



## Short Communication

## Personality profiles and frequent heavy drinking in young adulthood

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## ARTICLE INFO

## Article history:

Received 30 June 2014

Received in revised form 21 January 2015

Accepted 30 January 2015

Available online 3 March 2015

## Keywords:

Big Five

Personality

Binge drinking

Young adulthood

Latent profile analysis

## ABSTRACT

Few studies examining the link between personality and alcohol use have adopted a comprehensive modeling framework to take into account individuals' profiles across multiple personality traits. In this study, latent profile analysis (LPA) was applied to a national sample of young adults in the United States to identify subgroups defined by their profiles of mean scores on the Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness personality factors. Personality profiles were then used to predict heavy drinking. Five profiles were identified: Reserved, Rigid, Confident, Ordinary, and Resilient. Compared to individuals in the Ordinary profile, those with Reserved and Resilient profiles were at increased risk of frequent heavy drinking. These findings suggest which comprehensive personality profiles may place individuals at risk for problematic alcohol-related outcomes.

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## 1. Introduction

Several aspects of personality have been shown to be related to alcohol use. For example, Extraversion, Impulsivity, and Neuroticism have been shown to have a positive association with alcohol use, while Conscientiousness has a negative association with alcohol use (Natividade & Hutz, 2012; Loukas, Krull, Chassin, & Carle, 2000; Mellos, Liappas, & Paparrigopoulos, 2010).

Rather than occurring in isolation, however, personality dimensions (e.g., the 'Big Five' factors) co-exist within individuals, producing different pattern of personality traits. Latent profile analysis (LPA; Lazarsfeld & Henry, 1968) is a technique for identifying subgroups of individuals with similar means on two or more continuous indicators. This approach provides new insight into intra-individual patterns of personality traits, as well as how patterns are associated with outcomes, in a holistic way (Marsh, Lüdtke, Trautwein, & Morin, 2009). Specifically, it can simplify the investigation of higher-order interactions among personality factors with relatively few subgroups, while avoiding issues related to high error rates and reduced statistical power caused by the

numerous higher-order interaction terms in multiple regression (Lanza & Rhoades, 2012; Merz & Roesch, 2011).

Three personality profiles, Resilient, Undercontroller, and Overcontroller, have been identified consistently with NEO Personality Inventory and other instruments such as the California Child Q-set (Rammstedt, Riemann, Angleitner, & Borkenau, 2004). The Resilient group is low on Neuroticism and high on Extraversion, Openness, Agreeableness and Conscientiousness. The Overcontrollers group has high Neuroticism and low Extraversion, while the Undercontrollers group has low Agreeableness and Conscientiousness (Rammstedt et al., 2004). Several other personality profiles have been identified less consistently, including (1) Reserved with low Openness (Herzberg & Roth, 2006), (2) Ordinary, with average scores across all personality factors (Rammstedt et al., 2004), (3) Confident with high Extraversion and Openness (Herzberg & Roth, 2006), and (4) Non-desirable, with the opposite characteristics of the Resilient group (Rammstedt et al., 2004).

To date, LPA has been used in only a limited number of studies to describe personality profiles. Based on the big-five factors, Merz and Roesch (2011) found a three-profile model: Well-adjusted (similar to Resilients), Reserved with low Extraversion, and Excitable with high Neuroticism and Extraversion; while Kinnunen et al. (2012) found a five-profile model: Resilient, Overcontrolled, Undercontrolled, and Ordinary – also found in previous studies – and Reserved, characterized by high Conscientiousness but low on other factors. Personality profile models have not been constructed based on other models for personality traits to investigate

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relation between personality and drinking, however Neuroticism and Extraversion have been combined with sensation seeking traits to explore a latent profile model for young adults with alcohol use (Ayer et al., 2011). This study suggested that Extraverted, Deregulated young adults drank more frequently than those in the Regulated subgroup.

Further research is needed to advance our understanding about how a range of personality factors interact to confer risk for frequent binge drinking in young adulthood. The goal of the present study is to address this knowledge gap. Specifically, we identify subgroups of individuals in a national sample of U.S. young adults characterized by particular patterns across five personality dimensions and estimate the association between personality subgroup membership and frequent heavy drinking. Because early-onset drinking has been associated with the risk of heavy drinking as mediated through conduct problems (Rossow & Kuntsche, 2013), early-onset drinking was considered as a control variable in the current study.

## 2. Methods

### 2.1. Participants

This study used data from the National Longitudinal Study of Adolescent Health (Add Health; Harris, 2013), longitudinal study in the U.S. We relied on data from two of the four available waves for individuals who were in grades 9–12 at the start of the study (initial  $n = 6072$ ). Data on early alcohol use were collected at Wave 1 (1994–1995; participants in grades 9–12); personality and young adult alcohol use were assessed at Wave 4 (2008–2009). Participants who did not provide responses to the personality assessment, frequency of binge drinking in young adulthood, or age at first drink were excluded from analysis (final  $n = 3110$ ;  $M$  age = 30.9 years ( $SD = 1.3$ ) at Wave 4; 53% female; 65.4% White, 19.8% Black or African American, 3.7% American Indian or Native American, 4.3% Asian or Pacific Islander, 6.8% other race). Females, whites, and those with higher parental education and socioeconomic levels were more likely to respond in Wave 4. However, non-response in Add Health Wave 4 was found to be primarily due to random variation in measurement, and Wave 4 non-response was not significantly associated with Wave 1 alcohol use behaviors (Brownstein et al., 2009), increasing the plausibility of our assumption of data being missing at random. Wave 4 sampling weights were applied in all analyses.

### 2.2. Measures

#### 2.2.1. Mini International Personality Item Pool (Mini-IPIP)

At Wave 4, the ‘Big Five’ personality factors were assessed using the 20-item short form of the International Personality Item Pool with 5-point Likert scales for responses (Donnellan, Oswald, Baird, & Lucas, 2006). Factor scores were created for the five factors based on a recent psychometric investigation of the Mini-IPIP conducted on a similar sample (Baldasaro, Shanahan, & Bauer, 2013).

#### 2.2.2. Frequent binge drinking in young adulthood

At Wave 4, participants were asked, “During the past 12 months, on how many days did you drink five or more drinks in a row?” Responses were recoded to indicate binge drinking weekly or more often (coded 1) versus less than weekly binge drinking (coded 0).

#### 2.2.3. Early onset of alcohol use

At Wave 1, early onset of drinking was assessed using a question that asked, “Think about the first time you had a drink of beer,

wine, or liquor when you were not with your parents or other adults in your family. How old were you then?” Similar to many studies (e.g., Rossow & Kuntsche, 2013), early onset of alcohol use was defined as first use prior to age 14.

## 3. Results

### 3.1. Confirmatory factor analysis of personality subscales

Confirmatory factor analysis was used to confirm the five personality factors derived by Baldasaro et al. (2013) and to create factor scores for each individual. The confirmatory factor model provided marginal fit ( $\chi^2 = 3952.09$ ,  $df = 160$ ,  $RMSEA = .07$ ,  $CFI = .80$ ,  $TLI = 0.77$ ,  $\chi^2/df = 24.7$ ). Table 1 presents the mean, SD, and reliability of each factor.

### 3.2. Identification of personality profiles

LPA was conducted using the five factor scores as continuous indicators to identify personality profiles in the population; models fitted with 1–8 profiles were compared using the AIC and BIC in order to select the optimal number of personality profiles. The model fit improved as the number of latent profiles increased; however, the incremental improvement in fit was considerably smaller after four profiles (BICs for models with 4–6 profiles: 36150.32, 36043.30, 35887.05; AICs for models with 4–6 profiles: 35981.12, 35837.84, 35645.33). The five-profile model was well-identified and theoretically interpretable, comprising profiles that have been described in the literature.

Figure 1 shows the mean scores on the five personality factors for each profile, as well as the relative sizes of the profiles. Profile 1, labeled *Ordinary* (45.1% of the sample), is the most prevalent profile and reflects individuals closest to the mean across all personality dimensions. Profile 2, labeled *Rigid* (9.5%), is characterized by the highest Neuroticism and the lowest on the other four factors. Profile 3, labeled *Confident* (28.5%), is characterized by relatively low Neuroticism and relatively high Extraversion, Openness, and Agreeableness. Profile 4, labeled *Reserved* (6.9%), is characterized by the highest Conscientiousness but relatively low on the other four factors. Profile 5, labeled *Resilient* (10.1%), is characterized by the lowest Neuroticism and the highest Extraversion, Openness, and Agreeableness, as well as relatively high on Conscientiousness.

### 3.3. Predicting frequent binge drinking in young adulthood from personality profiles

Posterior probabilities were generated from an LPA with frequent binge drinking in young adulthood included as a covariate. After participants were assigned to their most likely personality profile, profile membership was treated as known, and used to predict frequent binge drinking in young adulthood using logistic regression. This “inclusive” classify-analyze approach ensures that the personality profile–binge drinking association is not attenuated as it is in standard approaches (Bray, Lanza, & Tan, 2014). Early

**Table 1**  
Descriptive statistics for the five indicators in the latent profile analysis.

Personality factor	Items included in scale	Mean	SD	Reliability
Neuroticism	4	0.02	0.85	0.64
Extraversion	4	0.00	0.86	0.72
Openness	4	−0.02	0.82	0.65
Agreeableness	4	−0.02	0.85	0.70
Conscientiousness	4	−0.01	0.83	0.65

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