Drug and Alcohol Dependence 130 (2013) 186–193

Contents lists available at SciVerse ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Does Alcoholics Anonymous work differently for men and women? A moderated multiple-mediation analysis in a large clinical sample

John F. Kelly*, Bettina B. Hoeppner

Center for Addiction Medicine, Massachusetts General Hospital and Harvard Medical School, United States

ARTICLE INFO

Article history:
Received 9 August 2012
Received in revised form 23 October 2012
Accepted 4 November 2012
Available online 30 November 2012

Keywords:
Alcoholics Anonymous
Gender
Recovery
Addiction treatment
12-Step
Women

ABSTRACT

Background: Alcoholics Anonymous (AA) began as a male organization, but about one third is now female. Studies have found that women participate at least as much as men and benefit equally from AA, but it is unclear whether women benefit from AA in the same or different ways as men. This study tested whether gender moderated the mechanisms through which AA aids recovery.
Methods: A cohort study of alcohol dependent adults ($N = 1726$; 24% female; Project MATCH) was assessed on AA attendance during treatment; with mediators at 9 months; outcomes (Percent Days Abstinent [PDA] and Drinks per Drinking Day [DDD]) at 15 months. Multiple mediator models tested whether purported mechanisms (i.e., self-efficacy, depression, social networks, spirituality/religiosity) explained AA's effects differently for men and women controlling for baseline values, mediators, treatment, and other confounders.
Results: For PDA, the proportion of AA's effect accounted for by the mediators was similar for men (53%) and women (49%). Both men and women were found to benefit from changes in social factors but these mechanisms were more important among men. For DDD, the mediators accounted for 70% of the effect of AA for men and 41% for women. Again, men benefitted mostly from social changes. Independent of AA's effects, negative affect self-efficacy was shown to have a strong relationship to outcome for women but not men.
Conclusions: The recovery benefits derived from AA differ in nature and magnitude between men and women and may reflect differing needs based on recovery challenges related to gender-based social roles and drinking contexts.

1. Introduction

In most developed nations, alarming increases in the prodigious economic, social, and medical burden attributable to alcohol and other drug misuse has opened the door for greater coordination among formal and informal intervention and support services to help reduce harm, curb health care costs, and enhance long term recovery (Bouchery et al., 2011; Centers for Disease Control and Prevention, 2012; Office of National Drug Control Policy, 2011; U.S. Department of Justice, 2011; UK Drug Strategy, 2010). Significant increases in the quantity and quality of professional addiction treatment has been paralleled by increases in the spread of addiction mutual-help organizations (Humphreys, 2004; Kelly and White, 2012; Kelly and Yeterian, 2008). The most ubiquitous of these is Alcoholics Anonymous (AA).

The most recent areas of investigation have been in examining AA's mechanisms of behavior change as well as potential moderators of its effects; specifically, increasing research has been conducted on the psychological and social change processes that are mobilized by AA and which subsequently lead to recovery (i.e., mediator analyses); and whether particular subgroups benefit more or less from AA (i.e., moderator analyses) (Kelly et al., 2012, 2009). Research has also begun to combine these two types of analytic questions to examine whether the mechanisms through which AA works depend on certain characteristics of patients (i.e., investigations of "moderated mediation" (Muller et al., 2005), such as the degree of alcohol involvement and impairment (Kelly et al., 2012) and age (Blonigen et al., 2011). Kelly et al. (2012), for example, found that, compared to less alcohol-impaired patients, more alcohol-impaired patients benefitted from AA more through decreases in depression symptoms and increases in spirituality/religious practices, and Blonigen et al. (2011) found that impulsivity was a mediator of AA's effects on subsequent outcomes for younger, but not older, patients. Another important characteristic of patients that is particularly intriguing when it comes to AA is gender, as the appropriateness of AA for women has been questioned.

* Corresponding author at: MGH Center for Addiction Medicine, 60 Staniford Street, Boston, MA 02114, United States. Tel.: +1 617 643 1980; fax: +1 617 643 1998.
E-mail address: jkelly11@partners.org (J.F. Kelly).

0376-8716/$ – see front matter © 2012 Elsevier Ireland Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.drugalcdep.2012.11.005

About one third of AA members are women, placing them in minority status in a predominantly male organization (Alcoholics Anonymous, 2012). Moreover, during AA's formative years, the organization was almost entirely composed of men. Consequently, it has remained somewhat unclear whether a program derived from its successful application to male alcohol dependent cases, would cater to and be as effective for women. Also, much of the literature on which AA is based is written using the male pronoun (i.e., "he", "him", "his") when describing the "alcoholic" (Alcoholics Anonymous, 1939, 1952), tacitly alienating women potentially further. In addition, some have objected to the 12-step focus on "powerlessness" espoused in step one of the AA program (Powell, 1987), contending that this emphasis may further disenfranchise an already disenfranchised group. Although, "powerlessness" stated in step one refers to alcohol and not other aspects of individuals' lives (i.e., "We admitted we were powerless over alcohol – that our lives had become unmanageable"), this concern has lingered nonetheless (Del Boca and Mattson, 2001).

These concerns, however, have not been borne out empirically. Studies that have examined whether women engage and benefit from AA as much as men have found that women become as, or more, involved, as their male counterparts, and also benefit as much or more than men (Del Boca and Mattson, 2001; Humphreys et al., 1994; Kaskutas et al., 2008; Krentzman et al., 2012; Moos et al., 2006; Timko et al., 2002; Witbrodt and Delucchi, 2011; Witbrodt and Romelsjo, 2010). Unclear, however, is whether women benefit from AA in the same or different ways as men. For example, recent findings suggest AA leads to enhanced alcohol outcomes by mobilizing recovery-supportive social changes in the networks of its members (i.e., leads to increases in pro-abstainers and decreases in pro-drinkers), and by increasing attendees' confidence in their ability to remain abstinent in high risk social situations or when experiencing negative affect, such as depression (Kelly et al., 2010, 2012). As noted above, AA participation has been shown also to lead to better outcomes by reducing depression symptoms and by increasing spiritual practices, particularly for more severely alcohol-impaired individuals (Kelly et al., 2012, 2010, 2011; Krentzman et al., 2012; Zemore, 2007). However, given gender differences in the prevalence of depression among men and women (Maier et al., 1999; Piccinelli and Wilkinson, 2000), and differing gender-related social roles (e.g., motherhood, homemaking; Cha, 2010; Nolen-Hoeksema, 2004; Wilsnack and Wilsnack, 1997), alcohol use contexts (e.g., drinking less in bars; Paradis, 2011), and work patterns (Kuntsche et al., 2009, 2011) which may present different stressors and recovery needs, it is currently unclear whether the similar, or greater, AA-related recovery benefits observed among women are derived through the same mechanisms, and if so, to the same degree, or through completely different mechanisms. Greater knowledge in this regard would help reveal the nature of any gender-specific benefits related to AA participation and also inform the broader field about the mechanisms through which men and women may recover from alcohol addiction (Potenza et al., 2012).

With the aid of a uniquely large clinical sample ($N = 1726$; Project MATCH Research Group, 1993), we conducted state of the art multiple mediator analysis to examine this question of whether AA benefits men and women differently (Muller et al., 2005). Based on prior mediational findings (Kelly et al., 2012, 2009), we examined six mediators of AA's effects on alcohol use outcomes: changes in pro-drinking and pro-abstaining social network ties; changes in abstinence self-efficacy in coping with risky social situations and when experiencing negative affect; changes in depression symptoms; and, changes in spiritual practices. We did not have strong directional hypotheses about gender differences. However, based on the relatively higher prevalence of depression among women than men (Piccinelli and Wilkinson, 2000) and differences in social roles and drinking contexts (Weich et al., 1998), we anticipated that AA may operate differently across gender lines on these mediators.

2. Methods

2.1. Participants

Participants were 1726 treatment-seeking adults suffering from alcohol use disorder (AUD) who participated in 12 weeks of outpatient treatment (24% female; $n = 419$; Project MATCH Research Group, 1993).

Project MATCH inclusion criteria were: current DSM-III-R AUD diagnosis; alcohol as principal drug of misuse; drinking during 3 months prior to study; 18 or older; minimum sixth grade reading level. Exclusion criteria were: current DSM-III-R diagnosis of dependence on sedative-hypnotics, stimulants, cocaine or opiates; intravenous drug use in prior 6 months; danger to self/others; probation/parole requirements that might interfere with participation; risk of residential instability; inability to identify at least one "locator" person to assist tracking; psychosis/organic impairment; involvement in alternative treatment other than MATCH (i.e., >6 h, except for self-help groups).

2.2. Procedure

Subjects were randomly assigned to 1 of 3 individually delivered, psychosocial interventions: cognitive behavioral therapy (CBT; Kadden et al., 1992), motivational enhancement therapy (MET; Miller et al., 1992), and 12-step facilitation therapy (TSF; Nowinski et al., 1992). Participants were reassessed at 3, 6, 9, 12, and 15 months following study intake, with follow-up rates over 90%. More complete details can be found elsewhere (Project MATCH Research Group, 1997). This study focused on baseline, 3-, 9-, and 15-month follow-ups because only these time points contained the necessary variables needed for our fully lagged analyses.

2.3. Measures

2.3.1. Alcohol use. Alcohol consumption was assessed using the Form 90 (Miller and Del Boca, 1994), which combines an interview procedure with calendar-based and drinking pattern estimates. Two drinking outcomes were based on the past 90 days: Percent Days Abstinent (PDA) and number of Drinks per Drinking Day (DDD).

2.3.2. Alcoholics Anonymous attendance. AA attendance was also assessed using the Form 90, which captured the number of AA meetings attended during the past 90 days at intake and 3, 9, and 15 months. The proportion of days attending AA was created by dividing the number of days attended by total number of days in period.

2.3.3. Self-efficacy. The Alcohol Abstinence Self-Efficacy Scale (DiClemente et al., 1994) is a 20-item scale that assesses self-efficacy using four subscales (Negative Affect, Social/Positive, Physical and Other Concerns, Withdrawal and Urges). Each item is rated on a 5-point Likert scale ("not at all confident" to "extremely confident"). In this study, two subscales were included ("Negative Affect": men $\alpha = 0.92$; women $\alpha = 0.92$; "Social/Positive": men $\alpha = 0.91$; women $\alpha = 0.89$), shown to be mediators of the effect of AA attendance on alcohol outcomes (Owen et al., 2003). Negative affect assesses an individual's confidence in their ability to successfully abstain when experiencing negative emotions; social self-efficacy assesses confidence in an individual's ability to abstain when encountering a high risk social drinking situation.

2.3.4. Spiritual/religious practices. Spirituality/religiousness was assessed with the religious background and behavior instrument (RBB; Connors et al., 1996). Total scores were based on self-reported religious status on a 5-point scale ["I do not believe in God," (Atheist) coded "0," "I believe we can't really know about God" (Agnostic) coded "1," through "Unsure," coded "2," "I believe in God, but I'm not religious (Spiritual) coded "3," "I believe in God and practice religion (Religious), coded "4"], and past 90-day religious and spiritual practices (i.e., "thought about God", "prayed", "meditated", "attended worship services", "read or studied scriptures/holy writings", and "had direct experiences of God"), rated on 8-point Likert-scale ("never" to "more than once a day"). As in previous research (Yung, 2008), RBB questions pertaining to lifetime religious practices were excluded from our total score, because this study examined *changes* in spirituality/religiousness.

2.3.5. Depression. Depression symptoms were assessed using the Beck Depression Inventory (BDI; Beck et al., 1961). This 21-item measure assesses past-week depression symptom severity; higher values indicate greater depression severity. The measure is well established psychometrically, with good internal consistency, test–retest stability and construct validity (Beck et al., 1988; men $\alpha = 0.89$, women $\alpha = 0.88$).

2.3.6. Social networks. The Important People and Activities Instrument (IPA; Clifford and Longabaugh, 1991) characterized patients' social networks on two dimensions: "pro-drinking" and "pro-abstinence". In the IPA, patients name the four most important people of the past 6 months, and rate how each reacts to their abstinence or drinking. A person was coded as "pro-abstinence" if s/he either encouraged