



Alcohol and drug treatment involvement, 12-step attendance and abstinence: 9-year cross-lagged analysis of adults in an integrated health plan[☆]

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ARTICLE INFO

Article history:

Received 15 April 2013

Received in revised form 15 October 2013

Accepted 29 October 2013

Keywords:

Path model

Longitudinal data

Alcohol and drug treatment

12-Step attendance

Managed care

ABSTRACT

This study explored causal relationships between post-treatment 12-step attendance and abstinence at multiple data waves and examined indirect paths leading from treatment initiation to abstinence 9-years later. Adults ($N = 1945$) seeking help for alcohol or drug use disorders from integrated healthcare organization outpatient treatment programs were followed at 1-, 5-, 7- and 9-years. Path modeling with cross-lagged partial regression coefficients was used to test causal relationships. Cross-lagged paths indicated greater 12-step attendance during years 1 and 5 and were casually related to past-30-day abstinence at years 5 and 7 respectively, suggesting 12-step attendance leads to abstinence (but not vice versa) well into the post-treatment period. Some gender differences were found in these relationships. Three significant time-lagged, indirect paths emerged linking treatment duration to year-9 abstinence. Conclusions are discussed in the context of other studies using longitudinal designs. For outpatient clients, results reinforce the value of lengthier treatment duration and 12-step attendance in year 1.

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1. Introduction

A once open debate in the literature (Ferri, Amato, & Davoli, 2006; Kaskutas, 2008) and popular media (Humphreys, 2010; Johnson, 2010a; Johnson, 2010b) that centered on the effectiveness of Alcoholics Anonymous (AA) has been challenged in recent years by a substantial empirical literature suggesting that participation in AA (Kelly & Yeterian, 2011; Tonigan, 2008; Tonigan, Toscova, & Miller, 1996) and similar 12-step groups (Gossop, Stewart, & Marsden, 2008; Weiss et al., 2005) leads to positive outcomes. This research has included various randomized control trials of treatments based on 12-step principals (Litt, Kadden, Kabela-Cormier, & Petry, 2009; Longabaugh, Wirtz, Zweben, & Stout, 1998; McCrady, Epstein, & Kahler, 2004) and naturalistic or quasi-experimental studies with clinical samples (Gossop et al., 2003; Kaskutas, Subbaraman, Witbrodt, & Zembore, 2009b; Ouimette, Finney, & Moos, 1997; Witbrodt et al., 2012b) and nonclinical samples (Moos & Moos, 2005a; Tonigan & Rice, 2010) as well as research with general population samples (Dawson, Grant, Stinson, & Chou, 2006a). Research on 12-step programs in the past decade has become increasingly sophisticated

both in study design and analytic approach. Consistent and robust findings indicating a positive correlation between AA participation and improved outcomes have been further advanced by findings from a handful of longitudinal studies using repeated and extended follow-ups, including some that have used time-lagged designs to test causal relationships between AA exposure and outcomes (Connors, Tonigan, & Miller, 2001; Fiorentine & Hillhouse, 2000; Kelly, Stout, Zywiak, & Schneider, 2006; Magura, Cleland, & Tonigan, 2013 23346; McCrady et al., 2004; Mckellar, Stewart, & Humphreys, 2003; Moos & Moos, 2006; Tonigan & Rice, 2010; Walitzer, Dermen, & Barrick, 2009; Weiss et al., 2005).

We might ask what the role of treatment is in the relationship between AA participation and improved outcomes as many help-seekers transition between treatment and 12-step programs before obtaining sustained remission (Dennis, Scott, Funk, & Foss, 2005). Studies of treatment and general population samples also suggest that specialty treatment and AA and other 12-step groups are closely linked when viewed concurrently (Fiorentine & Hillhouse, 2000; Kaskutas, Ye, Greenfield, Witbrodt, & Bond, 2008). While little data are available to substantiate whether AA itself is more effective than specialty treatment in general, the literature does suggest that treatment in combination with 12-step participation, especially treatment based on 12-step principles and behaviors, may be more successful in effecting abstinence over time (Kadden et al., 1998; Dawson et al., 2006b; Longabaugh et al., 1998; Moos & Moos, 2005a). This paper explores the relationship between 12-step meeting

[☆] This secondary analysis was supported by grants from the National Institute on Alcohol Abuse and Alcoholism (R01AA10359) and the National Institute on Drug Abuse (R37DA10572 and R01DA08728).

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attendance and abstinence using longitudinal data collected from help-seeking individuals with alcohol and other drug use disorders who were recruited from a private, integrated health system at treatment entry and who were interviewed at five data points across the span of nearly a decade. Integrated and other managed care organizations have become major providers for the private and public sectors, yet, only a few longitudinal studies of 12-step participation have focused on these populations (Chi, Kaskutas, Sterling, Campbell, & Weisner, 2009). Our analytic strategy is theoretically guided by the clinical and longitudinal treatment outcome research, including treatment careers and the natural course of treated populations (Hser, Anglin, Grella, Longshore, & Prendergast, 1997; Joe, Chastain, Marsh, & Simpson, 1990; Marsh, Joe, Simpson, & Lehman, 1990; Vaillant, 1996). Under this conceptualization, evaluating the dynamic patterns and outcomes of multiple sequential interventions over time is important (Hser et al., 1997; Laudet, Stanick, & Sands, 2007).

Our analysis builds mainly on a set of longitudinal studies. Three of these utilized cross-lagged analytic techniques to evaluate causal paths between AA participation and better outcomes. Under this analytical method reciprocal causation is explicitly modeled (Kenney, 1979). Using a treatment sample of alcohol-dependent males ($N = 2319$) from a multi-site Veteran's Administration (VA) study, Mckellar et al. (2003) was the first to apply a cross-lagged design to evaluate whether AA involvement was a "cause, consequence or merely a correlation" of better outcomes. Results indicated that higher levels of AA involvement in year 1 predicted better alcohol-related outcomes in year 2, but alcohol-related outcomes in year 1 did not predict AA involvement in year 2. These results were obtained even after controlling for baseline levels of AA involvement and problem severity. Treatment involvement was not considered in the model; however, the causal relationship between AA involvement in year 1 and the drinking outcomes in year 2 was not altered when baseline motivation was controlled. In a similar study, Walitzer et al. (2009) analyzed alcohol-dependent, outpatient clients ($n = 169$) randomized to one of three conditions: a directive approach to facilitating AA, a motivational enhancement approach to facilitating AA, or treatment as usual (no emphasis on AA). Cross-lagged panel models showed that AA involvement during treatment predicted alcohol abstinence at 4–6 months after treatment end, and AA involvement at 4–6 months after treatment end predicted alcohol abstinence at 10–12 months after treatment end. Similar to Mckellar et al. (2003) study, reverse causation was not found. Using Project MATCH data, Magura, Cleland, & Tonigan (2013) found that AA attendance at 3-, 6-, 9- and 12-months predicted increases in alcohol abstinence and reduction in drinking problems at 6-, 9-, 12- and 15-months respectively for the outpatient subsample ($n = 952$). Again casual effects in the reverse direction were unsupported. Results for the aftercare subsample ($n = 744$) were not as clear, but they also suggested that AA attendance leads to better outcomes. The current study builds on these cross-lagged studies by extending out to 9 years with a privately insured sample seeking services from a program that incorporated 12-step ideology into some group sessions.

Our analysis is also informed by findings from three extended, multi-wave studies. One such study followed initially untreated individuals ($n = 628$) with alcohol use disorders for 16 years and examined the sequence and duration of treatment and 12-step participation in relation to alcohol-related outcomes at three follow-ups. Better results were found at both 1 and 8 years for individuals who initiated treatment and 12-step participation in year 1; a longer duration of treatment in year 1 independently related to a higher likelihood of improved outcomes at these two follow-ups (Moos & Moos, 2003; Moos & Moos, 2004). Moreover, higher initial doses of 12-step attendance and treatment during year 1 were independently related to abstinence 15 years later (Moos & Moos, 2006).

Whereas this 16-year study analyzed data between two distinct time points, our current analysis is also informed by longitudinal studies that simultaneously considered multiple data waves in a single statistical model (Kaskutas, Bond, & Ammon Avalos, 2009a; Witbrodt, Kaskutas, Bond, & Delucchi, 2012a). These generally suggested that patterns of 12-step attendance vary across individuals and that ongoing participation is associated with better outcomes. Using latent class trajectories analysis (LCA) with the current integrated care treatment sample of alcohol and drug misusers, authors found that individuals reporting high steady 12-step attendance over 9 years and those reporting initial high levels of attendance followed by low but continued attendance reported the highest stable patterns of past-30 alcohol and drug abstinence over time; in contrast, those in a class with no (or very little) 12-step attendance over time reported the lowest pattern of abstinence over time (Witbrodt, Mertens, et al., 2012b). Longer index treatment duration was associated with membership in classes with the highest initial 12-step attendance patterns, and female gender and high problem severity correlated with 12-step attendance at all waves.

Drawing from these longitudinal studies, we use a path modeling strategy that incorporates cross-lagged and autoregressive techniques to assess causal linkages between treatment, 12-step attendance and abstinence over time. In this analytical approach each variable in the hypothesized path is regressed on all variables that precede it in time thus making full use of the multi-wave longitudinal data. While prior multi-wave longitudinal studies have examined these issues, they have not specifically explored the temporal and cumulative relationships between post-treatment 12-step attendance and treatment readmissions and abstinence status over time while considering the influence of index treatment duration as we do here. It is important to include the role of treatment because of its potential to confound the relationship between 12-step attendance and abstinence. Lastly, several papers examining the sample included in the current study support our conceptual model, but none looked at the cumulative relationships between treatment, 12-step attendance and abstinence over time (Chi & Weisner, 2008; Chi, Satre, & Weisner, 2006; Kohn, Tsoh, & Weisner, 2003; Mertens, Weisner, & Ray, 2005; Satre, Mertens, Areán, & Weisner, 2004; Satre, Blow, Chi, & Weisner, 2007; Weisner, Ray, Mertens, Satre, & Moore, 2003).

Following on the hypothesized directional relationships described in the three studies that used cross-lagged analyses, this method allowed us to explore (1) whether prior 12-step attendance is in the causal path leading to subsequent abstinence or, conversely, whether prior abstinence is the causal path leading to subsequent 12-step attendance for each of three time-lagged periods; or (2) whether these hypothetical relationships change over time (if they are cyclical). Similar to the Mckellar et al. (2003) study, we controlled for baseline problem severity and also included treatment duration in the model. The model additionally allowed us to explore not only the directional direct effects of formal treatment on 12-step attendance and abstinence, but also the time-lagged indirect paths leading from the point treatment initiation to abstinence 9 years later.

2. Materials and methods

2.1. Study site

Study individuals ($N = 1951$) were patients from two randomized controlled trials that were conducted at the Kaiser Permanente Chemical Dependency Recovery Program (CDRP) in Sacramento, CA (Weisner et al., 2000b; Weisner, Mertens, Parthasarathy, & Moore, 2001). Kaiser Permanente is a private group-model integrated health care organization covering 40% of the Sacramento catchment area population. It provides substance use and psychiatric services internally. Most members are insured through their own or a family member's employer. This CDRP site

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