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Childhood abuse and neglect and transitions in stages of alcohol involvement among women: A latent transition analysis approach

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ABSTRACT

Background: Childhood abuse and neglect have been linked with alcohol disorders in adulthood yet less is known about the potential of early trauma to influence transitions in stages of alcohol involvement among women. Study aims were to (1) identify stages of women's alcohol involvement, (2) examine the probability of transitions between stages, and (3) investigate the influence of four domains of childhood abuse and neglect (sexual abuse, physical abuse, neglect, and witness to domestic violence), assessed individually and as poly-victimization, on transitions.

Methods: The sample consisted of 11,750 adult female current drinkers identified in Wave 1 (2001–2002) and re-interviewed in Wave 2 (2004–2005) of the National Epidemiological Survey on Alcohol and Related Conditions.

Results: Three stages of alcohol involvement emerged from latent class analysis of 11 DSM-IV abuse/dependence criteria: severe (1.5% at Wave 1, 1.9% at Wave 2), hazardous (13.6% at Wave 1, 16.0% at Wave 2), and non-problem drinking (82.1% at Wave 1, 84.5% at Wave 2). Adjusted latent transition analyses determined transition probabilities between stages across waves. Women reporting any childhood abuse and neglect were more likely to advance from the non-problem drinking class at Wave 1 to severe (AOR = 3.90, 95% CI = 1.78–8.53) and hazardous (AOR = 1.56, 95% CI = 1.22–2.01) drinking classes at Wave 2 relative to women without this history. Associations were also observed between individual domains and transition from no problems to severe alcohol stage.

Conclusions: Results suggest a long-term impact of childhood abuse and neglect as drivers of progression in women's alcohol involvement.

1. Introduction

Prior research has established a consistent association between childhood abuse and neglect (CAN) and alcohol problems in adulthood (Dube et al., 2002a; Fetzner et al., 2011; Magnusson et al., 2011; Miller et al., 1993; Molnar et al., 2001; Nayak et al., 2012; Pilowsky et al., 2009; Tucci et al., 2010; Widom et al., 2007; Wu et al., 2010). Child victimization is associated with numerous

psychiatric sequelae (Jarvis and Copeland, 1997; Putnam, 2003; Stewart, 1996; Sugaya et al., 2012), and mounting evidence implies a differential impact of CAN on women's mental health (Danielson et al., 2009; Horwitz et al., 2001; Widom and Hiller-Sturmhofel, 2001).

Poly-victimization, or experiencing multiple types of victimization and neglect, has emerged as a distinct phenomenon in recent literature (Finkelhor et al., 2007). In a study of HMO-enrolled adults, a graded relationship was found between the number of adverse childhood events and alcohol problems in adulthood (Dube et al., 2002a; Pilowsky et al., 2009). Other studies explored the context of individual domains of CAN. Exposure to domestic violence in

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childhood has been associated with alcohol problems later in life (Dube et al., 2002b). Emotional and physical neglect and witnessing domestic violence are often inter-related, especially if parents abuse alcohol (Dong et al., 2004; Dube et al., 2001b). Similarly, although physical and sexual abuse often co-occur, child physical abuse has been found to be independently associated with alcohol dependence, negative alcohol-related consequences, drinking to intoxication, and heavy episodic drinking (Lown et al., 2011; Nayak et al., 2012). Several studies have reported a direct association between child sexual abuse and women's alcohol dependence (Dinwiddie et al., 2000; Kendler et al., 2000; Nelson et al., 2002), and other alcohol-related problems (Klanecky et al., 2008).

With few exceptions, the majority of research on the link between childhood victimization and women's alcohol involvement has focused on drinking status at time of interview or on lifetime alcohol use. These approaches do not account for changes in the course of alcohol involvement. Alcohol and other substance use disorders are often described as stage-sequential processes (Graham et al., 1991; Guo et al., 2000). Latent transition analysis is a useful method for modeling transitions between stage-specific processes over time and has ready application to the substance use framework (Lanza et al., 2010; Reboussin and Ialongo, 2010).

Additional research is needed that examines the associations between CAN and women's alcohol involvement longitudinally with a focus on growth or transitions. In one such study, the influence of child sexual abuse on two stages of alcohol involvement (drinking initiation and subsequent transition to alcohol dependence in adulthood) was explored (Sartor et al., 2007). The results demonstrated an association between sexual abuse and drinking initiation, but not for transition to alcohol dependence. Widom et al. (2007) examined the influence of childhood sexual or physical abuse and neglect on patterns of alcohol involvement among a large cohort of women followed into adulthood. They reported that CAN predicted alcohol use disorders in young adulthood but the impact diminished with progression into middle-adulthood (age 40).

It is not surprising that the influence of distal early experiences such as CAN diminish over time. However, important interactions might be missed by failing to account for more proximal adult outcomes such as earlier drinking behaviors and adult trauma. Although prior investigations have considered other important factors in this association (e.g., Sartor et al., 2007 accounted for family history of alcoholism), the importance of accounting for adult outcomes largely has been overlooked. In particular, alcohol use and interpersonal violence have been shown to influence the transition between stages of problematic drinking (Auerbach and Collins, 2006; Guo et al., 2000; Keiley et al., 2009).

To more fully explore the relationship between early child and more recent adult experiences on transitions between adult stages of alcohol use, the present study used latent transition analysis to examine independent associations between domains of CAN on the probabilities of transitioning between stages of alcohol involvement among a female cohort of current drinkers in a United States (U.S.) population-based sample followed up over a 3-year period. The objectives of this study were to: (1) identify stages of women's alcohol involvement; (2) examine the probability of transitions between stages; and (3) investigate the influence of four domains of CAN (physical abuse, sexual abuse, witness to domestic violence, and severe neglect) assessed individually and as poly-victimization, on transitions, after accounting for adult violence and alcohol use.

2. Methods

2.1. Study population

The sample consisted of 11,750 adult female current drinkers identified in Wave 1 (2001–2002) and re-interviewed in Wave 2 (2004–2005) of the National Epidemiological Survey on Alcohol and Related Conditions (NESARC), a nationally representative survey of 43,093 civilian participants ages 18 or older in the U.S. Data from eligible participants were collected through computer-assisted personal interviews (CAPI) for an overall response rates for Waves 1 and 2 of 81% and 87%, respectively. The interview last approximately 1 h, and participants who completed the interview were given $80. Blacks, Hispanics, and young adults (aged 18–24 years) were oversampled. Data were weighted based on 2000 Census demographic information to be representative of the U.S. non-institutionalized, civilian population. Additional sampling procedures and retention strategies for the NESARC are described in detail elsewhere (Grant et al., 2004). The analyses were based on de-identified publicly available data that is exempt from review by the Institutional Review Board.

2.2. Measures

2.2.1. Alcohol involvement. Alcohol abuse and dependence criteria were assessed with the Alcohol Use Disorder and Associated Disabilities Interview Schedule (AUDADIS-IV; Grant et al., 2003; Ruan et al., 2008), a structured diagnostic interview designed to assess alcohol, drug, and mental disorders according to DSM-IV diagnostic criteria (American Psychiatric Association, 2000). The current study used alcohol use disorder criteria, created from a set of past-year symptom questions combined to form binary indicators (1 = yes, 0 = no) used in identifying latent classes of alcohol involvement.

The four alcohol abuse criteria included (Fig. 1a and b; indicators 1–4, left to right on X-axis): recurrent drinking resulting in failure to fulfill major role obligations; recurrent drinking in hazardous situations; recurrent drinking-related legal problems; and continued drinking despite recurrent interpersonal problems caused or exacerbated by drinking. The seven alcohol dependence criteria included (Fig. 1a and b; indicators 5–11, left to right on X-axis): tolerance; having two or more withdrawal symptoms; drinking larger amounts or for a longer period than intended; having a persistent desire or unsuccessful attempts to cut down on drinking; spending a great deal of time obtaining alcohol, drinking, or recovering from drinking's effects; giving up important social, occupational, or recreational activities to drink; and continued drinking despite physical or psychological problems caused by drinking. These criteria were used successfully in a prior latent class analysis (LCA) among female NESARC participants (La Flair et al., 2012).

2.2.2. Childhood abuse and neglect. Childhood abuse and neglect were assessed exclusively at Wave 2 with a series of questions adapted from the Adverse Childhood Experiences Study (Dong et al., 2003; Dube et al., 2001a, 2003) relating to exposure to the following domains of CAN before the age of 18: sexual abuse, including rape and molestation; physical abuse by a parent or caregiver; witness to domestic violence in the home, including inter-parental violence; and neglect by a parent or caregiver (Ruan et al., 2008). Response categories for each domain were used to produce a binary measure (1 = yes, 0 = no) of any childhood victimization. A binary poly-victimization category was created to represent women who reported experiencing more than one form of CAN.

2.2.3. Covariates. Other variables included in the analyses were age, race/ethnicity, prior alcohol use disorder (past-year alcohol abuse or dependence at Wave 1). An intimate partner violence (IPV) measure was derived from an affirmative response to any of six abusive behaviors, abstracted from the Conflict Tactics Scales (Straus, 1979), perpetrated by a current or former intimate partner within the last 12 months at Wave 2: (1) pushing, grabbing, or shoving; (2) slapping, kicking, biting, or hitting; (3) threatening with a weapon such as a knife or gun; (4) cutting or bruising; (5) having forced sex; and (6) inflicting an injury that required medical care.

2.3. Statistical analysis

LCA is an empirical "person-centered" approach, which was used to derive subtypes or stages (classes) of alcohol involvement based on shared clinical features using DSM-IV criteria for alcohol abuse and dependence. The objective of LCA is to identify the fewest number of latent classes that adequately describe the associations among alcohol use disorder criteria. This approach has been applied in recent research with alcohol abuse and dependence diagnostic criteria among population-based samples (Ko et al., 2010; La Flair et al., 2012; Muthén, 2006).

To determine the correct class structure for the data, a series of unconstrained latent class models (1–4 classes) were fit separately for Waves 1 and 2 using the 11 DSM-IV abuse and dependence criteria as categorical latent class indicators. Conventional fit statistics, including the lowest Akaike Information Criterion (AIC), lowest sample-size adjusted Bayesian Information Criterion (a-BIC), and significance of the Lo–Mendell–Rubin (LMR) test (McCutcheon, 1987; Nylund et al., 2007) guided the selection of the most parsimonious model providing adequate fit to the data under standard assumptions of conditional independence and independent individuals (i.e., any association between criteria is attributed to the underlying categorical latent variable and an individual's class membership is not affected by that of another in the same study cohort). Entropy was used as a measure of classification accuracy distinction with values approaching 1 indicating a clear distinction of classes (Celeux and Soromenho, 1996). In general, the best-fitting class solution is indicated by the lowest BIC/a-BIC value. Furthermore, in testing consecutive models