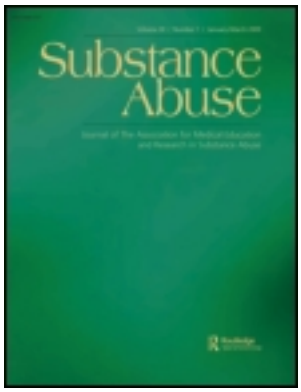

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The 10-Year Course of Alcoholics Anonymous Participation and Long-Term Outcomes: A Follow-Up Study of Outpatient Subjects in Project MATCH

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ABSTRACT. This study investigates the 10-year course and impact of Alcoholics Anonymous (AA)-related helping (AAH), step-work, and meeting attendance on long-term outcomes. Data were derived from 226 treatment-seeking alcoholics recruited from an outpatient site in Project MATCH and followed for 10 years post treatment. Alcohol consumption, AA participation, and other-oriented behavior were assessed at baseline, end of the 3-month treatment period, and 1, 3, and 10 years post treatment. Controlling for explanatory baseline and time-varying variables, results showed significant direct effects of AAH and meeting attendance on reduced alcohol outcomes and a direct effect of AAH on improved other-oriented interest.

Maria E. Pagano made substantial contributions to the conception and design of this study, analysis, interpretation of results, drafting and revising of the manuscript. William L. White and John F. Kelly made substantial contributions in interpretation of results, and revising the manuscript critically for important intellectual content. Robert L. Stout was involved in the study's conception, analysis, interpretation of results, and drafting of the manuscript. J. Scott Tonigan made substantial contributions to the acquisition of data, study design and coordination, and drafting of the manuscript. All authors commented on the manuscript.

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Keywords: AA-related helping, Alcoholics Anonymous, meeting attendance, Project MATCH, step-work

INTRODUCTION

Alcoholics Anonymous (AA) has distinguished itself within the alcohol problems arena through its membership size and geographical dispersion (more than 2.1 million members and 100,766 groups in 150 countries), its influence on the modern treatment of alcohol use disorders, and through the volume and growing methodological rigor of research studies on the effects of AA participation (1–3). Meta-analytic reviews of the effects of AA involvement report a positive association between AA participation and abstinence across diverse populations as well as reductions in substance-related health care costs (4–8). Efforts to date to isolate the active ingredients of AA participation have focused primarily on meeting attendance, step-work, and service (9, 10). Meeting attendance has been associated with abstinence and a higher number of sober friends (11–13). More step-work at a 3-year follow-up has been associated with decreased alcohol consumption at a 10-year follow-up (14). AA-related helping (AAH) activities are associated with greater abstinence at 1-year and 3-year follow-ups and reduced depression (15–20).

There are several theoretical interpretations of the evolution of service within the 12-step program. First, AAH can be viewed as an application of Riesman's "helper therapy principle" (HTP); one's own problems diminish through the process of helping others (21). AAH applies the long "wounded healer" tradition whereby survivors of a life-altering disorder or experience develop special sensitivities, insights, and skills to be uniquely helpful to others with the same condition (22, 23) —a process AA's co-founder Bill Wilson characterized as "the sublime paradox of strength coming out of weakness" (24). Second, just as an evolutionarily adaptive gene may promote the replication and survival of a particular species (25), AA's primary purpose, to stay sober and help other alcoholics, may have evolved to sustain the program's survival. Service positions such as chairperson or secretary further ongoing AA group functioning. Third, AAH can also be understood within AA's posited theory of self-centeredness as a central factor in the development and maintenance of alcoholism. AA's main textbook is filled with admonitions of the dangers of *selfishness*, *self-centeredness*, *self-absorption*, *self-justification*, *self-pity*, and *self-deception*. The collective experience of AA's original 100 members acknowledges *self-knowledge*, *self-reliance*, *self-control*, and *self-sufficiency* as failed paths to sustaining sobriety (26). Whereas mutual-aid alcoholic societies in the 19th century viewed self-assertion as liberating the alcoholic from the disease (27, 28), AA's founders characterized the illness as stemming from the "bondage of self" (26), which could only be broken by personal surrender and self-transcendence.

AA's main textbook emphasizes key exercises for ego reduction, which others reference as the foundation of recovery (29, 30). The AA recovery process involves (a) surrender—admission of powerlessness and personal limitations (Step 1) (". . .we had to quit playing God"); (b) transcendence of self via reliance on a power greater than self (Step 2); (c) witnessed confession of wrongs done to others (Step 5); (d) repair of family and social relationships through making amends (Step 9); (e) carrying a message of hope to other alcoholics (Step 12), which is often done in ritualized storytelling within a community of recovering people; and (f) personal anonymity as a spiritual principle—a metaphoric and literal shedding of self (Tradition 4) (31). Seen in this light, AA is not a "self-help" program but a mutual-help program that rests on the premonition that sustained sobriety cannot be achieved alone (32). AAH enacts many of these exercises designed to increase other-orientation and self-transcendence, which occurs quickly for some and slowly for others.

Long-term, prospective study of the course of AA participation across major programmatic activities and impact on behavior is limited. Of the few studies with 5-year or more follow-up post treatment, Kaskutas and colleagues (33) delineated 4 long-term patterns regarding AA meeting attendance: (1) low, (2) medium, (3) descending, and (4) high, with highest meeting attendance occurring in the first year following treatment. Long-term participation patterns in other program activities such as step-work and AAH are less clear. Although higher meeting attendance in the initial post-treatment period is associated with more improved drinking outcomes (7, 34–49), few have studied the long-term influence of other major components on decreased substance use. Further, long-term alcohol investigations of AA's impact on clinical outcomes beyond drinking are rare. A handful of early studies considered the potential effect of AA participation on a transformation from self-centeredness to increased other-orientation (29, 50). Reinert and colleagues (51, 52) hypothesized a decline in self-orientation with increased years in recovery, but did not find such declines over short periods of time in a sample of AA members. However, increased other-regard, if it occurs through such mechanisms as step-work or AAH, may span years of AA participation.

This paper builds upon prior prospective AAH research to explore the course and impact of AA participation across 3 major programmatic activities: meeting attendance, step-work, and AAH. In this study, we examine (1) the 10-year course of AA participation, drinking, and other-oriented behavior; (2) the influence of 12-step facilitated treatment (Twelve-Step Facilitation [TSF]) on AA programmatic

TABLE 1
Baseline Characteristics of Outpatient Sites in Project MATCH

	Outpatient site				
Variable	Albuquerque 226 (24%)	Buffalo 200 (21%)	Farmington 201 (21%)	Milwaukee 178 (19%)	West Haven 147 (15%)
Male	166 (73%)	140 (70%)	145 (72%)	115 (65%)	122 (83%)
Caucasian	120 (53%)	173 (87%)	190 (95%)	165 (93%)	135 (92%)
Hispanic	103 (46%)***	2 (1%)	3 (1%)	4 (2%)	4 (3%)
Married	44 (19%)***	72 (36%)	98 (49%)	59 (33%)	68 (46%)
Employed fulltime	95 (42%)	79 (40%)	125 (62%)	103 (58%)	83 (56%)
ASPD	28 (14%)	14 (7%)	11 (6%)	21 (12%)	7 (6%)
Treatment assignment					
CBT	72 (32%)	67 (33%)	61 (30%)	51 (29%)	50 (34%)
MET	79 (35%)	72 (36%)	66 (33%)	55 (31%)	44 (30%)
TSF	75 (33%)	61 (31%)	74 (37%)	72 (40%)	53 (36%)
Age, M (SD)	33.25 (8.50)***	40.17 (10.62)	41.93 (10.07)	37.53 (10.66)	43.25 (11.01)
Education, M (SD)	12.70 (1.90)***	13.50 (2.09)	14.16 (2.16)	13.50 (2.13)	13.49 (2.24)
PDA, M (SD)	36.45 (8.47)	31.25 (6.93)	28.49 (7.60)	43.50 (7.07)	31.83 (9.40)
Prior treatment, M (SD)	1.11 (2.89)	0.83 (1.67)	0.82 (1.32)	1.17 (1.75)	1.30 (1.92)
AA attendance, M (SD)	0.03 (0.08)	0.02 (0.06)	0.04 (0.12)	0.02 (0.07)	0.05 (0.14)

***$P < .001$

activities and outcomes over time; and (3) the influence of time-varying participation in AA programmatic activities on subsequent drinking and other-oriented behavior.

METHODS

Participants

Data were derived from Project MATCH, a prospective longitudinal investigation of the efficacies of 3 behavioral treatments for alcohol use disorders delivered over a 3-month treatment period (53). Project MATCH recruited subjects from 4 aftercare sites ($n = 774$; 80% male) and 5 outpatient sites ($n = 952$; 72% male). This report presents 10-year outcome data collected at one outpatient site in Project MATCH ($n = 226$). At intake, the clinical profile of the study sample was similar to other outpatient site samples in Project MATCH, with exception to being younger at intake ($P < .0001$), less education ($P < .0001$), and greater Hispanic representation ($P < .0001$; Table 1). During follow-up, over 85% of the original 952 outpatients in Project MATCH was retained in the 3 years post treatment, with no significant site differences in attrition (54, 55).

Extensive attritional analyses also compared study participants who did and did not complete a 10-year interview, which was completed on average 117 months (SD = 9.54) post randomization. Of the original 226 outpatient subjects, 23 (10%) did not provide consent for the 10-year follow-up interview and 22 (10%) had died since the 39-month interview, confirmed by obituaries death certificates from the New Mexico Office of Medical Records. Of the surviving, eligible subjects ($n = 181$), 148 (82%) completed a 10-year follow-up interview, 28 (15%) were unable to be located, and 5 (3%) refused to participate. There were no significant differences between study participants with and without 10-year evaluations (Table 2).

The general aims, research design, and organization of Project MATCH can be read about in detail elsewhere (56). The study procedures were approved by the Human Subjects Review Committee at University of New Mexico, written informed consent was obtained in accordance with the standards of the Committee on Human Experimentation with the Helsinki Declaration of 1975 (54, 57), and a Certificate of Confidentiality from the National Institute on Alcohol Abuse and Alcoholism was obtained.

Measures

Background characteristics were assessed at baseline. Time-varying variables (percent days abstinent, 3 indices of AA participation, other-oriented interest) were assessed at baseline and 3, 15, 39, and 120 months post randomization.

Background characteristics

Baseline demographic and clinical characteristics included gender, race, marital status, full-time employment status, age, years of education, antisocial personality disorder (ASPD), chemical dependency treatment history, and receipt of Twelve-Step Facilitation (TSF). Receipt of TSF versus no TSF (cognitive-behavioral therapy, motivational enhancement therapy) (58) was ascertained from Project MATCH's randomized treatment assignment (42).

Alcohol use

Alcohol use was defined as percent days abstinent (PDA) using the semi-structured Form 90 (59). The Form 90 is

TABLE 2
Baseline Characteristics of Outpatient Sample by 10-Year Interview Status

	Participant status at 10-year interview				
Variable	Interview completed 148 (66%)	Ineligible 23 (10%)	Refused 5 (2%)	Deceased 22 (10%)	Unable to schedule 28 (2%)
Male	104 (70%)	19 (83%)	4 (80%)	17 (77%)	22 (79%)
Caucasian	71 (48%)	13 (57%)	4 (80%)	16 (73%)	16 (57%)
Hispanic	75 (51%)	10 (43%)	1 (20%)	6 (27%)	11 (39%)
Married	35 (24%)	4 (17%)	1 (20%)	1 (6%)	368 (11%)
Employed fulltime	65 (44%)	10 (43%)	3 (60%)	7 (32%)	10 (36%)
ASPD	16 (13%)	7 (35%)	1 (20%)	3 (16%)	1 (4%)
Treatment assignment					
CBT	49 (33%)	8 (35%)	0 (0%)	6 (27%)	9 (32%)
MET	48 (33%)	11 (48%)	4 (80%)	7 (32%)	9 (32%)
TSF	51 (34%)	4 (17%)	1 (20%)	9 (41%)	10 (36%)
Age, M (SD)	33.12 (8.56)	32.43 (9.00)	37.60 (10.41)	36.18 (7.77)	31.54 (11.01)
Education, M (SD)	12.72 (1.97)	12.57 (1.78)	11.80 (0.45)	12.91 (2.27)	12.68 (1.47)
PDA, M (SD)	36.21 (8.72)	33.27 (9.59)	44.11 (4.85)	29.45 (9.00)	43.29 (5.60)
Prior treatment, M (SD)	1.11 (3.43)	1.09 (1.65)	1.00 (1.73)	1.50 (1.26)	0.79 (1.07)
Meeting attendance, M (SD)	0.02 (0.07)	0.03 (0.06)	0.12 (0.23)	0.04 (0.13)	0.04 (0.07)

a calendar-based daily drinking estimation method that incorporates a grid-averaging approach to provide a comprehensive and efficient assessment of a person's drinking over a designated period of time (90 days in this study). It has demonstrated test-retest reliability for treatment-seeking alcoholics (60) and problem use of illicit drugs (61). Given the negatively skewed distribution, PDA variables received an arcsine transformation, as was done in the primary MATCH outcome analyses (54).

AA participation

Three indices of AA participation variables were measured: (1) AAH, (2) AA meeting attendance (MTG), and (3) step-work. AAH was assessed with the 13-item Alcoholics Anonymous Involvement (AAI) questionnaire (62), a well-validated measure of AA affiliation developed for use in Project MATCH (62). Using criterion from prior work (9), AAH was defined by endorsement of 2 AAI items: being a sponsor and/or completion of the 12th step in the last 90 days. MTG was assessed from one item on the Form 90, "How many AA meetings have you attended in the past 90 days?" and converted into percent days attending AA (number of days attending AA/number of days in the assessment period), for a score ranging from .00 to 1.00. Because of a positively skewed distribution, MTG was log transformed. Step-work was measured from the continuous AAI item ascertaining completed steps (0 to 11) in the assessment period, and summed. Using Cohen's effect size *r* estimates (63), there was a small correlation between AAH and MTG at any assessment ($r = .18–.24$, $P < .001$), a moderate correlation between AAH and step-work ($r = .26–.43$, $P < .001$), and a moderate correlation between MTG and step-work ($r = .42–.60$, $P < .001$).

Other-oriented interest (OOI)

One item from the Beck Depression Inventory (BDI) (64) was used as an index of AA's espoused behavior towards others (i.e., ". . . trying each day to be a little more thoughtful and considerate to those with whom we came in contact" (65, p. 356). With regard to interest in others in the past week, participants rated the OOI item from 0 (no loss of interest) to 3 (lost all interest). Similar single-item measures have been used in other alcohol investigations (66, 67).

Statistical Analysis

Statistical analyses were performed using SAS version 9.1.3 (SAS Institute Inc., 2004; Cary, NC). Depending on the type of variables (continuous or discrete), the Fisher's exact test for binary variables or Kruskal-Wallis chi-square test for continuous variables was performed to evaluate demographic and clinical differences between subjects. We used hierarchal linear modeling (HLM) to examine the course of time-varying variables (AA variables, outcomes). Variables were mean centered to reduce multicollinearity (68).

We used pairs of time points in which time-varying AA covariates (AAH, meeting attendance, step-work) were analyzed in relation to lagged time-varying outcomes (e.g., AAH at 3 months predicting PDA at 15 months, AAH at 15 months predicting PDA at 39 months, and AAH at 39 months predicting PDA at 120 months). We used HLM to predict PDA, with adjustments for lack of independency among the multiple observations for each person. We used generalized estimation equation (GEE) methods to predict OOI, with an unstructured

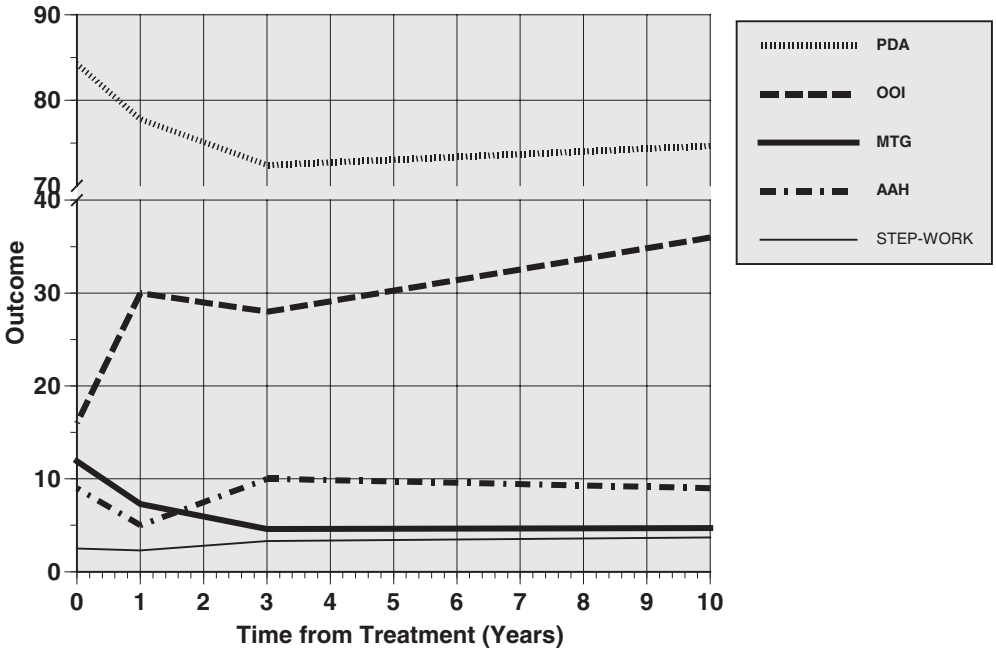

FIGURE 1 10-Year course of outcomes and aa participation. PDA = percent days abstinent in the assessment period; OOI = other-oriented interest, proportion endorsing some to all lost OOI in the assessment period; AAH = AA-related helping; MTG = percent days attending AA in the assessment period; STEP-WORK = number of steps worked among participants working 1+ steps in the assessment period.

correlation matrix and correction for overdispersion (69). A nonsignificant linear time coefficient between data collected in the initial 3 years and at the 10-year interview suggested no marked change in slope to raise concern of the interval time lag. All models controlled for baseline assessments of AA variables and the dependent variable. In addition, to help rule out the possibility that variables other than AA were responsible for improved outcomes, we included baseline covariates linked to treatment outcomes: gender, age, marital status (married/not married), race/ethnicity, full-time employment (yes/no), ASPD diagnosis (yes/no), and prior treatments (14, 16). To achieve this, we used an empirical backward elimination procedure to test whether baseline covariates were related to outcomes. Results revealed that age, marital status, full-time employment, and prior treatments were significantly related to study outcomes, and thus were maintained as control variables. To limit hypothesis testing and to maintain the recommended 15:1 predictor/subject ratio (70), we first evaluated evidence of direct effects of TSF and time-varying AA variables on outcomes at any time during the study. Analytic models were then rerun to include all interaction terms between TSF, the time-varying AA variable, and time.

Although missing data patterns were nonmonotone (i.e., intermittently missing), and importantly, not associated with PDA or OOI outcomes, we used the Markov chain Monte Carlo (MCMC) method for multiple imputation (71, 72). For any given assessment through month 39, data reconstruction for independent variables ranged from 4% to 6% for study participants. These rates are similar to those constructed for other outpatient samples in Project MATCH (73). The statistics reported for variables in our analyses are the averaged results across the 10 imputations performed. The degrees of freedom for the reported t statistics for each regression coefficient vary from analysis to analysis given the recommended use of adjusted degrees of freedom (74). When multicollinearity diagnostics of the 2 fitted models were examined, tolerances were .50 and above, indicating low concern of multicollinearity (69). We reported all 2-tailed tests with significance values greater than 95% ($P < .05$).

RESULTS

Table 1 shows the demographic and clinical characteristics of the outpatient sample at baseline. The majority of participants were male (76%) and single (76%). Approximately half of the sample were Caucasian (48%), Hispanic (51%), and employed full time (44%). On average, subjects were 33 years old (M = 33.12 years), had a high school diploma (M = 12.73 years of education), and 13% met diagnostic criteria for ASPD. Participants entered treatment with low PDA, few prior treatments, and low prior exposure to AA. Thirty-three percent ($n = 75$) of the outpatient sample was randomly assigned to TSF.

Course of Outcomes

Figure 1 shows the population-averaged estimates of the 10-year course of PDA and OOI. A significant direct effect for

time was found for PDA ($F = 40.15$, $P < .0001$) but not for OOI scores ($F = 2.11$, $P = .15$). The average PDA at the 3-month interview approximately doubled from baseline and declined thereafter. At no assessment did the rate of abstinence exceed 13%, a rate similar to other long-term investigations of problem drinkers (34). The proportion of subjects reporting some to all lost interest in others was lowest at the 3-month interview (16%), and returned to pretreatment levels by the 120-month interview (36%). At any assessment, there was a small, negative correlation between PDA and OOI scores (rs $= -.16$ to $-.20$, $P < .001$).

Course of AA Participation

The 10-year course of MTG, step-work, and AAH following the index treatment is shown in Figure 1. Significant fluctuations in MTG were observed over time ($F = 10.82$, $P < .0001$); as shown in Figure 1, MTG at the 3-month interview (0 year in Figure 1) more than doubled from baseline, declined by 6% at the 15-month interview (1 year on Figure 1), and further declined at the 39-month interview (3 years on Figure 1) to a level that was relatively constant at the 120-month interview. In contrast, the average number of steps completed remained low over the decade following the index treatment ($F = 2.01$, $P = 0.11$); notably, approximately two thirds of the sample were not working any steps at any point. However, as shown in Figure 1, those who worked at least 1 step during the index treatment continued to progress in step-work over time ($F = 10.21$, $P < .0001$). The rate of AAH was also relatively constant over time ($F = 2.62$, $P = .06$); approximately 9% to 10% of the population were AAH participants at any point during follow-up. At the 15-month interview, however, only 5% of the outpatient sample was participating in AAH.

TSF and Course of AA Participation

During the 3-month treatment period, TSF recipients had greater participation in AAH (15% vs. 6%; $\chi^2 = 5.17$, $P < .05$), step-work (1+ steps worked, 68% vs. 29%; $\chi^2 = 29.90$, $P < .0001$), and MTG (M = 23.73 vs. M = 5.93, $F = 38.81$, $P < .0001$). At the 15-month interview, this pattern continued in TSF recipients in terms of greater participation in AAH (10% vs. 1%; $\chi^2 = 10.54$, $P < .001$), step-work (1+ steps worked, 53% vs. 26%, $\chi^2 = 11.98$, $P < .001$), but not MTG ($F = 0.61$, $P = .23$). However, TSF did not distinguish long-term AA participation patterns beyond the 15-month interview. Unrelated to TSF, AAH initiation steadily increased from 3% at the 15-month interview to 11% at each subsequent assessment. At any point in the study, AAH participants versus non-AAH participants had higher levels of MTG ($F = 5.03$, $P < .0001$) and step-work ($F = 11.54$, $P < .0001$).

TABLE 3
Estimates and *P* Values for Final Model of Percent Days Abstinent Over Time in an Outpatient Sample in Project MATCH[a]

Variable	β	CI lower	CI upper	t	P
Time-varying covariates					
Follow-up month[b]	0.027	−0.313	0.170	1.04	.299
AAH[c]	−0.041	0.059	0.380	1.81	.033
Meeting attendance	0.144	0.026	0.216	2.60	.009
Step-work[d]	0.045	−0.086	0.176	0.65	.519
TSF assignment	0.095	−0.102	0.294	0.95	.341
AAH × Month	0.093	−0.030	0.216	1.50	.137
Meeting Attendance × Month	−0.069	−0.155	0.017	−1.44	.128
Step-work × Month	−0.054	−0.123	0.016	−1.54	.129
TSF × Month	−0.068	−0.154	0.017	−1.48	.122
Baseline covariates					
PDA[e]	0.263	0.146	0.380	4.43	<.0001
AAH	−0.117	−0.313	0.169	−0.58	.562
Meeting attendance	−0.025	−0.123	0.073	−0.51	.613
Step-work	0.047	−0.101	0.194	0.63	.531
Age	−0.010	−0.014	−0.002	−1.81	.067
Prior treatment	0.013	0.001	0.026	1.65	.059
Married	−0.103	−0.216	0.011	−1.78	.077

Note. [a]Lagged-panel HLM results with multiple imputation; [b]Follow-up month after intake: 3-month, 15-month, 39-month, 120-month; [c]AAH = AA-related helping; [d]Step-work = no. of steps worked (1–11); [e]PDA = percent days abstinent.

AA Participation and Outcomes Over Time

Table 3 shows the parameter estimates of baseline covariates and time-varying covariates (variables assessed at each follow-up) in relation to PDA over time. Controlling for baseline covariates, results showed significant direct effects of MTG ($P < .01$) and AAH ($P < .05$) on PDA outcomes. Results also revealed age, prior treatment, and being married approached significance ($P < .10$). Similar to prior results found in Project MATCH (75), there was no significant direct effect of TSF nor interaction with time to indicate greater efficacy of TSF versus other treatments on PDA during or following the index treatment episode.

Results also demonstrated significant direct effects of MTG ($P < .05$) and AAH ($P < .05$) on OOI outcomes (Table 4). The significant coefficient for AAH (−0.37) indicated an adjusted odds ratio of 0.69 (i.e., exp(−0.37)), the reciprocal of which translated into a 50% increased likelihood for AAH participants versus nonparticipants to be in the lower OOI category (i.e., higher interest in others), controlling for explanatory variables in the model. The coefficient for MTG (−0.126) revealed that with each 1-unit increase in MTG, the odds of being in a lower OOI category rose by 13% (i.e., 100[exp(−.126) − 1]. Prior treatment was significantly related to OOI ($P < .05$), whereas being married and TSF receipt approached significance ($P < .10$).

TABLE 4
Estimates and *P* Values for Final Model of Other-Oriented Interest Over Time in an Outpatient Sample in Project MATCH[a]

Variable	β	CI lower	CI upper	t	P
Time-varying covariates					
Follow-up month[b]	0.003	−0.072	0.032	0.08	.938
AAH[2]	−0.371	−0.772	−0.036	−2.81	.013
Meeting attendance	−0.126	−0.252	−0.026	−2.00	.033
Step-work[c]	−0.080	−0.263	0.103	−0.86	.391
TSF assignment	−0.222	−0.475	0.032	−1.73	.096
AAH × Month	−0.052	−0.227	0.122	−0.59	.556
Meeting Attendance × Month	0.031	−0.057	0.119	0.68	.496
Step-work × Month	0.043	−0.043	0.129	0.99	.323
TSF × Month	0.097	−0.026	0.219	1.57	.122
Baseline covariates					
OOI[d]	0.229	0.125	0.333	4.36	<.0001
AAH	−0.049	−0.198	0.099	−0.65	.514
Meeting attendance	0.005	−0.122	0.134	0.90	.368
Step-work	0.011	−0.120	0.142	0.17	.866
Age	0.001	−0.007	0.009	0.28	.783
Prior treatment	0.013	0.001	0.025	2.20	.028
Married	0.073	−0.085	0.231	0.67	.095

Note. [a]Lagged-panel GEE results with multiple imputation; [b]Follow-up month after intake: 3-month, 15-month, 39-month, 120-month; [c]AAH = AA-related helping; [d]Step-work = no. of steps worked (1–11); [d]OOI = other-oriented interest.

DISCUSSION

This study provides a snapshot of what can be expected of outpatients' AA participation in the decade following their index treatment and highlights the importance of meeting attendance and AAH to long-term behavioral change. Meeting attendance during treatment and in the following decade parallels patterns reported in other prospective 12-step investigations (76, 77): meeting attendance was highest during treatment and steadily declined thereafter. In contrast, a relatively stable rate of AAH (9%) and low levels of step-work were observed during and following treatment. Despite a lowered rate of AAH at the 15-month assessment, AAH participants did more step-work and attended more meetings than non-AAH participants at any study interval. TSF treatment significantly boosted AAH participation and step-work relative to the other treatment conditions, but effects were lost after the initial year post treatment. Extended effects of TSF beyond the initial year post treatment may be seen with coordination of other 12-step facilitation approaches such as "Bridging the Gap" (78, 79), or periodic booster sessions post treatment, such as Case Monitoring (R01 AA009907; 80).

We next explored the relationship between participation in 3 AA programmatic activities on subsequent drinking and other-oriented behavior over time. Consistent with prior work (6–8, 15, 16, 62), results showed direct effects of meeting attendance and AAH on greater abstinence across time, but not differential benefit of TSF. Controlling for pretreatment levels of OOI, those engaged in AAH were significantly more likely to report higher interest in others. These findings suggest the importance of meeting attendance to abstinence as a newcomer and in long-term recovery, and support AA's suggestion to help others as way to stave off an urge to drink and increase interest in others.

There are several limitations of this study that warrant attention. This outpatient sample was representative of other outpatient sites in Project MATCH with exception to age and education. Findings may not generalize to non–treatment-seeking populations or those with more severe addiction. However, alcohol consumption patterns were similar to 10-year course patterns observed in other samples of problem drinkers (34). Second, treatment effects in this study are limited to the randomized index treatment. Third, our estimates of AAH and OOI are likely to be on the low end of true rates given their 1- to 2-item assessments.

Limitations aside, this study is the first to explore the 10-year course of meeting attendance, step-work, and AAH and their concurrent influence on long-term outcomes. Psychometrically sound measures employed in Project MATCH were consistently collected at each study interval, with 10 years of month-to-month estimates of drinking outcomes reliably assessed with the Form 90. Other strengths of this study include a high representation of Hispanic problem drinkers seeking outpatient treatment; an 82% retention rate at 10 years post treatment; and advanced statistical techniques including multiple imputation that produced robust parameter estimates. The HLM methods employed controlled for all stable measured and unmeasured characteristics of subjects correlated with model covariates (69), thereby eliminating potentially large sources of bias.

Treatment provides a time-limited opportunity during which patients may be receptive to professional input and advice. The significant correlation in our study between worse alcohol outcomes and less interest in others suggests that clients may benefit from increasing other-oriented behaviors as part of their recovery program. The current practice of encouraging meeting attendance could be honed by encouraging service involvement at meetings that do not require extended sobriety time (e.g., helping setup chairs, tables, or coffee). Step-work activity during and following treatment was low; on average, 2 out of 3 alcoholics worked no steps during treatment and in the decade following. Formal step-work exercises, a common practice of treatment programs, may require more clinician guidance to increase clients' understanding of steps worked and their completion. Future studies are warranted to explore the impact of working all 12 steps on behavioral change as well as sequencing of AAH activities in relation to length of time sober.

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