Personality and Mental Health Treatment:

Traits as Predictors of Presentation, Usage, and Outcome

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Abstract

Self-report scores on personality inventories predict important life outcomes including health and longevity, marital outcomes, career success, and mental health problems, but the ways they predict mental health treatment have not been widely explored. Psychotherapy is sought for diverse problems, but about half of those who begin therapy drop out, and only about half who complete therapy experience lasting improvements. Several authors have argued that understanding how personality traits relate to treatment could lead to better targeted, more successful services. Here self-report scores on Big Five/Six personality dimensions are explored as predictors of therapy presentation, usage, and outcomes in a sample of community clinic clients (N=306). Participants received evidence-based treatments in the context of individual, couples, or family therapy sessions. One measure of initial functioning and three indicators of outcome were used. All personality trait scores except Openness associated with initial psychological functioning. Higher Conscientiousness scores predicted more sessions attended for family therapy, but fewer for couples therapy clients. Higher Honesty/Propriety and Extraversion scores predicted fewer sessions attended for family therapy clients. Better termination outcome was predicted by higher Conscientiousness scores for family, and higher Extraversion scores for individual therapy clients. Higher Honesty/Propriety and Neuroticism scores predicted more improvement in psychological functioning in terms of successive Outcome Questionnaire-45 (OQ-45) administrations. Taken together, the results provide some support for the role of personality traits in predicting treatment usage and outcome, and for the utility of a six-factor model in this context.

Keywords: Personality Correlates, Big Five Personality Model, Psychological Assessment, Treatment Outcomes, Psychotherapy, Family therapy

Public Significance Statement: This study found that normal range personality traits predicted some aspects of usage and outcome of psychotherapy in clients attending individual-, couples-, or family-therapy sessions at a community clinic. Ways that knowledge of personality traits might aid therapists in their practice are reviewed.

Personality and Mental Health Treatment:

Traits as Predictors of Presentation, Usage, and Outcome

Self-report scores on Big Five personality trait dimensions have been consistently

associated with mental health disorders (e.g. Kotov et al., 2010; Malouff et al., 2005). This is

unsurprising, as scores on these dimensions relate to virtually all measurable life outcomes,

including longevity, health, divorce, friendships, arrests, and academic, professional, and

creative success (Ozer & Benet-Martinez, 2006). Less research has addressed how personality

traits moderate treatment in psychotherapy. But considering that only about half of clients

reliably improve in symptoms after a course of therapy (Westen, Novotny, & Thompson-

Brenner, 2004), and that about half of patients who begin therapy drop out prematurely

(Wierzbicki & Pekarik, 1993), there is room for improvement in intervention science. Although

not yet well-explored, personality traits logically relate to mental health treatment usage,

modality preference, and efficacy, and their use in this context could improve treatment efficacy

(Bagby, Gralnick, Al-Dajani, & Uliaszek, 2016; Harkness and Lillienfeld, 1997; Lengel, Helle,

DeShong, Meyer, & Mullins-Sweatt, 2016; Miller 1991; Zinbarg, Uliaszek, & Adler, 2008).

Big Five/Six Models of Personality

The Big Five model of personality traits (Extraversion, Emotional Stability vs.

Neuroticism, Conscientiousness, Agreeableness, and Intellect/Openness) rose to prominence in

the 1990s when factor-analytic studies of temperament and personality scales and lexical studies

of personality in English, German, and Dutch converged on this model (Saucier, 2009;

Thalmayer, Saucier, & Eigenhuis, 2011). A significant degree of consensus on this robust model

has been generative for the field of personality psychology, and many meaningful relations

between life outcomes and scores on the five factors have been established (e.g. Ozer & Benet-

Martinez, 2006).

The Big Six model mostly overlaps with the Big Five, the main difference being the addition of a dimension with content related to moral and ethical behavior and conforming to social norms. The evidence for this update to the Big Five comes from lexical studies in which comparable six-factor solutions emerged across more diverse languages and cultures than five-factor solutions (Ashton et al., 2004; Saucier, 2009). The Big Six has demonstrated an advantage in predictive and explanatory power over the Big Five in terms of grades in college (Thalmayer et al., 2011), political attitudes (Chirumbolo & Leone, 2010), vocational interests (McKay & Tokar, 2012), workplace delinquency (Lee, Ashton, & de Vries, 2005), and life aspirations and sexual well-being (Visser & Pozzebon, 2013). The Big Six may be useful in the study of mental health, in particular for making distinctions in the externalizing domain, because this model should differentiate between aggression that is reactive (low Agreeableness) versus predatory (low Honesty/Propriety). This model was used in the current study to test its utility in a treatment context and to increase explanatory power.

Relations of Personality to Clinical Presentation and Treatment

Associations of personality traits with specific disorders were not measured in the current study, but this literature provides a basis for exploring associations with treatment. Two reviews provide a summary of associations between the Big Five and psychological disorders: Malouff, Thorsteinsson and Schutte's (2005) meta-analysis of 33 studies including symptoms of clinical disorders, and Kotov, Gamez, Schmidt, and Watson's (2010) quantitative review of 175 studies reporting associations with depressive, anxiety, and substance use disorders (SUD). The latter included studies using the Big Three model of Negative Emotionality, Positive Emotionality, and Disinhibition, the first two of which overlap substantially with Neuroticism and Extraversion.

Neuroticism is highly associated with all psychological disorders (Barlow, Sauer-Zavala, Carl, Bullis & Ellard, 2014; Kotov et al., 2010), especially mood disorders (Malouff et al., 2005). Likewise, all symptoms and disorders assessed in the reviews are associated, though more moderately, with low Conscientiousness (Kotov et al., 2010; Malouff et al., 2005), which is also associated with attention deficit hyperactivity disorder inattention-disorganization symptoms (Nigg et al., 2002). Extraversion and Agreeableness appear to have smaller effect sizes and more specific associations with psychological disorders. Low Extraversion/Positive Emotionality is associated with mood disorders (Hayward, Taylor, Smoski, Steffens, & Payne, 2013; Malouff et al., 2005), dysthymic disorder and social phobia (Kotov et al., 2010), and higher Extraversion with externalizing/conduct disorders (Malouff et al., 2005). Agreeableness appears to have small positive associations with anxiety disorders and negative associations with SUD and externalizing/conduct disorders (Malouff et al., 2005). Openness is not consistently associated with symptoms or disorders (Kotov et al., 2010; Malouff et al., 2005), but this may be due to its specific conceptualization in the commonly used NEO Personality Inventory (Costa & McCrae, 1992). When measured with more unconventionality content, Openness associates with Schizophrenia spectrum personality disorders (Lowe & Widiger, 2008). Honesty/Propriety has not yet been widely studied in relation to symptoms and mental disorders, but scores on this dimension correlated more highly than other Big Five/Six dimensions with compulsive drinking, risk taking, and lawbreaking behaviors (Saucier, 2009), and HEXACO Honesty/Humility overlaps significantly with measures of the 'dark triad' (Lee &Ashton, 2014).

The literature on Big Five relations to treatment usage and outcomes is sparser and no known work focuses on couples- or family-treatment, but several authors and reviews provide hypotheses for how traits may relate to treatment planning and outcomes, some of which are

supported by empirical work. Unsurprisingly, given its association with the disorders that lead to clinical treatment, higher Neuroticism has been associated with less treatment success for depression individually (Dermody, Quilty, & Bagby, 2016; Hayward et al., 2013; Quilty et al., 2008) and in a group setting (Ogrodniczuk, Piper, Joyce, McCallum, & Rosie, 2003). On the other hand, the discomforts of high Neuroticism may provide motivation for therapy (Miller, 1991; Widiger & Presnall, 2013), and knowing a patient's standing may help contextualize presenting complaints and set appropriate expectations (Miller, 1991; Zinbarg et al., 2008.) Higher Conscientiousness has been associated with better working alliance (Coleman, 2006), attending more sessions (Miller, Pilkonis, & Mulvey, 2006), and more successful response to group therapy for complicated grief (Ogrodniczuk et al., 2003) and treatment for depression (Dermody et al., 2016; Quilty et al., 2008) even accounting for life stress and severity (Anderson & McLean, 1997). A meta-analysis indicated consistent association with medication adherence (Molloy, O'Carroll, & Ferguson, 2014). Some level of Conscientiousness may be necessary for the success of psychotherapy, in terms of motivation (Bagby et al., 2016) and engaging with the process and tasks (Miller 1991; Widiger & Presnall, 2013).

Higher Extraversion has been associated with better working alliance (Coleman, 2006), better recovery from depression (Bagby et al., 1995; Dermody et al., 2016; Quilty et al., 2008), and improved outcomes of group therapy (Ogrodniczuk et al., 2003). Higher Agreeableness is associated with better working alliance (Coleman, 2006; Gurtman, 1996; Hirsh, Quilty, Bagby, & McMain, 2012; Johansen, Melle, Iversen, & Hestad, 2013), but it may also have costs, for example an inverse association with agency and thus with success in depression treatment (Dermody et al., 2016). Higher Openness is associated with more treatment seeking (Soldz & Vaillant, 1999) and session attendance (Miller et al., 2006), better working alliance (Coleman,

2006), and more successful treatment of depression (Quilty et al., 2008), though associations have not always replicated (Hopwood et al., 2008). Openness may have a role in treatment motivation (Bagby et al., 2016), self-help exercise compliance (Zinbarg et al., 2008), and choice of therapy model -- higher scorers may be better suited to the goals of the existentialist-humanist school or the process of psychoanalysis, while lower scorers may prefer structured approaches (Miller 1991). The role of Honesty/Propriety or Honesty/Humility has not been explored, but straightforwardness in relations and conforming to socio-moral expectations should provide a good foundation for therapy. Given that the dark triad traits associated with this dimension are notoriously difficult to treat, it seems likely that higher scorers would benefit more from therapy.

Goals for the Present Study

The current study tests how Big Five/Six personality traits relate to clinical presentation and treatment usage and outcome in a community clinic treating individuals, couples, and families. One indicator of initial functioning and three indicators of usage and outcome are used. Hypothesized associations are drawn from the literature described: Poorer initial functioning is hypothesized to associate most highly with higher Neuroticism, and also with lower Extraversion, Honesty/Propriety, and Conscientiousness. Sessions attended is hypothesized to be predicted by higher Conscientiousness, Honesty/Propriety, Agreeableness, and Extraversion. Successful termination and improvement in psychological functioning are hypothesized to be predicted by higher Conscientiousness, Honesty/Propriety, Extraversion, and Openness.

Methods

Participants

A total of 306 clients joined the study between 2011 and 2013 at the time of their intake session at the clinic. The Research Compliance Office of the University of Oregon reviewed and

approved the study, and all participants gave written informed consent. The sample was 55%

female (three clients identified as transgender) and 83% white, with 2-3% identifying as each of

the following: Native American, Asian or Pacific Islander, African American, Hispanic, or

mixed race. Age ranged from 18 to 79 ($M = 34.9$, $SD = 11$). Thirty-eight percent of the sample

identified as Christian, 38% as not having a religion, 3% Jewish, 3% Buddhist, 16% other. The

majority identified as heterosexual (83%), 7% bi-sexual, 3% gay or lesbian, 3% other. Almost all

(97%) reported English as their native language. The sample was low income, with 92%

reporting less than the approximate U.S. median annual household income of $50,000. The

sample was well educated, however, with 66% reporting at least some college education, and

12% a graduate degree. The most common therapy type attended was couples (46%); 34% came

for individual and 12% for family therapy. Nine percent of clients engaged in both individual and

either couples or family therapy. Of 139 participants who attended primarily couples therapy, 90

couples (or groups of three) were represented. In 28 cases one member joined the study and for

62 couples all members participated. The 39 family therapy participants represented 29 families.

Materials

The Outcome Questionnaire-45 version 2 (OQ-45) is a broad measure of psychological

functioning using a 5-point Likert scale ('never' to 'almost always') with nine reverse keyed

items (Lambert et al., 2004). Only the total score was used because it appears to have stronger

criterion validity than the subscale scores (Thalmayer, 2015). Clinic software imputed missing

values per instructions in the manual — substitute values are the mean of remaining domain

items rounded to a whole number. Scores with imputed values were used in the current study

only when two or fewer items were missing. Responses were associated with the number of

weeks since intake (week 0) for longitudinal analysis.

The Big Five Inventory (BFI) is a 44-item measure with phrases based on prototypical adjectives for each dimension (John, Naumann, & Soto, 2008). Scales include eight to 10 items, two to four reverse keyed. The BFI-six, developed to facilitate efficient measurement of the Big Six model alongside the Big Five (Thalmayer et al., 2011), adds 18 International Personality Item Pool (IPIP) items for a 10-item Honesty/Propriety scale and an 8-item "Agreeableness-six" scale as in the Questionnaire Big Six (QB6; Thalmayer et al., 2011). Honesty/Propriety items refer to use of deception, flattery, and dishonesty in relation to others, risk taking and disregard for rules. Agreeableness-six items focus on patience, trust, forgiveness, and lack of anger, grudge-holding and vindictiveness, to better match cross-cultural versions of this domain. This inventory compared favorably to the BFI and other Big Six measures in predicting grades and conduct issues 9-monthes later (Thalmayer et al., 2011). Scale statistics are reported in Table 1.

Procedure

The study site was the training clinic of a highly regarded couples and family therapy program. Student-therapists are second year master's students with extensive supervision trained in research-informed systemic models of intervention. They select an evidence-based model – Narrative, Brief, Strategic, or Solution-Focused Therapy, or Emotionally-Focused or Cognitive-Behavioral Couples Therapy – depending on context and client needs. Client-participants were randomly assigned to a total of at least 71 student-therapists in a "next up" rotation system, per usual practice at the clinic. Because therapists typically train at the clinic for a one-year period, clients who attended sessions for longer than a year or who began in the spring were likely to experience a change in therapist. About 10% of clients who attended primarily individual sessions had more than one therapist during treatment; such clients on average attended more sessions than those with only one therapist ($M = 50$, $SD = 43$ vs. $M = 14$, $SD = 20$; $t(109) = 4.82$,

$p = .02$). Clients who attended more than one type of therapy or who attended couples or family therapy (often conducted with a pair of therapists) typically worked with more than one therapist. The specific therapist was not accounted for in analyses due to the frequency of multiple therapists, the number of therapists involved, and their equal level of training.

New clients at the clinic who chose to participate in the study for a $5 incentive completed the 62-item personality questionnaire and gave researchers permission to access de-identified responses to clinic surveys completed at intake and later if services continued. The first 136 participants also completed 38 values items, but the survey was later revised to decrease participation time. Clinic surveys used per standard clinic procedure included a "Client Questionnaire" with demographic and background questions presented at intake, and the OQ-45, usually administered electronically by a handheld "personal digital assistant" (PDA) at intake and before a client's third, fifth, and tenth sessions, and every ten thereafter. The number of times participants completed the OQ-45 ranged from 0 to 22 ($M = 3.3$, $SD = 3$); 69% of participants completed it more than once.

Total number of sessions attended and termination outcome were obtained from client files. Participants attended from one to 164 sessions ($M = 14$, $SD = 19$). About 13% only attended an intake session. Outcome was coded into categories by the author and a research assistant from therapists' termination notes. The coding system was developed by the author and research assistants in a larger set of data from the same clinic. The three main categories were:

1. Drop out or quit before making gains

2. Some goals met (left after some progress but without completing stated goals)

3. Successful completion, goals met

The interrater reliability of this coding system was tested in a sample of 51 cases ($r = .83$; weighted Cohen's kappa = .71). In some cases two types of therapy (e.g. couples and individual) occurred during the same period. In other cases, clients terminated then restarted therapy. When restarted within six months of the last session, it was counted as the same course. In these cases, sessions were summed across files, and termination information was recorded from the later file.

Analyses

Pearson correlation between BFI-six dimensions and OQ-45 total score was used to assess the relation of personality traits to clinical presentation. For sessions attended and therapy outcome, analyses were stratified by type of therapy. Clients who attended multiple types of therapy were grouped with their majority type of sessions, and attending multiple types was accounted for in the model. Poisson regression with robust estimators was used to predict sessions attended, as this was a highly skewed count variable. While the number of sessions attended by the multiple members of a couple or family group was often the same, it was not bound to be. This is because: (a) all clients had the option of attending more than one type of therapy; (b) many couples therapy clients had sessions only one member attended (early in treatment therapists sometimes suggested alternating solo sessions; in other cases only one partner attended for logistical reasons); and (c) in family therapy, not all members were always present, for example if only one parent was able to attend on some occasions, both on others. Thus person-level predictors remain relevant. Ordinal logistic regression was used for the prediction of termination outcome. For couples and family therapy clients, a multilevel ordinal procedure (GENLIN MIXED in SPSS 20 per Heck, Thomas, & Tabata, 2012) was used to nest individuals within couple or family units in the cases where more than one member participated.

Multilevel Modeling using SPSS Mixed was used to test how personality dimensions

related to initial functioning (OQ-45 intercept) and change in functioning (OQ-45 slope). Here, therapy types were combined with dummy variables to account for type. This was done for practical reasons, as subsamples were too small for longitudinal models with all predictors to converge, and because psychological functioning is an internal, individual-level variable.

Analyses accounted for age, gender, and level of education. Income is described above for the sample but was reported categorically with some discrepencay in options between two questionnaire versions, preventing it from being used as a continuous covariate in analyses.

Results

Scale statistics and correlations among personality dimensions and between personality dimensions and intake OQ-45, sessions attended, and therapy outcome are reported in Table 1. To compare personality scores of this sample to non-clinical norms, average scores from a large national community sample ($N = 840$, mean age $= 36$, 66% female, 71% white) are also shown. The largest difference was higher Neuroticism in the clinical sample. The clinical sample also had statistically significantly lower Agreeableness-six, Conscientiousness, Honesty, and Openness scores. In analyses not shown in the table, personality scores for clients in the different types of therapy were compared. Individual clients had higher mean Neuroticism than couples or family therapy clients ($F[2, 298] = 14.69$, $p <.001$), and family therapy clients had higher mean Honesty/Propriety than the other groups ($F[2, 288] =5 .53$, $p = .004$). Otherwise differences in personality scores were not significantly different between groups. Among the personality scales, as intended, Agreeableness-six was less highly correlated with Conscientiousness and Honesty/Propriety than regular BFI Agreeableness. Agreeableness-six was included in subsequent analyses, in place of Agreeableness.

Higher Neuroticism and, to a lesser degree, lower Extraversion, Honesty/Propriety, and Conscientiousness were hypothesized to predict initial level of psychological functioning. While Neuroticism had the highest correlation and Openness the lowest, Agreeableness (both versions) and Conscientiousness were more strongly associated with the OQ-45 than Extraversion or Honesty/Propriety.

Mean values on the ordinal termination outcome variable are reported in Table 1 to provide an estimated comparison across therapy type. Those who attended multiple types of therapy had the best outcomes, followed by those who attended family, individual, then couples therapy. These differences are displayed in Figure 1 in terms of percentage of each outcome by type. The highest drop-out rate was for couples, over half of whom left without making discernable progress. The drop-out rate was 40% for individual, and 34% for family therapy clients. Unsurprisingly, those who chose to pursue multiple types of therapy concurrently or in close succession were the least likely to drop out, and the most likely (31%) to successfully reach their therapeutic goals. Individual clients with more than one therapist were never coded as drop-out (vs. 43% with one therapist), but were equally likely to be coded as successful (27% of both groups; not shown in figure).

Poisson regression results for predictors of sessions attended, stratified by type of therapy and accounting for age, education, gender, baseline OQ-45 score, and multiple types of therapy, are reported in Table 2. For an 18-year-old woman with a high school education, average sessions attended were a little over one (1.2) for individual, over two (2.2) for couples, and nearly seven (6.8) for family therapy clients. For individual and couples clients, attending more than one type of therapy meant doubling (rate = 2.2) or tripling (rate = 3.3) average sessions attended. For family clients the association appears to be negative, though the sample for this

category was very small. Being older was associated with more sessions attended for couples and family clients, and being more educated with more sessions for individual and family clients; there was a marginal effect in this direction for couples clients. Scores on Conscientiousness, Honesty/Propriety, Agreeableness, and Extraversion were hypothesized to predict attending more sessions. Conscientiousness predicted more sessions for family, but fewer for couples clients. Higher Honesty/Propriety and Extraversion predicted fewer sessions for family clients. Together, control and personality variables accounted for 21% of the variance in sessions attended for individual, 39% for couples, and 56% for family clients (final deviance compared to unconditional model using same listwise deletion per Cohen, Cohen, West, & Aiken, 2003).

Results of ordinal logic regression for predictors of therapy outcome, stratified by therapy type and accounting for age, education, gender, baseline OQ-45 score, and multiple types of therapy, are reported in Table 3. For individual therapy clients a scores test of proportional odds indicated no significant difference between the two steps, supporting the suitability of the ordinal approach. Multilevel analysis was used for couple and family participants; a similar scores test of proportional odds is not available in this context. Education level was a significant predictor of better outcome for couples, and marginally so for individual therapy clients. Mixed types of therapy were seen to predict worse outcomes for family therapy clients, but again based on very few participants. Higher Conscientiousness, Honesty/Propriety, Openness, and Extraversion scores were hypothesized to predict more successful termination. Higher Extraversion was related to more successful outcomes for individual and higher Conscientiousness for family clients, but higher Honesty/Propriety was only marginally related to better outcome and Openness scores were in the opposite direction for individual clients. Together, control and

personality variables accounted for 16% of the total variance in therapy outcome for individual

clients. (Summary measures of variance accounted for are not available for multilevel analyses.)

Participants who completed the OQ-45 at least once and who had no missing data on

predictor variables ($N = 267$) were included in longitudinal analyses of change in OQ-45 scores.

Dummy codes accounted for therapy type. Time was tracked in terms of weeks since intake and

change in functioning was modeled in terms of score-change per week. Only a linear time

variable was included in analyses after determining that quadratic and cubic trends were not

significant. Results for an unconditional and a full model are reported in Table 4. The

unconditional linear growth model indicates that on average, participants' scores (intercept =

69.59) decreased by a small amount each week (-.20, $p < .001$). Significant variance between

clients in initial score (425.68, $p < .001$), and within persons over time (136.51, $p < .001$)

remained after accounting for average weekly decrease, but there was not significant variance in

clients' change over time (.03, *ns*). An intraclass correlation coefficient (ICC = .75) indicated

that most of the variation in scores was between people rather than within people over time.

The full model included age, education, therapy type, and personality variables as

predictors of intercept and slope, and total sessions attended as a predictor of slope to account for

variation in regularity of sessions. Initial OQ-45 score was higher among those who attended

individual sessions, who attended more than one type of therapy, who were older, or who were

higher in Neuroticism or lower in Conscientiousness. Although the overall amount of change per

week was small and non-significant after taking contextual, demographic, and personality

variables into account, two personality variables did have significant relations with the rate of

change per week. Higher Honesty/Propriety scores predicted faster decrease in OQ-45 – virtually

double the average. Higher Neuroticism also predicted steeper decrease over time. Compared to

the unconditional linear model, the full model explained 1% more variance in within-person

variation in scores, 54% more variance in initial score, and 53% more variance in rate of change.

Discussion

Self-report scores on personality trait dimensions have been consistently associated with

important life outcomes (Ozer & Benet-Martinez, 2006) and clinical disorders (Kotov et al.,

2010; Malouff et al., 2005). Compelling arguments have been made that their assessment could

also improve treatment efficacy (Bagby et al., 2016; Harkeness & Lillienfeld, 1997; Miller,

1991; Zinbarg et al., 2008), but their role in therapy usage and outcomes has not yet been widely

explored. The current study tested how Big Five/Six traits relate to mental health treatment in

terms of initial psychological functioning, sessions attended, termination outcome, and change in

functioning, for community-clinic clients with diverse presenting concerns.

The expected association between higher Neuroticism and poorer psychological

functioning at intake was indeed strong ($r = .68$), followed by the other scales ($r = -.36$ to $-.15$),

with the anticipated exception of Openness. In the multilevel model including personality

variables and age, education, and type of therapy, higher Neuroticism and lower

Conscientiousness still predicted higher initial OQ-45 scores.

Session attendance could indicate follow-through on a commitment (Conscientiousness,

Honesty/Propriety), interest in personal growth (Openness), and/or successful formation of a

therapeutic alliance (Extraversion, Agreeableness). Few studies have focused on this simple

metric, excepting Miller et al. (2006) who found that those higher in Conscientiousness and

Openness attended more sessions in small in- and out-patient samples. Here, personality scales

were inconsistent predictors. The hypothesis for higher Conscientiousness was supported for

family clients, but the association was negative for couples clients, as were associations for

Honesty/Propriety and Extraversion for family clients. One cannot benefit from therapy without

attending it, but this may be a weak indicator of success in a clinic where brief techniques are

used. The correlation between termination outcome and sessions attended was only .27. Some

clients had uncomplicated complaints and were able to meet goals quickly, whereas others

presented with very complex difficulties and attended sessions for years. The role of personality

attributes in attendance might be more apparent where treatment protocols dictate a specific

number of sessions. In a clinic like this one, obtaining an estimate after intake of expected

number of sessions given the presenting complaint might better isolate the role of personality.

For termination outcome, the hypothesis that higher Conscientiousness scores would

predict more successful outcome was supported for family clients, and that for higher

Extraversion was supported for individual clients. Hypotheses for higher Honesty/Propriety and

Openness generally were not (except a marginal effect for Honesty/Propriety for individual

clients). Instead, lower Openness predicted better termination outcome for individual clients. The

lack of results for couples-therapy clients may be related to the small sample and the many

factors that play a role in multi-person therapies. The association between successful outcome

and lower Openness is more surprising. This is contrary to Quilty and colleagues' finding that

lower Neuroticism and higher Extraversion and Openness predicted better response to

psychotherapy and medication treatment for major depressive disorder in a large sample (2008).

Other studies have looked at Openness in the process of treatment, in terms of interest and

motivation (Soldz & Vaillant, 1999), alliance (Coleman, 2006) and exercise compliance (Zinbarg

et al., 2008). Miller (1991), on the other hand, predicted that the relation between Openness and

treatment outcome would be complex – while clinicians may prefer clients higher in Openness, it

may not be as closely related to mental health as anticipated. It is possible that the more positive

aspects of Openness overlap with other traits in the model, and that the unique portion associated

with worse outcome is the more "unconventional" aspect. This interpretation is supported by the

lack of zero order correlation between Openness and termination outcome ($r = -.05$, ns).

In the unconditional longitudinal model, OQ-45 scores decreased .20 per week on

average, on a scale with scores ranging from 17 to 139 ($M = 71$). Although slope was non-

significant in the full model, the hypothesis that those with higher Honesty/Propriety scores at

intake would see greater improvement in OQ-45 scores was supported. For this indicator,

Honesty/Propriety had an advantage over the more frequently tested Big Five domains. This

finding provides some support for the utility of a six-factor model in the treatment context.

Honesty/Propriety should better capture attention to normative expectations and follow-through

on commitments, beyond the orderliness and lack of impulsivity of Conscientiousness, and the

patience and lack of reactive aggression of Agreeableness. The association with Neuroticism was

not predicted, but is likely best explained as a form of regression to the mean. Neuroticism scores

were highly correlated with intake OQ-45 scores ($r = .68$), and were the largest predictor of OQ-

45 intercept in the full model. Given an average initial intercept of 41.7, each point higher on

Neuroticism was associated with an additional 16 points on the OQ-45. In addition to having

high trait Neuroticism, some individuals' scores on both the OQ-45 and Neuroticism were likely

elevated by the acute problems that brought them to their clinic to begin therapy. As the crisis

passed, their OQ-45 scores may have come down from this elevation a little more steeply than

the decreases seen by those who were less extremely distressed at intake.

Limitations and Future Directions

Some aspects of the current study may have limited its potential to elucidate relations

between personality and mental health treatment, and may limit the generalizability of results.

The clinic used for data collection was an advantageous setting in several respects. A community clinic which basically takes all comers and serves primarily low-income clients, maps closely to what mental health services look like in the real world and thus provides excellent ecological validity. It also provides greater variation in presenting complaint and level of functioning, and thus in personality traits, than would be expected at a clinic or research study focused on a single domain, for example mood or substance use disorders. Furthermore, the treatments are evidence-based and carefully supervised, excellent records are kept, and extensive demographic information and multiple OQ-45 responses are collected from clients. On the other hand, the diversity of complaints creates noise in the data that may obscure or lead to spurious associations in small samples. Some clients present with serious mental illness and pervasive life difficulties, while others come seeking support through relatively straightforward life transitions or more circumscribed psychological problems. An attempt to code for presenting complaint based on intake and session notes was hampered by the fact that only a small minority of cases were prototypical examples of one situation or another. As is likely the case in most real-world clinics, reasons for therapy seeking were intermingled and not simple to categorize.

A limitation specific to predicting change in OQ-45 scores in this sample was the small amount of change in scores. At the average rate observed in the baseline model (-.20-point per week) it would take clients over a year to achieve the 14-point decrease the manual defines as "clinically significant change" (Lambert et al., 2004). While this is not an unreasonable timeline for meaningful change in therapy, it would require longer-term services than are typically received at this clinic (the average number of sessions attended was 14.) Furthermore, change that did occur might not have been captured by the timing of measurement. Because the OQ-45 is administered at this clinic for planning and guiding treatment, it is administered more

frequently at the beginning of therapy than toward the end. No attempt is made to obtain scores at termination or post-therapy, which would allow for more accurate estimation of ending psychological functioning. In future studies, adding a termination assessment would be ideal.

Future studies would benefit from larger samples, increasing the power to detect effects in these complex phenomena, especially in the case of multiple therapy contexts and modalities. Collecting data in clinics or practices with fewer therapists seeing larger numbers of clients would make it possible to account for therapist effects, including personality and professional preferences. Such measurement might even reveal 'selection effects' – practitioners may select clientele based on personality profiles desirable to certain modalities.

Finally, in the current study therapists did not view personality data, and therefore made no use of it. An important future direction would be to follow the recommendations of multiple researcher/practitioners to use knowledge of client personality scores to guide treatment planning (e.g. Miller, 1991; Zinbarg et al., 2008). For example, Harkness and Lilienfeld (1997) recommended that treatment planning distinguish between basic tendencies which are unlikely to change, and characteristic adaptations, which can be more effectively addressed. An exciting effort currently underway goes a step further, advocating for personality assessment as more useful to the clinician than traditional diagnoses. For example, Widiger and Presnall (2013) argue that personality disorders can be described more precisely by the Big Five than by the heterogeneous categories currently in use, and that treatment protocols could be more simply and effectively created for extreme or maladaptive variants of Big Five traits than for the traditional categories. Similarly, Barlow and colleagues (2014) argue that fine distinctions between anxiety and mood disorders are not helpful given the extent of co-morbidity between such conditions. They suggest that such disorders be conceptualized simply as emotional disorders, with

treatment focused on trait Neuroticism (Barlow et al., 2014). Interventions have been seen to effectively change personality traits (Roberts et al., 2017 provide a meta-analysis of 207 studies) and protocols are currently being developed to treat traits like high Neuroticism (Armstrong, & Rimes, 2016; Sauer-Zavala, Wilner, & Barlow, in press) and low Conscientiousness (Roberts, Hill, & Davis, in press). Over time this approach may lead to both greater simplification and greater precision in how psychological disorders are conceptualized and treatment protocols deployed.

Conclusions

Taken together, the results of the current study provide some support for the overall hypothesis that personality traits relate to treatment usage and outcome, and for the utility of a Big Six personality model in mental health applications. Consistent with much previous work, all Big Five/Six traits except Openness associated with psychological functioning at intake. Number of sessions attended was predicted by higher Conscientiousness for family therapy clients but lower Conscientiousness for couples therapy clients. Higher Honesty/Propriety and Extraversion also predicted fewer sessions attended for family therapy clients. Better termination outcome was predicted by higher Conscientiousness for family, and higher Extraversion for individual therapy clients. Higher Honesty/Propriety and higher Neuroticism (likely a regression to the mean) predicted quicker improvement in psychological functioning. Many mental health treatments exist, but drop-out rates are high, and success rates are moderate. There is a substantial literature on normal range personality variation and association with life outcomes and clinical presentation, but relatively few extensions of this knowledge into clinical practice. With continued exploration, knowledge of how personality traits affect treatment for psychological disorders may help clinicians more effectively and efficiently serve their clients.

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Table 1

Descriptive Statistics, Comparison to Norms, and Correlations for BFI-six Scales, Intake OQ-45 and Clinical Outcomes

Scale	N	M	SD	α	items	Norms M	Norms SD	N	A6	A	C	H	E	O
Personality Scales														
Neuroticism (N)	301	3.37	.77	.82	8	2.98*	.86							
Agreeableness^six (A6)	299	3.34	.73	.78	8	3.39	.75	-.47*						
Agreeableness (A)	297	3.70	.62	.76	9	3.80*	.66	-.37*	.71*					
Conscientiousness (C)	298	3.61	.68	.81	9	3.74*	.70	-.34*	.18*	.32*				
Honesty/Propriety (H)	291	3.64	.61	.69	10	3.73*	.61	-.21*	.28*	.36*	.38*			
Extraversion (E)	296	3.28	.84	.85	8	3.18	.89	-.22*	-.02	.06	.14*	-.16*		
Openness (O)	294	3.83	.64	.79	10	3.98*	.59	.03	.15*	.10	-.01	-.04	.16*	
Clinical Measures														
Intake OQ-45	291	71.08	25.31	.94	45			.68*	-.36*	-.26*	-.33*	-.20*	-.15*	.01
Sessions attended:														
Individuals	103	15.78	25.43					.09	-.00	.05	.07	.09	-.10	.09
Couples	139	11.76	14.13					.00	-.11	-.15	-.04	.06	.05	.04
Families	38	8.39	6.16					-.17	.28	.27	.08	-.15	-.19	-.03
Mixed types	26	36.96	40.62					-.00	.02	.02	-.19	-.07	.27	.03
Overall	306	14.83	22.31					.04	-.01	.01	-.00	.02	.04	.10
Termination Outcome:														
Individuals	103	1.85	.80					.10	-.02	.07	-.03	.14	.05	-.14
Couples	139	1.69	.84					.00	-.01	-.02	.08	.06	.00	.03
Families	38	1.95	.80					-.08	-.07	.22	.15	-.26	.08	-.25
Mixed types	26	2.04	.77					.01	.25	-.08	.21	.10	-.15	-.12
Overall	306	1.81	.82					.04	-.01	.04	.07	.07	.04	-.05

Note. N is for scale statistics. Study sample age range 18-79 (*M* = 34.9, *SD* = 11), 55% female. Norm comparison scores are from the Life and Time national community sample (*N* = 840), age 18-63 (*M* = 36, *SD* = 11), 66% female. Comparisons use two sample *t*-tests. Correlation *N* = 277-299. BFI items are measured on a 1-5 scale, scale scores are item averages. Termination outcome is measured on an ordinal scale of 1 (drop out or quit without gains), 2 (some progress), or 3 (successful completion of goals).
* $p < .05$.

Table 2

Predictors of Number of Sessions Attended Using Poisson Regression

Predictor	B	SE	Wald χ^2	rate	B	SE	Wald χ^2	rate	B	SE	Wald χ^2	rate
	Individuals (N = 97)				Couples (N = 127)				Families (N = 29)			
Intercept	1.20	1.60	.56		2.20	1.73	1.63		6.83	1.92	12.71**	
Multiple types therapy	.78	.33	5.66*	2.17	1.20	.29	16.90**	3.31	-.87	.38	5.34*	.42
Age (years over 18)	.02	.01	2.15	1.02	.02	.01	6.78*	1.02	.03	.01	4.62*	1.03
Education (years over 12)	.17	.07	6.05*	1.19	.09	.05	3.09~	1.09	-.24	.10	5.45*	.79
Gender male	.27	.28	.90	1.30	.17	.23	.54	1.18	-.81	.29	8.03*	.44
OQ-45 baseline	.01	.01	2.66	1.01	.00	.01	.12	1.00	.01	.01	2.80~	1.01
Personality Variables												
Conscientiousness	.25	.21	1.42	1.28	-.38	.13	8.17**	.68	.26	.12	4.50*	1.30
Honesty/Propriety	.03	.23	.01	1.03	.28	.18	2.56	1.33	-.84	.27	9.62**	.43
Agreeableness[six]	-.04	.16	.07	.96	-.10	.22	.19	.91	.31	.21	2.21	1.36
Neuroticism	.00	.22	.00	1.00	-.06	.18	.12	.94	-.63	.37	2.83~	.53
Extraversion	-.10	.16	.36	.91	.25	.14	3.28~	1.28	-.51	.18	7.84*	.60
Openness	-.01	.21	.00	.99	-.06	.23	.07	.94	.08	.20	.17	1.09
Goodness of fit												
R^2_L	.21				.39				.56			
Deviance (*df*)	1928.81 (85)				1606.46 (115)				52.11 (17)			
Deviance$_{unconditional\ model}$ (*df*)	2434.87 (96)				2614.99 (126)				117.32 (27)			
Model χ^2 (*df*)	506.06 (11)**				1008.53 (11)**				65.32 (11) **			

Note. Rate = exp(B), the rate of increase for sessions for each unit change in predictor. R^2_L = R^2 for logistic regression models (variance explained compared to unconditional) per Cohen et al. (2003). For these analyses, clients who attended multiple types of therapy were grouped with the primary type of sessions attended; attending multiple types is accounted for the in the model. While the number of sessions attended by multiple members of a couple or family was often the same, it was not bound to be, because (a) all clients had the option of attending more than one type of therapy, (b) many couples had sessions alone, and (c) in family therapy, not all members were present for every session. Thus person level predictors remain theoretically relevant.
~ *p* < .10; * *p* < .05; ** *p* < .001.

Table 3

Predictors of Termination Outcome Using Single- (Individuals) and Multi-Level (Couples and Families) Ordinal Logistic Regression

Predictor	B	SE	Wald	OR	B	SE	t	OR	B	SE	t	OR
	Individuals (N = 114)				Couples (N = 125)				Families (N = 29)			
Threshhold = 1	1.09	2.92	.14		-.19	3.40	-.06		-26.54	8.19	-3.24*	
= 2	2.72	2.93	.86		2.21	3.41	.65		-23.14	8.01	-2.89*	
Multiple types therapy	.76	.71	1.14	1.00	-.42	.68	-.62	.66	-13.89	2.56	-5.43**	.00
Age (years over 18)	-.02	.02	.82	2.15	.01	.03	.40	1.01	.09	.08	1.09	1.09
Education (years over 12)	.24	.12	3.74~	.98	.37	.13	2.98*	1.45	-.49	-.49	-.83	.61
Gender = male	.34	.46	.54	1.26	.20	.32	.64	1.22	1.51	2.24	.68	4.53
OQ-45 baseline score	.01	.01	.12	1.40	-.00	.01	-.02	1.00	.04	.03	1.08	1.04
Personality Variables												
Conscientiousness	-.25	.32	.59	.78	-.21	.28	-.74	.81	2.46	.97	2.54*	11.71
Honesty/Propriety	.64	.37	2.97~	1.90	.28	.45	.62	1.32	-2.63	1.64	-1.60	.07
Agreeableness[six]	-.06	.31	.04	.94	-.12	.34	-.33	.89	-.00	1.52	-.00	1.00
Neuroticism	.53	.39	1.87	1.70	-.08	.41	-.21	.92	-2.16	1.74	-1.24	.12
Extraversion	.53	.25	4.44*	1.69	-.01	.18	-.07	.99	-.16	.75	-.21	.85
Openness	-1.00	.374	7.09*	.37	-.07	.37	-.19	.93	-1.11	1.56	-.71	.33
Goodness of fit												
Pseudo R^2 (Nagelkerke)	.16											
-2LL	194.73											
AIC					1,063.60				285.30			
BIC					1,066.28				285.79			
Scores test of proportional odds χ^2 (df)	9.80 (11) *n.s.*											

Note. OR = odds ratio. Termination outcome was coded into 3 groups: (1) Drop out before making progress; (2) Some gains made; (3) Successful completion. For couples- and family-therapy clients, analyses were multilevel with individuals nested within couples or families if relevant, using GENLIN MIXED in SPSS. Scores test of proportional odds and deviance values are not available in this procedure. Data was available on all predictors in the analysis for 125 couples-therapy participants of 153 total within 90 couples, and for 29 family participants of 39 total within 29 families.

~ $p < .10$; * $p < .05$; ** $p < .001$.

Table 4

Longitudinal Change in Outcome Questionnaire-45 Scores

Predictor		Linear			Full Model		
		B	*SE*	*t*	*B*	*SE*	*t*
Fixed Effects	Intercept	69.59	1.37	50.94**	41.73	14.33	2.91**
Initial status	Individual vs. group				6.56	2.49	2.63*
	Couples vs. family				.66	1.78	.37
	Multiple types therapy				7.78	3.38	2.30*
	Age (years over 18)				.31	.09	3.30**
	Education (years over 12)				-.36	.55	-.65
	Neuroticism				16.09	1.68	9.57**
	Conscientious				-4.94	1.72	-2.87**
	Honesty				-.71	1.95	-.37
	Agreeableness^{six}				-.72	1.65	-.44
	Extraversion				-1.47	1.30	-1.14
	Openness				-1.67	1.80	-.93
Slope	Week	-.20	.04	-5.67**	.15	.52	.28
	Sessions				.00	.00	1.80
	Individual vs. group				.09	.14	.62
	Couples vs. family				.13	.14	.93
	Multiple types therapy				.00	.07	-.03
	Age (years over 18)				.00	.00	1.67
	Education (years over 12)				.01	.02	.34
	Neuroticism				-.11	.05	-2.10*
	Conscientious				.04	.05	.80
	Honesty				-.14	.07	-2.12*
	Agreeableness^{six}				-.03	.05	-.66
	Extraversion				-.03	.04	-.73
	Openness				.09	.05	1.70
Variance Components							
Level 1	Within-person		136.51**			134.91**	
Level 2	In initial status		425.68**			197.06**	
	In rate of change		.03			.02	
Pseudo R^2 Statistics and Goodness of fit							
	R$^2_{residual}$					.01	
	R$^2_{intercept}$					.54	
	R$^2_{slope}$					.53	
	ICC		.76			.59	
	-2 Log Likelihood		7737.34			7542.33	
	AIC		7747.34			7598.33	
	BIC		7771.44			7733.26	

Note. $N = 915$ total OQ completions from 270 participants with data on all variables. For pseudo R^2, the full model is compared to the linear growth model with listwise deletion to match cases. ICC= intraclass correlation coefficient (per Singer & Willett, 2003).
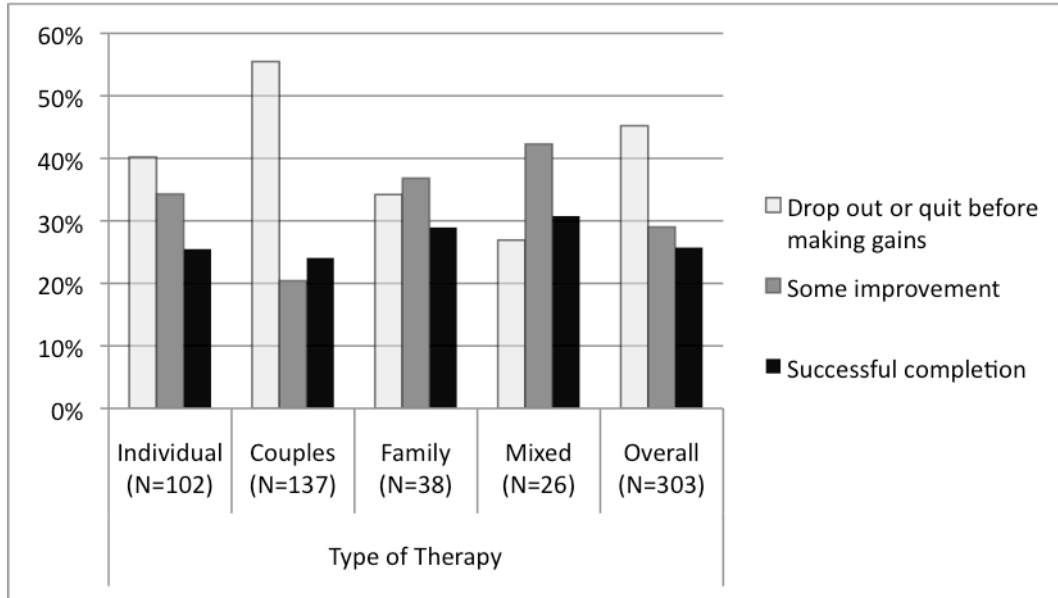~ $p < .10$; * $p < .05$; ** $p < .001$.

Figure 1. Termination outcome by type of therapy. Mixed refers to participants who attend more than one type of therapy.