Drug and Alcohol Dependence 148 (2015) 217–220

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

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

Short communication

Exploration of the telescoping effect among not-in-treatment, intensive heroin-using research volunteers

Jonathan J.K. Stoltman[a], Eric A. Woodcock[a], Jamey J. Lister[a], Mark K. Greenwald[a,b,*], Leslie H. Lundahl[a]

[a] Department of Psychiatry and Behavioral Neurosciences, School of Medicine, and Wayne State University, Detroit, MI 48201, USA
[b] Department of Pharmacy Practice, Eugene Applebaum College of Pharmacy and Health Sciences, Wayne State University, Detroit, MI 48201, USA

ARTICLE INFO

Article history:
Received 11 September 2014
Received in revised form 8 January 2015
Accepted 10 January 2015
Available online 19 January 2015

Keywords:
Telescoping effect
Heroin
Race
Gender

ABSTRACT

Background: Addiction research literature suggests some demographic groups exhibit a later age of substance use initiation, more rapid escalation to dependence, and worse substance use-related outcomes. This 'telescoping' effect has been observed more often in females but has not yet been examined in not-in-treatment heroin users or racial subgroups.
Methods: Not-in-treatment, intensive heroin-using adults screened for laboratory-based research studies ($N = 554$; range 18–55 yr; mean age: 42.5 yr; 60.5% African American [AA]; 70.2% male) were included in this secondary analysis. A comprehensive drug history questionnaire assessed heroin-use characteristics and lifetime adverse consequences. We examined telescoping effects by racial and gender groups: Caucasian males and females; AA males and females.
Results: Caucasian males initiated heroin use significantly later than AA males but this difference was not observed for age at intensive heroin use (≥3 times weekly). Caucasian males reported significantly more lifetime heroin use-related consequences, were more likely to inject heroin, and reported more-frequent past-month heroin use, but did not differ from AA males in lifetime heroin quit attempts or prior heroin treatment. Females, compared to males, reported later onset of initial and intensive use, but there was no gender-telescoping effect from initial to intensive heroin-use.
Conclusions: In this not-in-treatment sample, Caucasian males exhibited more rapid heroin-use progression and adverse consequences than AA males, i.e., within-gender, racial-group telescoping. Despite later-onset heroin use among females, there was no evidence of gender-related telescoping. Given the resurgence of heroin use, differential heroin-use trajectories across demographic groups may be helpful in planning interventions.

1. Introduction

Heroin use is a growing problem in the United States (Cicero et al., 2014; SAMHSA, 2013). Current understanding of heroin-use trajectories, i.e., progression from initial to intensive use or dependence, and clinical outcomes is largely based on investigations of treatment-seeking populations (Anglin et al., 1987; Back et al., 2011b; Darke et al., 2003; Kosten et al., 1985; Ross et al., 2005). However, most heroin users are not in treatment (SAMHSA, 2013), suggesting further study of non-treatment seeking individuals – an understudied group (Ross et al., 2005) – could inform prevention and intervention strategies.

Substance-use trajectory studies have often focused on a 'gender *telescoping effect*' (Greenfield et al., 2010; Kay et al., 2010; Piazza et al., 1989; Zilberman et al., 2004), whereby females report later onset of initial substance use, but transition faster to intensive use/dependence, and experience worse outcomes than males. Gender telescoping has been observed among users of nicotine (Oncken et al., 2004), cannabis (Hernandez-Avila et al., 2004), cocaine (Haas and Peters, 2000), and both heroin and prescription opioids (Sartor et al., 2014) as well as non-treatment seeking prescription opioid users (Back et al., 2011a). Findings are equivocal among alcohol-dependent populations: some studies replicated the Piazza et al. (1989) findings of gender telescoping (Bravo et al., 2013; Diehl et al., 2007; Johnson et al., 2005; Mann et al., 2005; Piazza et al., 1989; Randall et al., 1999) whereas others did not (Alvanzo et al., 2011;

* Corresponding author at: Department of Psychiatry and Behavioral Neurosciences, Tolan Park Medical Building, Suite 2A, 3901 Chrysler Service Drive, Detroit, MI 48201, USA. Tel.: +1 313 993 3965; fax: +1 313 993 1372.
E-mail address: mgreen@med.wayne.edu (M.K. Greenwald).

http://dx.doi.org/10.1016/j.drugalcdep.2015.01.010
0376-8716/

Keyes et al., 2010; Lewis and Nixon, 2014). For example, Alvanzo et al. (2011) found that males progressed to alcohol dependence faster than females, and Caucasian males and females progressed faster than African Americans and Hispanics. Discrepant findings may reflect sampling differences, e.g., non-replication studies primarily relied on representative population samples whereas other studies used treatment samples (which emphasizes the value of examining different substance using populations).

Opioid telescoping has been studied only in treatment-seeking populations and yielded inconclusive findings. Hernandez-Avila et al. (2004) found that opioid-dependent females progressed to treatment faster than males, whereas Holscher et al. (2010) did not observe this effect. These incongruent results could be due to methodological factors, such as Holscher et al. (2010) using age at first injection to represent age at initial use. Recently, Sartor et al. (2014) found progression to opioid dependence was faster for females than males, and faster for African-Americans than Caucasians, demonstrating the importance of racial and gender stratification.

The present secondary analysis investigated: (1) differential telescoping effects by gender and/or race in a metropolitan-based sample of not-in-treatment, intensive heroin users; and (2) whether demographic group differences in trajectory from initial to intensive heroin use relate to current heroin-use patterns. Based on previous literature, we hypothesized a gender telescoping effect such that females would report later initial use but faster transition to intensive and worse outcomes of use.

2. Methods

2.1. Participant selection

Not-in-treatment, intensive heroin-using adults (18–55 yr) were recruited from the community through print advertisements and word-of-mouth referral for multiple experimental opioid studies (1998–2014). Secondary analysis was conducted on screening data pooled from these studies. The local Institutional Review Board approved all studies, which were conducted according to the Declaration of Helsinki. Candidates who denied major medical or psychiatric contraindications (e.g., heavy alcohol use, major depression, cardiovascular/pulmonary diseases, or conditions that might need treatment) during a structured phone interview were invited to undergo comprehensive in-person screening following written informed consent. Opioid-positive (>300 ng/ml), alcohol-free individuals (<.002%) were included in this analysis.

2.2. Measures

Lifetime and current heroin use was assessed *via* a standardized, self-report battery of substance use created locally by experts in the substance abuse field, the Drug History and Use Questionnaire (available upon request). Variables of interest included two heroin-use chronological landmark variables: age at onset both of *initial* and *intensive* heroin use (≥3 times weekly); and lifetime heroin-use characteristics. Also examined were duration of heroin use (age at study *minus* age of initial use), number of heroin-quit attempts (range: 0–100), treatment ever sought for heroin use (yes/no), injection heroin use (ever/never), and total number of heroin use-related negative consequences (21-items, e.g., heroin overdose, financial problems due to heroin use; each ever/never; see Woodcock et al. [2015, in press] for table including all items). Finally, we included current heroin-use characteristics, including number of past-month heroin-use days (30 maximum) and total past-month heroin use (mean daily uses in the past week *multiplied by* past-month use days).

2.3. Data analyses

Two-way multivariate analysis of variance (MANOVA) examined effects of gender and race on heroin-use landmark variables (age at onset of *initial* and *intensive* heroin use). Progression latency (age at onset of intensive use *minus* age at initial heroin use) was examined using two-way ANOVA. Heroin-use characteristics were examined using two-way MANCOVA (controlling for duration of heroin-use) and chi-square tests when appropriate. Due to non-normally distributed data, $\log_{10}$ transformations were used to normalize all continuous variables included in analysis.

Telescoping would be indicated by: (1) delayed age at *initial* onset of use, but no difference between groups in age at onset of *intensive* heroin use, with (2) a concomitant shorter mean latency to intensive use accompanied by worse consequences of use. Criterion to reject the null hypothesis was set at $p < .05$ for all analyses, conducted using SPSS v.21 (IBM Corp, 2012).

3. Results

3.1. Participant characteristics

Complete data were available for 554 from a total sample of 567. Participants were excluded for reporting 'other' or having incomplete race data ($n = 13$). Participants included in analysis were mostly African American (60.5%) and male (70.2%), with mean (±1 SD) age of 42.5 (±9.3) yr and education of 12.4 (±1.6) yr. Mean age for initiating heroin use was 23.4 (±7.7) yr and age at onset of intensive heroin use was 25.6 (±8.0) yr. Average past-month heroin use was 28.2 (±4.5) days and duration of heroin use was 19.2 (±11.8) yr. Lifetime incidence of heroin injection was reported by 69.0% of the sample. Heroin-use characteristics for groups and significant *F*-test values are presented in Table 1.

3.2. Telescoping effect

3.2.1. Age at initial use. Results indicated a significant gender × race interaction on age at initial heroin use. Simple contrasts indicated Caucasian males (CAm) were significantly older than African American males (AAm) at first heroin use, $F_{(1, 550)} = 6.53$, $p = .011$. AA females (AAf) started later than AAm, but there was no gender difference among Caucasians. A gender main effect indicated females started heroin use later than males. There was no race main effect.

3.2.2. Age at intensive use. A gender main effect revealed that females reported later-onset intensive use. There were no other significant differences.

3.2.3. Latency. Heroin-use progression latency was skewed: 49.1% progressed to intensive use within one year of initial use, 26.9% within two years, and 24.0% in ≥3 yr. Two-way ANOVA revealed a race main effect for progression latency, with CA reporting shorter latency than AA. There were no other significant differences.

3.3. Heroin-use characteristics

Two-way MANCOVA identified a gender × race interaction on total past-month heroin-use. Simple contrasts indicated CAf had higher past-month frequency of use than CAm, $F_{(1, 523)} = 13.64$, $p < .001$, and AAf, $F_{(1, 523)} = 11.73$, $p < .001$. There were main effects of race (CA > AA) and gender (females > males) on heroin-use frequency.

Main effects for race were found on total lifetime consequences of heroin use: CAs endorsed more consequences than AAs, had more quit attempts, and were more likely to have injected heroin. No