International Journal of Drug Policy 36 (2016) 58–66

Contents lists available at ScienceDirect

International Journal of Drug Policy

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

Research paper

Environmental contexts of combined alcohol and energy drink use: Associations with intoxication in licensed venues

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ARTICLE INFO

Article history:
Received 3 December 2015
Received in revised form 21 May 2016
Accepted 30 June 2016

Keywords:
Alcohol
Energy drinks
Intoxication
Stimulants
Nightlife
Licensed venues
Observational research

ABSTRACT

Background: Environmental factors inside licensed venues have been found to influence the intoxication levels and consumption practices of patrons. The consumption of alcohol mixed with energy drinks (AmED) occurs primarily at or prior to attending licensed venues, however there is a lack of in situ research investigating AmED use in these contexts. Given that AmED use has been linked with increased alcohol consumption, intoxication, illicit substance use, and risk taking behaviours, this paper explores the environmental correlates and levels of intoxication associated with AmED use in licensed venues.
Methods: Structured observations were undertaken in five Australian cities on Friday and Saturday nights. Covert teams spent 4–5 h in venues and recorded hourly observations on patron, venue, and staff characteristics, alcohol, illicit drug and AmED consumption patterns and intoxication levels.
Results: 898 hourly observations were recorded across 68 venues. All but one venue served energy drinks, and patron AmED use was observed during 34.9% of hourly records. AmED use was more prevalent after 12am and in nightclub venues compared to bars and pubs, and was positively associated with high intoxication levels, illicit drug use, and younger crowds. After controlling for environmental factors (i.e. venue crowding, service practices, venue characteristics, patron demographics and behaviour) AmED use did not predict high intoxication at a venue level in multivariable models.
Conclusion: AmED consumption is ubiquitous in the licensed venues of Australian night-time entertainment districts, particularly busy nightclub venues where intoxication and risky consumption are heightened. However, AmED use was not associated with high patron intoxication when environmental factors were considered.

Introduction

Consuming alcohol mixed with energy drinks (AmED) has increased in popularity in the past decade, and has attracted attention from researchers and policy makers attempting to quantify and prevent potential increases in alcohol related harms (Arria and O'Brien, 2011; Australian & New Zealand Food Regulation Standing Committee, 2013; Pennay & Lubman, 2012b). Compared to consumers of alcohol only, AmED consumers have been linked to higher levels of alcohol intoxication, involvement in drink driving and driving without a seatbelt, risky sex, susceptibility to tobacco smoking, higher rates of alcohol dependence, illicit substance use, and involvement in physical aggression (Azagba & Sharaf, 2014; Brache & Stockwell, 2011; Linden & Lau-Barraco, 2014; Miller, 2008; O'Brien et al., 2013; Peacock, Pennay, Droste, Bruno, & Lubman, 2013; Thombs et al., 2010).

However, the nature of the relationship between AmED consumption and these outcomes has been difficult to quantify. Experimental models have demonstrated that AmED dosage can produce increased desire for more alcohol (Marczinski, Fillmore, Henges, Ramsey, & Young, 2013; McKetin & Coen, 2014), increased subjective ratings of stimulation (Marczinski, Fillmore, Bardgett, & Howard, 2011), and a reduced perception of the intoxicating effects of alcohol (Marczinski & Fillmore, 2006), all of which imply that AmED use may promote greater alcohol intake in voluntary consumption scenarios. However, within-subjects findings of actual self-reported consumption rates are mixed, with some studies reporting higher alcohol intake during AmED sessions (Brache & Stockwell, 2011; Peacock, Bruno, & Martin, 2013; Price, Hilchey, Darredeau, Fulton, & Barrett, 2010), whereas others report

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http://dx.doi.org/10.1016/j.drugpo.2016.06.016
0955-3959/

no difference in alcohol intake, or higher intake during sessions of alcohol only (de Haan, de Haan, van der Palen, Olivier, & Verster, 2012; Verster, Benson, Johnson, Scholey, & Alford, 2016; Woolsey, Waigandt, & Beck, 2010).

In order to explore these inconsistencies, some researchers have turned to the investigation of individual consumer factors such as risk-taking propensity and motives for AmED consumption, with results indicating that AmED consumers are a heterogeneous group whose consumption outcomes are strongly linked to motives, expectancies, and other risk-taking behaviours (Droste et al., 2014; Mallett, Marzell, Scaglione, Hultgren, & Turrisi, 2014; Peacock, Droste, Pennay, Lubman, et al., 2015; Peacock, Droste, Pennay, Miller, et al., 2015). Other commentators (e.g. Miller, 2013; Pennay & Lubman, 2012a) have called for an exploration of AmED consumption contexts to determine the extent to which environmental factors such as the drinking environment, promotions, and venue characteristics are associated with AmED use. To date, there has been a lack of research directly addressing the consumption contexts of AmED use.

Given that consumption contexts have been demonstrated as powerful predictors and moderators of alcohol and illicit substance use (Hughes et al., 2011, 2012; Lindsay, 2009; Measham, 2004a; Measham, 2004b), studies that more directly address contexts of AmED use are important in order to understand the relationship between AmED use and drinking environments, and particularly the relationship between AmED consumption, alcohol intoxication and behavioural or social practices.

What is known about AmED contexts?

Only five papers have addressed the environmental contexts in which AmED are consumed (Jones, Barrie, & Berry, 2012; Peacock, Bruno, et al., 2013; Pennay & Lubman, 2012a; Price et al., 2010; Wells et al., 2013), and three of these addressed context indirectly (Jones et al., 2012; Peacock, Bruno, et al., 2013; Price et al., 2010). Overall, it was reported in these papers (or the research design indirectly assumed) that the majority of AmED consumption takes place either prior to, or during, attendance at licensed nightlife venues. Across all papers, only one directly questioned AmED users about consumption context (Peacock, Bruno, et al., 2013). This Australian web-based survey found that two-thirds of AmED users reported consuming AmED in licensed venues, with only one-fifth of consumption occurring in private residences. Similarly, based upon 72 face-to-face structured interviews with Canadian college students, Price et al. (2010) reported that all AmED consumption occurred on either a Friday or Saturday night. Further, in an Australian focus group study (Jones et al., 2012), reported discussions with participants were entirely focused upon drinking prior to or during attendance at licensed venues. These contextual trends were reflected in another Australian qualitative pilot study, with participants ($n = 10$) reporting that they typically consumed AmED intermittently over the course of the evening in licensed venues (Pennay & Lubman, 2012a). The authors reported that amongst their sample AmED were also regularly consumed at home, although always in the context of 'pre-drinks' before attending licensed venues. Acknowledging that AmED consumption was strongly related to nightlife environments, a patron interview study conducted in New York targeted patrons across venues catering to different music and cultural sub-groups (Wells et al., 2013). The authors reported that AmED was significantly more prevalent at venues and events catering to LGBTI patrons, compared to the indie-rock, warehouse and electronic dance music scenes.

In summary, there is a lack of research exploring the environmental contexts of AmED use, although the available literature shows some consistent trends. While AmED use was predominantly associated with attendance at licensed nightlife venues, no study has specifically assessed the importance of environmental factors on AmED consumption in these spaces.

Why are consumption contexts important?

The level of patron intoxication in a licensed venue is a powerful predictor of frequency of barroom violence and aggressive incidents (Graham, Osgood, Wells, & Stockwell, 2006). Observational research conducted in licensed venues in Canada and the UK has implicated a number of environmental characteristics in increased alcohol intoxication and subsequent incidents of harm. In a large-scale study assessing environmental factors in venues in four European countries, the proportion of younger clientele, measures of venue crowdedness, presence of discounted drink promotions, "rowdiness" amongst patrons, poor staff monitoring and service practices, and observations conducted later at night were all positively associated with increased intoxication levels in venues (Hughes et al., 2011, 2012). In addition to these factors, Hughes et al. (2011) refer to a recurring theme of "permissiveness" in venues as a predictor of increased intoxication, aggression, violence and assaults. Permissiveness was defined with some variability across cultures, but the factor has been operationalised as an 'anything goes' atmosphere: swearing, overt sexual contact, rowdiness, underage patrons, and generally low decorum expectancies (Hughes et al., 2011; Quigg et al., 2014).

As yet, the degree to which AmED consumption is associated with these environmental characteristics is unknown. However, given that many AmED users report consuming AmED for intoxication, hedonism, or to manage drunkenness, in addition to energy and endurance motives (Droste et al., 2014; Peacock, Bruno, et al., 2013; Peacock, Droste, Pennay, Miller, et al., 2015), it stands to reason that AmED consumption may be positively linked with environmental factors known to increase intoxication, and may in turn increase intoxication levels in venues where they are consumed. Alternatively, consumers may choose to consume AmED in environments that they deem to be appropriate for the drink. For example, participants in Szmigin et al. (2008) reported use of cider was specific to relaxing in pub-type venues, whereas being out at a club promoted selection of other beverages, and drinking to achieve intoxication.

In summary, there is a lack of information surrounding environmental contexts of AmED use, however that which is available implies that AmED use is predominantly associated with attendance at licensed nightlife venues, and regularly occurs during typical high-alcohol hours (Fridays and Saturdays 10 pm–6 am). Given that environmental contexts can exert substantial influence upon substance use behaviour and subsequent intoxication and harms, this paper aims to explore the barroom correlates of AmED use, and the degree to which the presence of AmED may predict overall venue intoxication levels using observational methods. Based upon a review of the literature, it is hypothesized that:

1. The presence of AmED consumption will be positively associated with overall intoxication level in licensed venues;
2. The presence of AmED consumption will be positively associated with environmental factors known to predict alcohol intoxication in licensed venues; and,
3. In a model which accounts for environmental predictors of intoxication, AmED use will significantly predict overall intoxication level in the licensed venues.

Further, given the dearth of information on AmED use in licensed venue contexts, this paper will provide descriptive data on the consumption of AmED in such environments.