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Age differences in outcomes among patients in the "Stimulant Abuser Groups to Engage in 12-Step" (STAGE-12) intervention

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ABSTRACT

Emerging adults (roughly 18–29 years) with substance use disorders can benefit from participation in twelve-step mutual-help organizations (TSMHO), however their attendance and participation in such groups is relatively low. Twelve-step facilitation therapies, such as the Stimulant Abuser Groups to Engage in 12-Step (STAGE-12), may increase attendance and involvement, and lead to decreased substance use.

Aims: Analyses examined whether age moderated the STAGE-12 effects on substance use and TSMHO meeting attendance and participation.

Design: We utilized data from a multisite randomized controlled trial, with assessments at baseline, mid-treatment (week 4), end-of-treatment (week 8), and 3- and 6- months post-randomization.

Participants: Participants were adults with DSM-IV diagnosed stimulant abuse or dependence (N = 450) enrolling in 10 intensive outpatient substance use treatment programs across the U.S.

Analysis: A zero-inflated negative binomial random-effects regression model was utilized to examine age-by-treatment interactions on substance use and meeting attendance and involvement.

Findings: Younger age was associated with larger treatment effects for stimulant use. Specifically, younger age was associated with greater odds of remaining abstinent from stimulants in STAGE-12 versus Treatment-as-Usual; however, among those who were not abstinent during treatment, younger age was related to greater rates of stimulant use at follow-up for those in STAGE-12 compared to TAU. There was no main effect of age on stimulant use. Younger age was also related to somewhat greater active involvement in different types of TSMHO activities among those in STAGE-12 versus TAU. There were no age-by-treatment interactions for other types of substance use or for treatment attendance, however, in contrast to stimulant use; younger age was associated with lower odds of abstinence from non-stimulant drugs at follow-up, regardless of treatment condition. These results suggest that STAGE-12 can be beneficial for some emerging adults with stimulant use disorder, and ongoing assessment of continued use is of particular importance.

1. Introduction

Emerging adulthood, the period roughly between 18 and 29 years of age, has been characterized as being a unique developmental period as compared to both adolescence and adulthood in more developed, western cultures. Emerging adulthood is described as a time of personal exploration with reduced societal and family restrictions along with fewer responsibilities and more social/personal instability (Arnett, 2000, 2005). This age group also has a higher prevalence of substance use and related substance use disorders than those either younger or older (Substance Abuse and Mental Health Services Administration, 2015).

While emerging adults face an increased risk for substance use disorders, the literature has outlined some specific challenges in providing services to this population. Older age has been associated with a greater readiness to change (Sinha, Easton, & Kemp, 2003), higher rates of treatment completion (Hser, Joshi, Maglione, Chou, & Anglin, 2001; Korte, Rosa, Wakim, & Perl, 2011; Maglione, Chao, & Anglin, 2000; Satre, Mertens, Arean, & Weisner, 2003), and better treatment outcomes (Oslin, Pettinati, & Volpicelli, 2002; Satre et al., 2003; Satre, Chi, & Mertens, 2012). Specifically, Oslin et al. (2002) found that older

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participants were more likely to attend regular treatment visits (85.0% vs. 64.1%, $p < 0.01$) and adhere to medication for the treatment of alcohol use disorder (80.0% vs. 55.3%, $p < 0.05$) at three-months than were younger participants. Satre et al. (2003) and Satre et al. (2012) examined treatment retention six-months following intake into alcohol and drug treatment, as well as alcohol and other drug use at six-months and five, seven, and nine years post-intake. While there were no age differences in treatment initiation, older and middle aged adults stayed significantly longer in treatment than did adults age 39 or younger ($p < 0.001$). They further found that at most follow-up points, older and middle-aged adults were more likely to have abstained from alcohol and other drugs within the prior year than were younger adults.

Other studies have found that younger adults are less likely to perceive a need for treatment (Sinha et al., 2003; Wu & Ringwalt, 2004), to enter treatment following detoxification (Shin, Lundgren, & Chassler, 2007), and to comply with recommendations for treatment (Aalto & Sillanaukee, 2000). Potential reasons why younger adults have less success with traditional treatment have been described by Bergman, Kelly, Nargiso, and McKowen (2016) and include: 1) lower initial motivation for treatment engagement and abstinence, 2) social networks composed of others with high rates of substance use, 3) higher rates of co-occurring psychiatric disorders, 4) lower levels of conscientiousness (e.g. ability to make it to scheduled meetings and appointments), and 5) feeling "in-between", meaning that emerging adults have more freedom and independence than adolescents, but often greater dependence on parents or other caregivers than do older adults.

Community-based twelve-step mutual-help organizations (TSMHOs) are the most commonly utilized form of support for people attempting to change their substance use and are used both independently and in conjunction with more formal treatment (Substance Abuse and Mental Health Services Administration, 2012). There is evidence that attendance and active involvement in Alcoholics Anonymous (AA) or Narcotics Anonymous (NA), particularly as a follow-up to more traditional treatment programs, can result in higher rates of abstinence among emerging adults (Bergman, Greene, Hoeppner, Slaymaker, & Kelly, 2014; Bergman, Hoeppner, Nelson, Slaymaker, & Kelly, 2015; Hoeppner, Hoeppner, & Kelly, 2014; Kelly, Stout, & Slaymaker, 2012, 2013). Hoeppner et al. (2014) examined data from Project MATCH, a large clinical evaluation of three treatments for disordered alcohol use, to identify similarities and differences in mediators of AA between younger (18–29) and older (30+) adults. For younger adults, two of six mediational pathways were significant, compared to six complete pathways for adults. The two strongest mediators for young adults were increased self-efficacy in social situations and a decrease in pro-drinking social networks, and both pathways were more salient for younger than for older adults. Notably TSMHO meetings benefitted younger adults as much as older adults, despite fewer mediational pathways. The authors suggest that pathways as yet unidentified may exist for younger adults. Other research has found the TSF is more effective with people who have social networks supportive of drinking, as is often the case for emerging adults, than is Motivation Enhancement Therapy or Cognitive Behavioral Therapy (Longabaugh, Wirtz, Zweben, & Stout, 1998; Wu & Witkiewitz, 2008).

Another prospective study of attendance and involvement in TSMHOs following treatment (Kelly et al., 2013) showed that emerging adults can be motivated to attend and become active in TSMHOs, and that those who do demonstrate greater abstinence. In this study, about a third of the sample had attended at least one TSMHO meeting in the 90 days prior to entering treatment. This rate increased to 90% at three-months following treatment, tapering to about 76% a year after treatment. Frequency of attendance was 2–3 times per month prior to treatment, and rose substantially to an average of 3–4 times *per week* at three months and 1–2 times *per week* one year after treatment. Importantly, both attendance and active involvement in TSMHOs were independently associated with an increase in percent of days abstinent and a decrease in days of heavy drinking.

However, despite the benefits, emerging adults appear to be more difficult to engage in TSMHOs than are older adults. One study looking at predictors of retention in dual-focus TSMHOs (substance use and psychiatric comorbidity; Laudet, Magura, Clevland, Vogel, & Knight, 2003) and another examining factors associated with frequency of meeting attendance (Brown, O'Grady, Farrell, Flechner, & Nurco, 2001) found that younger adults were less likely to utilize community TSMHOs than were older adults, demonstrated by lower frequency of meeting attendance after four months (Brown et al., 2001), and one-year (Laudet et al., 2003) following entrance into outpatient treatment.

"Stimulant Abuser Groups to Engage in 12-Step" (STAGE-12; Baker, Daley, Donovan, & Floyd, 2007; Donovan et al., 2013) is a manualized combined group and individual Twelve-Step Facilitation (TSF) treatment designed to help individuals with stimulant abuse or dependence overcome perceived barriers to TSMHO attendance and enhance engagement in 12-step recovery. As such, it may be particularly well suited for younger people who have historically had more difficultly in engaging in such groups, but for whom there is evidence that participation would be beneficial. Group sessions focus on increasing attendance and participation in meetings through five topic areas: 1) acceptance (Step 1); 2) people, places, and things (habits, routines, and relapse triggers); 3) surrender (Steps 2 and 3); 4) getting active in 12-step programs; and 5) managing negative emotions (HALT: hungry, angry, lonely, tired). An explicit focus on people and routines may be particularly important to emerging adults who are more likely to have social networks comprised of people actively engaged in substance use (Bergman et al., 2016). In addition, STAGE-12 incorporates an intensive referral procedure (Timko & DeBenedetti, 2007) that actively connects participants with a 12-step volunteer in the community who arranges to attend a meeting with them. This additional support from an experienced adult may be beneficial in increasing conscientious meeting attendance among young adults who are more likely to be new to TSMHO culture and concepts.

In contrast, Davis, Bergman, Smith, and Kelly (2017) surmised that TSF therapies may be a mismatch for emerging adults compared to other therapies, such as Cognitive-Behavioral Therapy, due to lower dependence severity and initial abstinence motivation often associated with younger age. In a secondary analysis of data from Project MATCH (Project MATCH Research Group, 1998), they found that, in fact, emerging adults assigned to TSF had a lower percentage of days abstinent and greater number of drinks per drinking day during the 12-week treatment than emerging adults assigned to either Cognitive Behavioral Therapy or Motivational Enhancement Therapy, and to older adults in any treatment condition. There were no differences in alcohol outcomes by emerging adult status and treatment condition by the one-year follow-up.

The analyses described here builds on this work by utilizing a different dataset collected in a National Drug Abuse Treatment Clinical Trials Network multi-site study that evaluated a group-plus-individual TSF intervention for stimulant users. STAGE-12 had the goal of increasing attendance and participation in TSMHO and ultimately reducing stimulant and other drug use (Donovan et al., 2013). Analyses of self-reported substance use revealed that STAGE-12 led to increased abstinence from stimulant and other drug use during active treatment, as well as increased TSMHO meeting attendance and involvement through a six-month follow-up period, among those who are able to achieve abstinence at all. However, among people who did not remain abstinent during treatment, those in the STAGE-12 group had somewhat higher rates of substance use compared to those in TAU. Of particular importance is that age was not a predictor of treatment completion for those randomized to receive STAGE-12 (Doyle & Donovan, 2014). Treatment completion is a consistent predictor of better treatment outcomes (McLellan, 2006; Simpson, Joe, Rowan-Szal, & Greener, 1997). The fact that younger participants were as likely as older participants to complete the STAGE-12 treatment could suggest that younger adults in STAGE-12 may be able to achieve outcomes similar to their older counterparts, who are often found to fare better in treatment.