nature of Baekland & Lundwall's study (which included various populations, settings, practitioners, and treatment modalities), current research has been critical of the broad and varied conclusions that ultimately lack replication. Several studies focusing on attrition have built upon the work of Baekland & Lundwall by focusing on the demographic characteristics of clients related to premature discontinuation of psychotherapy (e.g. Barett, et al., DuBrin & Zastowny, Swift & Greenberg, 2012; Wierzbicki & Pekarik, 1993).

Demographic variables such as socioeconomic status, race (cultural background), and educational attainment have been historically associated with client attrition rates (Buttell, 2012; Warden, et al., 2009; Wierzbicki & Pekarik, 1993), while other characteristics such as age (Edlund, Wang, Berglund, Katz, Lin, and Kessler, 2002; Reis & Brown, 1999; Thormählen,Weinryb, Noren, Vinnars & Bagedahl-Strindlund, 2010), gender (Reis & Brown, 1999), and treatment modality have produced less consistent findings (Garfield, 1977; Barrett, et al., 2009).

Education. Increased educational attainment is negatively correlated with rates of attrition as demonstrated in several independent studies. Buttell (2012) sought to identify differences between participants who completed a mandatory batterer intervention program, and those who prematurely dropped out. Results indicated that higher levels of education acted as a significant protective factor, which ultimately predicted program completion. Similarly, using data from 125 independent attrition studies, Wierzbicki & Pekarik (1993) completed two analyses in order to examine both the relationship between attrition rate and client demographic characteristics, and

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the effect size of the relationship. Authors found across studies, the mean rate of attrition was near 50% and that increased attrition risk was associated with lower levels of education as well as minority and low socioeconomic status, although the effect size was described by the authors as "only of moderate magnitude" (p.193). Three client demographics yielded a significant effect size, including client age (with younger clients tending to drop out of therapy more often than did older clients) marital status (single clients were more likely than their married counterparts to dropout), and gender (females dropping out of treatment more often than males (Wierzbicki & Pekarik).

Age Although findings have been mixed, younger adults appear more likely than their older adults to attrit. Warden, et al. (2009) tracked client progress in an outpatient therapy program for depression (STAR*D), while aiming to identify predictors of premature discontinuation, and assessed whether attrition predictors varied across income levels. After analyzing data from approximately 3,500 participants, younger age alone "independently predicted greater likelihood of attrition" for all income levels (p.626). Edlund, et al. (2002) used survival analysis to examine data collected in in-person interviews with over 1,000 individuals suffering from "self-defined problems with 'emotions, nerves, mental health, or use of alcohol or drugs' at some time during the 12 months preceding their interview" (p.846). Thormählen, et al. (2010) similarly found that young adults were more likely than older adults to drop out of treatment.

Swift & Greenberg (2012) combined data from nearly 700 independent attrition studies, including 83,834 clients, in order to explore differences between treatment completers and drop outs, and to identify predictors of attrition. Their meta-analysis revealed that individuals who dropped out of and those who completed treatment differed in terms of educational attainment,

but not in gender, marital status, or race. Meta-regression within the study "indicated that both gender and marital status predicted therapy drop out, but race, employment, and education did not" (p.556).

The mixed conclusions regarding demographic predictors of attrition invite additional attention and research as they have been primarily explained by the literature as a result of conflicting methodologies, various existing operational definitions of psychotherapy attrition, (Barrett et al., 2009; Garfield, 1977; Swift & Greenberg, 2012; Wierzbicki & Pekarik, 1993) and the repeated application of "suboptimal analytic techniques" (Corning & Malofeeva, 2004, p.354).

Dose Response

Several researchers (Barrett, et al., 2009; Hatchett & Park, 2003; Swift & Greenberg, 2012) have attributed the conflicting findings in independent attrition studies to a divergence among scholars in the ways they have operationalized the construct of attrition. One popular model used to understand the construct of attrition defines individuals who prematurely discontinue therapy as those clients who attend less than a specified number of therapeutic sessions (Hansen, Lambert & Forman, 2002; Hatchett & Park; Swift & Greenberg). This model is based on the theory of the *dose-effect relationship*, wherein the *dose* is calculated by the number of sessions attended by the client, and the *effect* is measured using the percentage of clients with improved outcomes, which can also be understood as "the normalized probability of improvement for one patient" (Howard, Kopta, Krause, & Orlinsky, 1986, p.1009). "Dose-response methods have been widely adopted in medical research and have been adapted to psychotherapy research" more recently (Hansen, Lambert & Forman, 2002, p. 331). The dose-effect relationship suggests that a "minimum number of sessions are required for clients to show

improvement in therapy" (Swift & Greenberg, p.548). It is commonly assumed that more therapy is better, and after examining 156 findings spanning the last 65 years, 100 "indicated a positive relationships between therapy duration and outcome" (Anderson & Lambert, 2001).

Despite the finding that increased therapeutic treatment often yields superior outcomes, the number of sessions required for clients to benefit has been contested. In response to the lack of evidence-based direction detailing the number of treatment sessions required to achieve clinically significant change, several researchers have sought to quantify the amount of therapy needed to produce positive and meaningful client outcomes. Using data from over 850 clients suffering mostly from depression and anxiety, Kopta, Howard, Lowry, & Beutler (1994) reported that upon completion of 11th the therapeutic session, 50% of clients reported achieving clinically significant change. It was not until after the 58th session that 75% of clients reached the same status. Similarly, Kadera et al. (1996) studied a smaller sample of clients (N=64) with comparable diagnoses (depression, anxiety), and reported that clinically significant change was attained in 50% of clients attending 16 sessions, and 75% of clients made meaningful progress by session 26.

In Anderson and Lambert's 2001 study, questions surrounded not only establishing the number of sessions required for clinically significant change, but also the number necessary for the achievement of *reliable and lasting change*, which was defined by the authors as the point at which "[clients have] met clinically significant change at every subsequent session" (p.878). Researchers utilized a self-report measure, the Outcome Questionnaire (OQ-45) to track, longitudinally, participants' (N=75) level of symptomatic distress, interpersonal functioning, and role performance over the course of psychotherapy. Researchers concluded that before 50% of the clients were able to attain meaningful therapeutic change, 11 sessions of psychotherapy were

required, and that the median number of sessions needed to achieve *lasting (reliable) change* within the sample was 9 (Anderson & Lambert, 2001).

Lambert (2007) later went on to collect data from independent clinical samples including nearly 6,000 clients who "received routine clinical care" (p.3) in order to further explore the dose-response relationship theory within psychotherapy. Similar to previous research, Lambert utilized data from studies that tracked client progress via the OQ 45 at each session. Following the combination of data sets, he concluded that 11-21 sessions were needed for 50% of clients to reach clinically significant change, and that $25 - 45$ sessions were required in order for 75% to reach this point (Lambert, 2007), supporting previous findings. However, these studies included predominately clients who were suffering from anxiety and depression, and researchers have noted that "highly distressed outpatient clientele need more than the 11-16 sessions that may suffice for a large portion of less-disturbed clientele… [and thus] those who are suffering the most, and are in most need of help, require at least 20 sessions to have a good chance of recovering" (Anderson & Lambert, 2001, p.885).

A consensus finding in the research on the dose-effect relationship seems to suggest that a minimum of 11 sessions are required for one-half of clients to show lasting and meaningful change (Anderson & Lambert, 2001; Barrett, et al., 2009; Hansen, Lambert & Forman; 2002, Lambert, 2007). Therefore, it may seem reasonable to assume that consumers attend at least as many sessions as are needed for improvement. However, Gibbons, et al. (2011) examined actual psychotherapy utilization and discovered this is not necessarily the case. Participants in the study included two cohorts of clients (N=1,479 in 1993 and N=5,912 In 2003) seeking treatment for major depressive disorder in the Philadelphia community mental health system over a span of ten years. Using descriptive statistics to analyze service claims records, researchers discerned that

the "modal number of sessions attended for either psychotherapy or medication treatment was only *one session*… [and] the median number of psychotherapy sessions remained stable at five sessions across the decade" (Gibbons, et al., p.6). Other studies (Duncan, 2010) similarly suggest that clients often come late to treatment and do not, on average, attend enough sessions, resulting in suboptimal treatment. In light of these findings, a major concern emerges from existing literature: clients often attend an insufficient number of sessions in comparison to the number of sessions required for clinically reliable change or for recovery.

Clients discontinue psychotherapy a variety of reasons. Some terminate prematurely because of dissatisfaction, because they have recovered, or due to an exhaustion of third-part payment assistance (Anderson & Lambert, 2001; Gibbons, et al., 2011; DuBrin & Zastowny, 1988;). Over the last two decades, "changes in the organization and financing of services for all mental disorders…[has] resulted in limits on the number of visits and the amount of reimbursement per visit for psychotherapeutic services" (Gibbons, et al., 2011, p.2). Based on the prevailing assumption that clients can realize positive outcomes in only a few sessions (Lambert, 2007), reimbursement for psychological treatment has commonly been capped at four to eight sessions (Lambert, 2007), although the positive outcomes demonstrated in "clinical trial treatments that [clinicians] are attempting to duplicate were based on 12-14 sessions, not four to eight" (Lambert, 2007, p.3). In effect, it can be assumed that many clients who seek psychotherapy do not obtain the therapeutic "dosage" necessary for beneficial change, and thus the likelihood of positive outcomes is threatened. Difficulties in closing the gap between research and policy here have been widely recognized (Hansen, Lambert & Forman, 2002; Layard & Clark, 2015).

Method

Procedure

   This study utilized a secondary data analysis of archival data, looking at the course of

psychotherapy for 3,728 clients in a community mental health clinic. In this way the study

utilized an intent to treat design, looking at psychotherapy as it naturally occurred in this

treatment setting without prescribing its duration in advance. Inclusion criteria consisted of all

clients who had one or more Outcome Questionnaire ("OQ") score on record between 1999 and

2013. All participants had at least an initial baseline OQ from their first intake session. The OQ

was administered quarterly, at approximately three month intervals thereafter, as long as clients

remained in treatment. Status variables were created to mark participants' final scores as their

point of attrition. SAS system version 9.3 was used in order to carry out a Cox regression

proportional hazards survival analysis to look broadly at the nature of attrition, at what

demographics and diagnostic categories moderated outcome, and at process variables such as

session frequency and recent changes in symptomology as status variables.

Setting & Intervention

   The data were gathered over the course of fourteen years (from 1999 to 2013) at a

Midwestern outpatient community mental health clinic, founded in the 1950's. This clinic sees

an average of over 700 clients annually, is an American Psychological Association (APA)

accredited training site, and at the time the data were queried represented treatments carried out

by 16 full time therapists. The clinic hosts approximately 12 graduate trainees annually, who also

see clients, representing the fields of psychology, social work, and psychiatry. Staff therapists at

the clinic are highly trained, committed to, and skilled in the administration of psychotherapy.

Many of the staff therapists supervise trainees, who include graduate level students in both

psychology and in clinical social work. Third and fourth year psychiatric residents (G3 and G4) also train at this clinic under the supervision of three staff psychiatrists. The clinic is relationally focused, historically psychodynamic, and increasingly integrative in its practice orientation. Both staff and trainees participate in weekly interdisciplinary teams to review and to consult on cases. Staff and trainees additionally receive individual supervision in relation to their work. The clinic has three primary foci: offering quality care for uninsured and underinsured clients, training graduate student and community practitioners, and conducting research. The clinic has had a formal research program for over twenty years and collaborates in this capacity with university-based researchers, two of whom are authors of this study.

The clinic provides weekly, interdisciplinary supervision, where relationally-based, integrative psychotherapy is the common theoretical framework. At least one psychiatrist is present at each of these team meetings. Administrators at this clinic are licensed clinicians who see clients in addition to their administrative roles. The clinic is strongly interdisciplinary with psychiatrists, psychologists, and clinical social workers consulting in relation to shared clients. Clients are considered *clinic* clients and psychiatrists are on site, providing consultation and psychotherapy in addition to medication management. The treatment, though not manualized, is carried out with a large degree of shared treatment orientation (evidenced in individual interviews with all staff therapists and a sample of interns in 2010) with weekly sessions as the clinic's standard of care. This approach is akin to that laid out in Summers & Barber's 2009 book, *Psychodynamic therapy: A guide to evidence-based practice.* While the treatment is not formally manualized, studies such as those by Vinnars, et al. have called into question whether this is necessary for the purposes of researching an intervention. Vinnars, et al. (2005), for instance, found comparable outcomes between manualized and non-manualized treatments in a

community mental health setting with many similarities to this one. We were most interested in understanding outcomes associated with practice as it occurred, naturally, in this setting.

Measure- The Outcome Questionnaire (OQ 45.2)

The OQ 45.2 (*Outcome Questionnaire)* is a 45 item client-administered adult questionnaire developed by Lambert, et al. (2004) specifically to measure outcomes particularly relevant to adult psychotherapy. Its use has since become widespread, now having been studied with over 100,000 people. Each item utilizes a five point Likert scale. The OQ provides both an overall score (ranging from 0 – 180) as well as three subscales, which measure symptom distress, interpersonal relations, and social role functioning. Lower scores represent less severity and higher scores represent more psychiatric distress, with 63 representing a clinical cut-off and measure of caseness. Clients scoring at or above 63 are seen as warranting treatment in contrast to community norm scores, which average 45. The measure has strong psychometric properties and has been applied to psychiatrically well community populations, to students in college counseling centers, with EAP clients, clients in outpatient mental health centers, and with psychiatric inpatients. It has also been tested for reliability across gender, race, and with various ethnicities. Its alpha coefficients for internal consistency range between .84 and .93 for OQ total scores. Its test-retest reliability is .84 for OQ Total scores. The OQ is able to speak not only to recovery (a score in the range of community norms) but to clinically reliable change (RCI) as well, defined as a *decrease* of 14 or more points in total score, and to deterioration, defined as a 14 or greater point *increase* in total score.

Survival Analysis

The Cox regression model was selected as the method of survival analysis. This technique has two advantages for present purposes. The first is its relative flexibility as a semi-parametric model that does not require a choice of particular probability distribution of survival

times. Termination times in psychotherapy do not suggest an a priori probability function; therefore a nonparametric model is preferred in order to fit the data more closely even at the cost of increased error variance which is the essential cost of semi- or nonparametric methods.

The second advantage of the Cox regression model is that it can incorporate time-varying covariates. While other techniques such as Kaplan-Meier can estimate termination patterns by subgroups based on fixed attributes of patients (such as education or diagnosis), Cox regression can incorporate predictor variables that change over time. In this paper the researchers describe an approach where a client's long and short term symptom changes during the course of psychotherapy are identified as potential predictors of the likelihood of termination at a given time. These risk indicators vary in intensity over the course of therapy, and thus are referred to as time-varying, or time-dependent covariates.

A final methodological decision involved the censoring of values. The data for this study were collected from all client records between October, 1999, and December, 2013. This data set included a number of clients who had terminated over the last decade, but also included a subset of clients who were still in treatment at the time of data collection and must not be counted as terminated. Thus, a censoring flag was set for clients who had a valid OQ-45 assessment on file from September 2012 through the date of data collection. This is referred to as right censoring. It is used to protect the accuracy of the parameter estimates for those whose outcome is not yet known. In addition, the EFRON method of tie-breaking was used as recommended by Allison (2010). The SAS® System version 9.3 software PROC PHREG was used in the analysis.

The following model was chosen:

Equation 1.

$$h_i(t) = \alpha(t)e^{\beta_1 x_{i1} + \beta_2 x_{i2}(t) + \cdots + \beta_{1k} x_{ik}(t)}$$

This says that the hazard h of termination for person i at time t (t is session number) is a product of some base probability function $\alpha(t)$ which has no particular parametric form, e.g., exponential or Gompertz, times the exponential of a linear combination of explanatory variables, some of which can be functions of time, as seen in predictor variable x$_2$ which is represented as $\beta_2 x_{i2}(t)$.

The hazard of termination is the odds ratio of termination relative to survival. For example, the hazard ratio of 1.5 means that a client with a particular configuration of covariates is 1.5 more likely to terminate treatment at time t compared to other clients who do not share this particular configuration. The hazard ratio for a client dropping out at time 2, for instance, might depend on marital status, as well as the magnitude of symptom change experienced recently.

The Cox regression model estimates coefficients for this model by taking the logarithm of equation 1 to make a linear model:

Equation 2.

$$\log h_i(t) = \alpha(t) + \beta_1 x_{i1} + \beta_2 x_{i2}(t) + \cdots + \beta_{1k} x_{ik}(t)$$

After converting the model in this way, it is possible to understand the results by analogy with multiple regression models. The dependent variable is the log of the odds of termination at treatment session number t. The covariates of the model are:

$\alpha(t)$: The Intercept term, the expected log of the odds of termination without respect to any of the covariates, I,e., all other things being equal.

βx: The set of fixed covariates to predict termination included

(1) demographic factors such as education, ethnicity, relationship status, and gender.

(2) diagnostic factors including depression, anxiety, OCD, trauma, and substance related

disorders

βx(t): The set of time-varying covariates to predict termination based on local change in status

in time included:

(1) The change in OQ-45 total score from the previous assessment to the most current

assessment on record

(2) The cumulative change in the OQ-44 total score from intake to the most current

assessment on record

A first stage model entered all of the proposed covariates in the model to see which, if any,

predicted termination above and beyond the level of the baseline termination risk.

Time Varying Covariates

There are four time-varying covariates in the research model.

Long Term OQ Change. Long term OQ change is the cumulative change in OQ status from the

beginning of treatment to the present time. It is the current OQ-45 total score minus the intake

score. If a client makes gains over time, this number will be negative because lower scores on the

OQ-45 represent less symptom severity. A large negative number over the course of treatment

would indicate that symptom severity is decreasing. This variable is thought to capture sustained,

enduring change.

Short Term OQ Change. This metric is similar to the previous one except that it is localized in its

duration. It is the change in OQ-45 score since the previous OQ-45 measure. Thus, a client could

have both a significant long term OQ change, showing long lasting improvement that the client

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retains, but also a short term deterioration in symptoms, resulting in an increase in the short term score. This variable is thought to capture brief, recent, and transient change.

Surge. This is an improvement of at least 10 points over the previous OQ-45 measurement. It is meant to capture a clinically significant movement in a short time. It should be noted that the researchers did not use the OQ's normative "14 points" reliable change index (RCI) as published in the OQ-45 *Scoring Manual*. Instead, we used the local sample to estimate the reliability and standard deviation, and computed a local reliable change threshold, which was 10 points.

Relapse. The opposite of a surge is a deterioration of at least 10 points on the OQ-45 since the immediately preceding OQ-45 score. It is meant to suggest an abrupt, clinically meaningful worsening, which is clinically significant even in the context of significant long term gain. We sought to differentiate this event from either short or long term OQ change.

Power Analysis

Because a Cox proportional hazard regression function is not a fully parametric model, statistical power is difficult to estimate. Some authors such as Castelloe (2000) argue that it is necessary to use computer simulation to determine statistical power. A model offered by Schoenfeld (1983) suggests that the minimum sample size for comparing the survival curves of two different groups can be determined using the normal distribution approximation. Using this approximation shows that 90% statistical power is achieved in subgroup comparisons of hazard rates with a sample size of around 800. The current study has a much larger size and therefore a lack of statistical power was not a significant threat.

Results

Demographics

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The sample consisted of 3,728 clients, predominantly female (63%, n = 2,345) with an average age of 38.5 (SD = 13.3). About 15% of the sample was young (age < 25) while another 7% was older (age > 60). The typical age could be characterized as middle adult. A plurality of the sample had an unspecified ethnic status (47%, n = 1,469), followed by Caucasian (39%, n = 1,474) and Hispanic (7%, n = 253). There were small numbers of African Americans (4%, n = 139), Multi-Racial (1%, n = 54), Asian/Pacific Islander (1%, n = 49), and Native American/Alaskan (<1%, n = 21) participants. Relationship status was also mostly unspecified (46%, n = 1,713) with the majority of known status being single (26%, n = 989), followed by married (16%, n = 597), divorced (6%, n = 226), long-term civil union (4%, n = 142), separated (1%, n = 37) and widowed (<1%, n = 24). Educational status for most was unspecified (47%, n = 1,748), but the majority of those for whom data were available were college educated (23%, n = 856), followed by high school (14%, n = 527), graduate school (10%, n = 363) and two-year college or vocational school (3%, n = 133). In keeping with national norms, the mean baseline OQ score for clients in this sample was 75.33 (SD = 25.59).

Table 1 below shows the effects of demographic variables on the hazard function. The B coefficients are those referred to in Equation 2 above. The significance of the coefficients is computed using the Wald statistic, and the p-values show whether the coefficient differs from 0 as posited in the null hypothesis. It is evident that several levels of the demographic factors are statistically significant. The Hazard coefficient *h* results from taking the anti-log of the B coefficient. It is directly analogous to an effect size in ANOVA and regression models. The hazard coefficient can be interpreted as an odds ratio. It is the increase or decrease in likelihood of drop out for clients having the demographic characteristic. This number equals 1 where the odds are even that members of this class will attrit. When the coefficient is greater than one, it

means the class is more likely to drop out of treatment over time, and when the coefficient is less than one, it means the class is less likely to attrit, all other things being equal.

As an example, the effect of "less than high school education" is significant ($B = 1.18$, *Wald* $(1) = 88.11$, $p < .001$, $h = 3.28$), indicating that a client reporting less than high school education was 3.28 times more likely to drop out at any given time compared to the baseline survival rate. The general trend in this data set is that less educated clients had a higher risk of dropout, while those with some college or higher education have a lower risk. This group attended an average number of 12 sessions (SD = 40.99).

Race, or ethnic categories showed another clear pattern, in that Caucasians ($B = -.46$, Wald $(1) = 35.72$, $p < .001$, $h = .63$) and Hispanics ($B = -.45$, *Wald* $(1) = 24.80$, $p < .001$, $h = .64$) were more likely to remain in treatment. A way to interpret hazard ratios less than 1.0 is to take h − 1, which for Hispanics is .64-1 = -.36 and take the absolute value times 100 for a percentage, giving 36%. Hispanics were 36% more likely to remain in treatment than other racial categories, with a mean number of 25 sessions (SD = 57.53).

The age demographic analysis demonstrated a fairly clear pattern in which clients over 30 and less than 50 years old were more likely to remain in treatment. The age category 40-49 was significant in this sample ($B = -.695$, *Wald* $(1) = 7.5$, $p = .006$, $h = .50$), with 1.50 suggesting that middle aged adults are 50% more likely to remain in treatment than older and much younger counterparts. This age group had a mean of 25 sessions (SD = 53.73).

Table 1.

Demographic Variable Effects

Parameter	Level	df	B	SE	Wald	p	Hazard	Interpretation
Education	Less than High School	1	1.188	0.13	88.11	<.0001	3.28	
Education	Trade/Vocational	1	0.454	0.12	14.87	0.000	1.58	*less educated have greater dropout risk*
Education	High School	1	0.288	0.08	11.69	0.001	1.33	
Education	Graduate School	1	-0.083	0.09	0.80	0.371	0.92	*not significant*
Education	College	1	-0.233	0.08	8.37	0.004	0.79	*college educated have decreased dropout risk*
Race	Asian/Pacific Is Native	1	0.342	0.17	4.20	0.041	1.41	*Asian at greater risk of dropout*
Race	American/Alaskan	1	-0.051	0.24	0.04	0.834	0.95	*not significant*
Race	African American	1	-0.107	0.11	0.89	0.344	0.90	*not significant*
Race	Hispanic	1	-0.450	0.10	20.48	<.0001	0.64	
Race	Caucasian/White	1	-0.459	0.08	35.72	<.0001	0.63	*ethnic groups likely to remain in treatment*
Race	Multi-racial	1	-0.593	0.17	12.32	0.000	0.55	
Age	Less than 18	1	0.118	0.33	0.13	0.720	1.13	*not significant*
Age	18 to 29	1	-0.203	0.25	0.64	0.422	0.82	*not significant*
Age	Over 60	1	-0.366	0.26	1.97	0.160	0.69	*not significant*
Age	30 to 39	1	-0.510	0.25	4.06	0.044	0.60	
Age	50 to 59	1	-0.640	0.26	6.26	0.012	0.53	*adults over age 30 tend to remain in treatment*
Age	40 to 49	1	-0.695	0.25	7.50	0.006	0.50	

Diagnostic Categories

Specific diagnostic categories were well represented, with depression and anxiety being common among the sample, each with around 10-15% frequency, depending on the criteria used (DSM versus therapist designation). There was also a relatively large subgroup who were admitted for trauma and stress related conditions (4%, n = 137).

All of the diagnostic categories shown in Table 2 below were statistically significant, meaning that all of them increased or decreased the risk of attrition over time. OCD related disorders appeared to be at a particularly high-risk for drop out ($B = 2.12$, $Wald(1) = 37.98$, $p < .0001$ $h = 8.32$). Clients within this cluster were over eight times more likely to drop out of treatment compared to the baseline survival curve, with a mean of only 2 sessions (SD = 7.00). Hazard coefficients this large might be influenced by having a small number of clients in this subcategory (n = 25).

Those with substance use as a secondary diagnosis ($B = 1.14$, $Wald(1) = 6.43$, $p = .011$ $h = 3.13$) and anxiety disorders ($B = .39$, $Wald(1) = 4.53$, $p < .033$ $h = 1.48$) similarly constituted higher risk groups. An important qualifier is that anxiety disorders as defined by DSM-5 criteria actually constituted a better prognosis for remaining in treatment ($B = -.66$, $Wald(1) = 47.49$, $p < .0001$ $h = .52$) than when the analysis used DSM-IV criteria.

Depressive disorders ($B = -.933$, $Wald(1) = 213.57$, $p < .0001$ $h = .39$) and DSM-IV personality disorder as a secondary diagnosis ($B = -.65$, $Wald(1) = 6.78$, $p < .009$ $h = .52$) appeared to improve the probability of remaining in treatment. The mean number of sessions for clients in each of these categories is represented in summary form on Table 4.

Table 2.

Diagnostic Covariates

Parameter	df	B	SE	Wald	p	Hazard	Interpretation
OCD Related SubstanceDisorder	1	2.119	0.34	37.98	<.0001	8.32	*very large risk of dropout but small n*
Secondary	1	1.141	0.45	6.43	0.011	3.13	*very large risk of dropout but small n*
AnxietyDisorder DSM IV	1	0.391	0.18	4.53	0.033	1.48	*increased risk for this definition of anxiety*
AnxietyDisorder DSM5	1	-0.662	0.10	47.49	<.0001	0.52	*decreased risk for this definition of anxiety*
Depressive Disorder DSM4	1	-0.933	0.06	213.57	<.0001	0.39	
Personality Disorder							*Good candidates for long term therapy*
Secondary	1	-0.648	0.25	6.78	0.009	0.52	

Process Variables

OQ-45 Measures. The number of OQ-45 assessments in the sample ranged from 1 to 27. The measure was administered approximately quarterly for the duration of treatment. The modal number of OQ 45 assessments was one, meaning that a majority (56%, n = 2,094), terminated treatment between the first and second OQ administration. Of those who continued, many more ended by the time of the third OQ-45 assessment (26%, n = 954). The remaining participants continued in treatment for longer term psychotherapy.

Number of Sessions. The unit of time in this study was the treatment session. The question posed by the researchers was whether the number of sessions until termination was predicted by demographic, diagnostic, or factors related to client progress. The cumulative number of sessions was established for each client. As noted above, most clients ended during the first three months of treatment. The mean number of sessions was 21.27 (SD = 51.85), but again this distribution is skewed by the large number of clients discontinuing during the first three months of treatment. A separate analysis of the distribution for only those who continued in treatment beyond the first quarter showed that for the 1,588 clients who continued, the mean number of sessions was 49.89 (SD = 69.65, 50th percentile = 24, 75th percentile = 57, 90th percentile = 125, 99th percentile = 360).

One way to define the attrition rate is as the proportion of clients who attrited before the average number of sessions. Using only those who continued in treatment at least until the second OQ 45.2 administration, the average number of sessions was 50. Of these clients, 70.4% (n = 1,118) ended before the mean number of sessions.

Table 3 below shows the effects of the "process variables," meaning the factors that change with time, and possibly related to the treatment process itself. These are what Equation 2 referred to as time varying covariates. They are the primary reason that the Cox proportional hazard model was employed.

Long term OQ change was statistically significant ($B = .012$, $Wald(1) = 91.41$, $p < .0001$ $h = 1.01$). It would seem that the hazard coefficient is ineffectual, that an increase in long term OQ change improves retention by a factor of a mere 1.01 to 1.0. However, this factor applies to each point in OQ improvement. A client who improved by 20 points has an odds-ratio of 1.27 to 1.0, meaning that they are 1.27 times as likely to terminate treatment compared to a baseline termination rate. A client who improved by 65 points is over twice as likely to terminate treatment.

Short term OQ change was also statistically significant ($B = -.013$, $Wald(1) = 20.94$, $p < .0001$ $h = .99$). This coefficient indicates that a client who improved slightly between OQ measurements is slightly more likely to remain in treatment. A person who improved by 5 points has a hazard coefficient of .94 meaning that they are slightly more likely to remain in treatment.

Both a clinically significant surge ($B = -.81$, $Wald(1) = 98.24$, $p < .0001$ $h = .44$) and a clinically significant relapse ($B = -.95$, $Wald(1) = 97.16$, $p < .0001$ $h = .39$) increased the likelihood of remaining in treatment. H coefficients less than 1 mean retention so that a client who experienced a surge (improvement) was 56% more likely to return for treatment than baseline counterparts. A client who experienced a relapse was 61% more likely to return.

Table 3.
Time Varying
Covariates

Parameter	Level	df	B	SE	Wald	p	Hazard	Interpretation
Long term OQ change	positive = lacking progress	1	0.012	0.00	91.41	<.0001	1.01	*long term deterioration increases dropout*
Short term OQ change	positive = symptom deterioration	1	-0.013	0.00	20.94	<.0001	0.99	*short term deterioration increases continuation*
surge = +1 RC	> 10 pt symptom improvement OQ-45	1	-0.812	0.08	98.24	<.0001	0.44	*significant change in OQ -- better or worse -- increases*
relapse = -1 RC	> 10 pt deterioration OQ-45	1	-0.951	0.10	97.16	<.0001	0.39	*continuation*

RC was computed to be 10 points for this sample using local test-retest reliability of
the OQ 45.2

Table 4. Mean OQ 45.2 Scores at Intake and at Termination		Baseline OQ			Number of Sessions			Termination OQ			OQ Post-Pre
		M	SD	N	M	SD	N	M	SD	N	Change
Education	College	74.29	23.22	850	32.37	68.79	847	68.93	23.82	836	-5.36
	Graduate School	67.65	22.61	357	30.81	57.09	355	61.88	22.36	351	-5.77
	High School	82.58	25.17	522	19.04	51.54	520	77.82	27.10	516	-4.76
	Less than High School	83.48	25.92	100	12.11	40.99	100	80.85	26.93	99	-2.63
	Trade/Vocational School	76.59	26.97	133	10.80	24.89	131	74.93	27.75	132	-1.66
	Unknown	74.68	26.64	1735	15.77	40.73	1697	70.32	27.44	1720	-4.35
Race	African American	85.80	25.58	138	13.09	36.08	138	83.15	27.70	137	-2.65
	Asian/Pacific Islander	82.61	28.73	49	14.16	42.04	49	79.04	31.18	48	-3.57
	Caucasian/White	75.06	24.00	1459	29.22	62.72	1452	69.75	24.98	1438	-5.31
	Hispanic	74.35	25.03	252	24.71	57.53	250	70.70	24.81	244	-3.65
	Multi-racial	83.19	20.73	54	30.11	100.97	54	80.33	20.51	54	-2.85
	Native American/Alaskan	75.81	26.93	21	25.57	80.39	21	73.71	29.29	21	-2.10
	Unknown	74.41	26.75	1724	14.46	35.77	1686	69.94	27.50	1712	-4.47
Age	Less than 18	66.13	20.27	24	9.00	29.38	24	63.17	20.04	23	-2.95
	18 to 29	78.26	24.70	1153	16.73	46.59	1139	72.45	26.48	1147	-5.82
	30 to 39	75.05	25.80	1003	22.74	56.63	994	70.63	26.88	990	-4.41
	40 to 49	75.11	25.81	770	24.63	53.73	755	71.84	25.81	760	-3.27
	50 to 59	75.35	26.22	495	25.94	54.57	490	70.47	26.47	487	-4.88
	Unknown	70.72	24.61	18	4.81	19.25	16	72.39	25.86	18	1.67
	Over 60	64.09	24.18	234	18.91	43.77	232	59.64	25.06	229	-4.45
OCDRelated	NO	75.34	25.59	3688	21.32	51.90	3641	70.70	26.49	3645	-4.64
	YES	70.33	26.19	9	2.33	7.00	9	71.22	26.46	9	0.89
AnxietyDisorder	NO	75.34	25.59	3636	21.35	52.04	3591	70.65	26.52	3594	-4.69
	YES	74.77	25.76	61	16.59	38.56	59	73.62	23.86	60	-1.15
DSMIVAnxietyDisorder	NO	75.20	25.74	3465	20.68	50.96	3419	70.51	26.63	3424	-4.69
	YES	77.27	23.05	232	30.04	63.06	231	73.53	23.99	230	-3.74
DepressiveDisorder	NO	74.21	25.68	3260	16.93	41.01	3213	69.58	26.52	3222	-4.63
	YES	83.71	23.25	437	53.23	94.57	437	79.06	24.64	432	-4.65
DSMIVpersonalitysecondary	NO	75.31	25.59	3667	20.82	50.30	3620	70.62	26.52	3623	-4.69
	YES	78.03	25.86	30	75.57	139.26	30	80.52	19.23	31	2.48

SubstanceDisorder	NO	75.36	25.58	3691	21.29	51.88	3644	70.73	26.48	3648	-4.63
	YES	59.50	28.20	6	8.00	18.63	6	55.17	27.47	6	-4.33
TOTAL	Total	75.33	25.59	3697	21.27	51.85	3650	70.70	26.48	3654	-4.63

Discussion

Summary of findings:

Results suggest that a number of demographics, diagnostic categories, and factors related to client progress (i.e. process variables treated as time-dependent covariates) were associated with clients ending treatment. Demographics that increased the risk of ending in a statistically significant way included: participants reporting less than high school, high school, or trade/vocational schooling as the highest level of education achieved. Participants reporting college or graduate school education were more likely to continue in treatment. Gender did not emerge as a significant variable in predicting attrition. Those identifying as Hispanic, African American, Caucasian, or multi-racial were the most likely to continue in treatment. Among these groups, Caucasian, Hispanic, and multi-racial clients achieved statistically significant protection against ending. Those identifying as Asian/Pacific Islander were more likely to attrit. The latter was the only group to demonstrate statistical significance in terms of increased risk when looking at race and ethnicity. When examining age, two categories stood out as statistically important: adolescents (those under age 18) were more likely to attrit, and the age category 30 – 39 emerged as an important "cut point" whereby clients older than 30 were more likely to continue in treatment. Older adult clients (those 60 and older) were similarly more likely to remain in treatment than those under 60.

A number of diagnostic categories emerged as significant as well. Participants with unipolar depressive and personality disorders emerged as good candidates for longer-term psychotherapy (were more likely to remain in treatment), while those diagnosed with OCD and substance-related disorders were significantly more likely to attrit. Interestingly, anxiety emerged as a relatively low risk of attrition based on its DSM-5 categorization, but became a risk of ending using the DSM-IV categorization. This may reflect the reorganization of OCD in the

DSM-5, particularly in light of the strong hazard or risk it posed for attrition in this sample. In terms of process variables, two significant findings emerged. First, long term deterioration predicted drop out. Second, a recent change in OQ 45 score, whether positive or negative, predicted continuation in treatment. This in itself may point to the importance of clinicians simply monitoring for clinically reliable change using measures such as the OQ as part of routine practice, for which Lambert and others have called (Layard & Clark, 2015).

Relationship to existing studies

In keeping with Swift and Greenberg's (2012) recent meta-analysis, we found a significant rate of attrition. While Swift and Greenberg found an overall drop-out rate of nearly 20%, we found that approximately 70% of clients attrited before the mean number of sessions in this sample for those continuing beyond the first OQ administration. We similarly found age and diagnostic category to be meaningful moderators. In contrast to Swift and Greenberg who found personality disorders to be associated with an increased risk of attrition, we did not. This may reflect this clinic's strong relational, collaborative and interdisciplinary focus. The clinic has significant experience in offering longer-term care for clients diagnosed with personality disorders. The experience and prognosis of this group may be worth further attention in future research. We lacked sufficient numbers to look at the role of individual diagnoses such as eating disorders in the way Swift & Greenberg were able to, but we were able to look at broader diagnostic categories, such as: unipolar mood, anxiety, substance psychotic, and OCD-related disorders. Our analysis points to the particular importance of substance and OCD-related disorders in this community mental health setting as particularly powerful potential moderators of outcome.

Our findings are also consistent with those reported by Warden (2009) from the federally funded *Sequenced Treatment Alternatives to Relieve Depression* (STAR*D) study, which pointed to the importance of younger age, socioeconomic status (lower income), and less

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education as all associated with increases in attrition. STAR*D served as a particularly important point of comparison in that both studies had a comparable sample size of approximately 4,000. We found two of these three variables to predict attrition, with education exerting a particularly strong effect (risk) for those client participants with less than a high school education and for those with trade or vocational training. Participants in this study under age eighteen were at particular risk, as were those reporting lower incomes. In keeping with older, classic studies in attrition such as Baekland & Lundwall (1975), these risk factors begin to point to a general risk profile of a younger, less educated, lower income client as a potentially less socially advantaged client with less social and economic capital. While the STAR*D study found these risks operating in relation to adult clients with major depression, we found these to be important moderators more broadly and with adolescent clients in addition to adults. The STAR*D study similarly speaks to the importance of identifying these potential risk groups in that Warden, et al. (2009) reported that both "remission rates were lower for participants who dropped out of treatment" (p 622) and "attrition rates increased as income decreased" (622), finding that simply utilizing a public insurance was associated with a poorer income. Both Warden, et al. (2009) and Swift & Greenberg (2012) call for more intentional outreach and prevention efforts tailored to participants in these risk groups.

Our findings in relation to race and ethnicity were more mixed. While Connolly Gibbons, et al. (2011) found race to be "a significant predictor of both treatment type received and length of treatment" (p. 495) in community mental health systems, our findings were less clear, with several racial and ethnic groups demonstrating longevity and more protection against attrition (seen in the form of hazard ratios less than the benchmark of 1.0). For instance, in contrast to the STAR*D study, we did not find African Americans to be at increased

risk of attrition (hazard = .90). Caucasian, Hispanic, and multi-racial clients were all likely to remain in treatment. However, clients identifying as Asian had the highest rate of attrition. This discrepancy may be understood, in part, as a result of this clinic's conscious and intentional effort to better serve an ethnically and racially diverse clientele. As evidence of this, the clinic offers Spanish-speaking therapists, administrative staff, and psychiatrists. Clients may undertake psychotherapy and utilize psychiatric consultation entirely in Spanish. The clinic has made similar efforts to reach out to an increasing number of Hmong and older adult clients, offering an older adult program. It is worth noting that older adults in this sample were similarly less likely to attrit, with adults age 30 and older being more likely to remain in treatment. It may serve as an example of the potential for clinics to reduce attrition by way of such efforts and may be worth further exploration in future studies.

Strengths:

The strengths of this study are particularly tied to its relatively large sample size and longitudinal nature. With nearly 4,000 participants and over a decade of data, we were able to explore not only at the role of demographics such as age, race, income, and diagnostic clustering in the way other studies have, but we were able to add attention to process variables in the form of looking at both the role or potential predictive value of both "overall improvement" and "recent change" (clinically reliable improvement or deterioration) in predicting the risk of attrition, building on the work of Roos (2011), who similarly brought attention to process variables in better understanding the risk of attrition. We were also able to respond to the call of Corning & Malofeeva (2004) to apply survival analysis to better understand both attrition and termination in psychotherapy. We did so using a measure of clinically reliable change (defined as a 10 or more point increase or decrease from one's baseline score) calculated specifically for

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this clinic sample. We found that clinically reliable change in either direction correlated with a greater likelihood of remaining in treatment. Those clients who were either recently improving or worsening were less likely to attrit.

The study also benefitted from its naturalistic and "real life" clinical setting. Previous studies such as Swift & Greenberg's 2012 meta-analysis pointed to the "setting for the intervention" (p. 547) and "type of study" (efficacy vs. effectiveness) (p. 547) as important moderators of outcome. This study was able to offer a form of replication and to serve as an effectiveness study, looking at actual, open-ended and community based treatments as they naturally occurred in a community mental health setting. The clinic also has a historically psychodynamically grounded and fairly uniform theoretical orientation. Swift and Greenberg pointed to theoretical orientation as not necessarily predictive of attrition. With our attention to a large group of psychodynamically oriented practitioners in this study, with findings comparable to other studies, our findings add strength to this assertion. The large number (n = 437) of participants presenting with a depressive disorder allowed for comparisons with studies such as Connolly Gibbons, et al. (2011) and Warden, et al. (2009), who gave exclusive attention to the risk of attrition for this specific diagnostic cluster. We were able to make some direct comparisons and contrasts with this large, federally funded study.

The study had associated limitations as well. While a quantitative method offers a good deal of information as to *when* people leave, it tells little about the contextual variables that may speak to *why* people leave. That is, clients end therapy for a multitude of reasons, including the successful resolution (or "enough" of a resolution to) a presenting concern and sufficient symptom improvement. Authors such as Duncan (2010) have written speaking to the often brief nature of actual psychotherapy. The clinic's modal number of sessions being 3 adds weight to

this assertion as well. We witnessed a large percentage of clients ending treatment between the first and second administration of the OQ 45.2. It would be beneficial to hear from those clients who did not return after even a first session. This absence of this information also points to the potential benefit of a qualitative study giving attention to better understanding the nature of and reasons for endings at the clinic. This study has prompted the clinic to formally reach out to and to study more formally the reasons clients end.

This study also suffered from a lack of some diagnostic specificity. The electronic health record used tracked largely intake diagnoses. We thus lacked a post-treatment confirmation of diagnosis as well as a lack of axis II diagnoses we would have expected due to both the size of this data set and the nature of an outpatient mental health setting, where authors such as Black and Andreasen (2010) predict 30 % present with a personality-related component to their treatment. Lastly, despite a large sample that represents both student/trainee and staff clinicians as providers, we were not able to parse the data set by student trainee versus staff provider. This may be worth doing in the future in that both Hansen, Lambert, & Forman (2002) and Swift & Greenberg's 2012 meta-analysis pointed to differences in attrition between these two groups. Lambert has pointed to a general need for more attention to trainee outcomes broadly.

Potential Practice Implications:

The study, building upon an existing literature begins to suggest some potential practice implications. While there is broad agreement in the literature that premature discontinuation of psychotherapy is a fairly widespread and expected phenomenon, this study (in keeping with others), suggests that there are particular groups of clients, identifiable by education, income, and possibly age, that may benefit from particular attention and efforts aimed at reducing attrition.

Both Duncan (2012) and Whipple, et al. (2003) have published findings pointing to the importance of feedback effects and of feedback-informed practice, with both authors demonstrating reduced attrition and improved treatment outcomes in cases where clinicians give explicit, in-session attention to a client's progress or lack of progress, making adjustments accordingly. Whipple, et al. (2003) have offered clinicians ways to identify early treatment failure and associated problem-solving strategies as part of routine clinical practice. Lambert (2010) has pointed to the importance of using a clinical measure such as the OQ 45.2 in doing so in that clinicians tend to be poor judges of who is likely to attrit, based solely on observation or clinical impression. In some ways these findings call for what Dr. David Eagleman refers to as "guided clinical judgment." This study's findings support others that suggest younger age and lower income matter as relevant demographics. In addition, the broader literature's identification of: a lack of insurance, younger age, lower income, ask risks or "hazards", may speak to a broader clinical presentation of a less advantaged client sub-population. Our additional finding that recent change matters, suggests in line with Lambert, that less than weekly meetings may not be a sufficient standard of care and that those clients who simply maintain or "stall" in middle phase work may pose a risk as well.

Finally, these findings point to the general importance of explicit treatment engagement strategies in outpatient clinic settings. Authors such as Nock (2012) and Lizardi & Stanley (2010) have outlined the importance of facilitating treatment engagement specifically in relation to clients presenting for outpatient mental health care after a suicide attempt. These interventions are often relatively practical and involve strategies such as making phone contact with a client before a first session. Similarly, in the context of practice evaluation, mental health providers such as Darnall (2013) and others have pointed to systematic efforts to reach out in writing to

clients who stop attending outpatient psychotherapy, with an associated significant reduction in attrition. Darnall, in particular, points to the danger of "out of sight, out of mind" (personal communication) and to clinicians' implicit theories behind why clients leave that are often inaccurate. Because a substance-related diagnosis emerged as a particular risk in this setting, it may be worth noting that Monras & Gual (2000) echo this finding and conclude, in their study of 329 adults diagnosed with alcohol dependence that the first three months of treatment were particularly important in partcipants' deciding whether or not to commit to therapy.

The diagnostic factors that emerged as important are worth noting in a couple ways. OCD-related disorders emerging as a particular risk for attrition is a good reminder for community clinicians that OCD is conceived of by many as a specific disorder calling for a specific treatment (e.g. exposure and response prevention). The role of substance as a risk is an important reminder that substance is often missed in clinical settings and can complicate a clinical relationship (Freimuth, 2008). If this finding holds in other settings, it may serve as a reminder to assess for substance abuse or dependence with clients and to the importance of staffing clinics with clinicians with expertise here (i.e. with licensed alcohol and drug counselors or LADC's). Lastly, our findings pointing to the predictive value of not only diagnostic categories, but of overall change and recent change in particular. They suggest value in looking, even descriptively, at change over time and at recent attendance, using measures such as the OQ 45.2, that offer software packages such as the *OQ Analyst* to assist clinicians in identifying recent changes in status that may signal the risk of attrition or treatment failure.

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