

## ORIGINAL PAPER

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# An empirical comparison of substance and alcohol dependence patterns in the homeless in Madrid (Spain) and Los Angeles (CA, USA)

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■ **Abstract** *Background* Alcohol and drug use continue to figure heavily in the experience of the contemporary homeless population. The comparison among pattern of use plays a central role in the cross-cultural view of this topic. This article shows the results of comparing the data concerning alcohol and other drug abuse and dependence among the homeless population of Madrid (Spain) and Los Angeles (USA). *Methods* Data come from two studies carried out independently in each city. Both studies used a comparable methodology which included the same inclusion and diagnostics criteria, representative sampling methods and similar diagnostic structured interviews. In the present study, the data from these two studies are combined in a unique database which allows global and item-to-item comparison between the two studies. *Results* The results show different sociodemographic profiles for each city. Once controlled for the sociodemographic differences (age, education, current employment status and marital status), the life and 12-month prevalence rates of alcohol and other drug disorders (DSM-III-R) are also different. There are also significant differences in social, emotional and health problems associated with the consumption of alcohol and other drugs. The Madrid and LA samples also present differences in the time patterns of the beginning of the homelessness situation and the onset of alcohol- and drug-related disorders. *Conclusions* The pattern of results is discussed in the light of the differences in both socioeconomic and cultural among Madrid and Los Angeles which might explain, in

turn, differences in the homelessness situation as well as in the alcohol and other drug use patterns.

■ **Key words** homeless – homelessness – drug dependence – alcohol dependence – patterns of substance abuse – epidemiology – cross-cultural comparison

## Introduction

In the last 15 years, many research efforts in the United States have sought to document the characteristics of homeless individuals in order to understand factors that either create vulnerability to homelessness or hinder the ability of homeless individuals to obtain and maintain housing. Attention to alcohol and drug use has been a regular feature of these studies.

This focus on substance abuse stems from an earlier research tradition in the 1950s and 1960s that virtually equated homelessness and chronic public inebriance (Fischer and Breakey 1991). However, the focus also reflects the recognition that alcohol and drug use continue to figure heavily in the experience of the contemporary homeless population, particularly point-in-time samples of homeless adolescents and adults. The literature on substance abuse and homelessness includes detailed analyses of both epidemiology (Fischer and Breakey 1991; Koegel and Burnam 1992; Lehman and Cordray 1993; Hodder, Teeson and Buhrich 1998; Kovess and Maguin-Lazarus 1999) and innovative service provision (Center for Mental Health Service 1994; Kunstman and Helvie 1999).

In contrast, literature on homelessness in Europe is only recently beginning to emerge (Avramov 1995; Bhugra 1996; Muñoz, Vázquez and Cruzado 1995), despite growing recognition that homelessness is an increasingly troublesome social problem in European countries (Muñoz 1999). Although rigorously designed studies of homeless samples in Europe exist, only a subset of these have focused on issues related to alcohol and

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drugs (Meltzer 1995; Fichter, Koniarczyk, Greifenhagen, Koegel et al. 1996; Greifenhagen and Fichter 1997; Vázquez, Muñoz and Sanz 1997; Craig and Hodson 1998).

There has been a tendency to assume that data from US studies of homelessness and substance abuse can be generalized to Europe. However, the fact that substance use and homelessness are each strongly mediated by social, cultural and situational factors (Avramov 1995; Babor 1992; Koegel, Melamid and Burnam 1995) calls this assumption into question (Fichter, Koniarczyk, Greifenhagen et al. 1996; Muñoz, Vázquez, Koegel et al. 1998; Kovess and Maguin-Lazarus 1999). Until emerging studies from Europe begin to show the extent to which homelessness, substance abuse, and mediating factor issues play themselves out in different or similar ways, data from European homeless samples are best used to elucidate the relationship between homelessness and substance abuse in the European context.

The value of reliable data on substance abuse among homeless populations in Europe goes beyond the ability to provide an empirical foundation for local policy. Such data also hold the promise of supporting comparisons between Europe and North America that can suggest how national policy, differing social and economic contexts, and cross-cultural variation may influence the profile of the homeless population and the dynamics of homelessness. Making such comparisons in a meaningful way is admittedly a difficult undertaking. Variations in the profile and experience of homelessness across cities even within the same nation are often hard to attribute directly to more macro-level factors (Kales, Barone, Bixler, Miljkovic et al. 1995; Lehman and Cordey 1993; Spinner and Leaf 1992). As a result, it is difficult to set the threshold at which differences in homelessness are substantial enough to justify cross-cultural or cross-national explanations.

Moreover, a substantial amount of measurement noise clouds interpretation of such comparisons because different methods and definitions are often used in geographically distinct studies of homelessness. For example, homeless samples are drawn from different sampling frames and with different levels of rigor; conceptually identical issues are measured with different instruments; and homelessness, mental health, substance abuse, exit from homelessness, and a host of other variables are defined differently. In effect, comparisons become an attempt to weave together the reported findings from markedly different studies rather than statistical analysis of a uniform set of data across multiple geographical locations. These methodological and conceptual challenges have made documenting and understanding variation across cities and countries slow work (Honig and Filer 1993).

What would studies based on uniform data from multiple locations look like? According to Leaf, Hwu and Canino (1992), such investigations should have the following characteristics: (a) common inclusion and diagnostic criteria; (b) comparable sampling strategies; and

(c) the same instruments, designed cross-culturally. These criteria would permit us to compare results of various investigations. However, they would not allow us to make item-to-item comparisons or create new common variables. To achieve these aims, we would need to combine the databases of different studies and conduct joint statistical analyses (for example in the Epidemiological Catchment Area (ECA) study, Helzer, Bucholz and Robins 1992; also Muñoz, Vázquez, Koegel et al. 1998). In fact, we have recently shown that this type of strategy is very fruitful in analyzing differences in mental health problems among the homeless persons from different cultures (see more details and data in Muñoz, Vázquez, Koegel et al. 1998).

Our research examines patterns of alcohol and drug consumption among a sample of homeless people in two cities (Madrid and Los Angeles) with different cultural referents (Berry et al. 1992) using an approach designed to address the challenges described above. Following the suggestions of Leaf, Hwu and Canino (1992), we have conducted two independent studies that have comparable aims and use comparable methods. The Madrid study was included in the III European Program against Poverty (Poverty – 3). The Los Angeles study was part of the Course of Homeless Study conducted by the RAND Corporation. The goals of both studies included examining the prevalence of alcohol and other drug dependence in the homeless. The sampling system employed, in both cases multicentric and randomized, facilitated comparison. The choice of structured interviews in both studies – the Composite International Diagnostic Instrument (CIDI) in Madrid and the Diagnostic Interview Schedule (DIS) in Los Angeles – permitted us to unite the databases (the DIS is included in the CIDI), making the results completely comparable, even on an item-to-item basis.

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## Subjects and methods

Data were gathered in Madrid (Spain) and Los Angeles (California, USA). Madrid, the capital of Spain, is a city of 3 million. Estimates of the city's homeless population, based on field samples and service center statistics, range from 900 to 2000 literally homeless people on any given day (Vázquez, Muñoz, and Rodriguez 1999). The Madrid sample was drawn from the center of the city, the area in which the majority of homeless people can be found.

Los Angeles County has a population of approximately 9 million people and a homeless population that has been estimated at between 36,800 and 59,100 on a given night (Shelter Partnership 1995). The LA sample was drawn from the two sites (Downtown and the Westside) that contain the highest concentration of homeless individuals in Los Angeles County.

In each city, we conducted face-to-face surveys averaging approximately 90 min with individuals who were eligible for inclusion in the sample. In Madrid, 262 homeless persons completed the interview between November 1992 and January 1993 (acceptance rate of 85%); in LA 1,548 homeless persons completed the interview between October 1990 and September 1991 (acceptance rate of 87%). Los Angeles participants were paid \$ 10; Madrid participants were not paid.

Participants in the study were, in all cases, literally homeless as defined by the Stewart B. McKinney Homeless Assistance Act (NACHC 1987). The inclusion criterion, equivalent in both studies, consisted of

having spent at least one night, in the last 30 days, in: (a) a setting either defined as a temporary shelter or not designed for shelter, excluding doubled up with family or friends; or (b) an institution for homeless individuals providing temporary living accommodation.

### ■ Sampling

The Madrid study sampling plan drew upon several principles from Burnam and Koegel's service sector approach to sampling homeless individuals (Burnam and Koegel 1988). We began by creating a list of all existing homeless centers and specific social resources for this population. Then, we randomly selected a subset of these centers and service settings, stratified according to the nature of the service. In the end, subjects were drawn from two shelters (355 beds), two soup kitchens (300 meals daily) and one social integration service (100 persons attended). Our Madrid sample also included street people located by the Mobile Social Emergency Units, which attend homeless people in the street. In each of these centers, subjects were randomly selected (see more details in Vázquez, Muñoz, and Sanz 1997). In total we collected data from approximately 15%–20% of the target population.

The LA survey's sampling plan combined elements of Burnam and Koegel's service-setting sampling approach (1988) and Rossi et al.'s "blitz" sampling approach (1987) to draw a probability sample of homeless adults. Respondents were sampled proportionate to their numbers in the downtown and Westside areas, as determined by a one-night enumeration. They were also sampled proportionate to their distribution across three nested sampling strata: the population using shelters, the homeless population using meal facilities but not shelter beds, and the unsheltered population using neither. Respondents were randomly selected at each service facility in proportion to the number of homeless people served by each facility over a 30-day period and across a stratified probability sample of streets in the dead of night. Women, who actually comprise 16% of the homeless population in these areas, were oversampled to represent 26% of the sample (see Koegel et al. 1996 for additional details).

LA data were weighted by the reciprocal of an estimated probability of selecting each sampled individual. Probabilities were estimated using two different underlying stochastic models that were conceived as bounds on actual probabilities: one model assumed that homeless individuals use the same facilities and street locations repeatedly; the other assumed that individuals choose randomly among geographically available facilities and street locations. Probabilities estimated under each model included two components: the selection of facilities and street locations on any given day (or night) of survey sampling, and the selection of individuals within locations, given the selection of facility/location. Weights used in this paper average the results from these two models. Although the sampling method used in the Madrid study did not allow to obtain weights, further studies have shown that the estimates found by using the present strategy are not likely to be biased in the particular case of the city of Madrid (Muñoz, Vázquez, Vázquez et al. in press).

### ■ Instruments

The Madrid instrument yielded data on the prevalence, onset and recency of specific mental disorders, as well as data on life stressors and health status. Results from the Madrid study have been reported elsewhere (Muñoz, Vázquez and Cruzado 1995; Vázquez, Muñoz and Sanz 1997; Muñoz, Vázquez, Bermejo, et al. 1999; Vázquez and Muñoz 2001). Specific mental disorders were assessed with the official Spanish adaptation of the CIDI (1.1 version, Rubio-Stipec, Bravo and Canino 1991). The CIDI is a structured interview that yields diagnoses with high validity indices (Janca, Robins, Buchholz et al. 1992), based on the diagnostic criteria of both the DSM-III-R (APA 1987) and the ICD-10 (WHO 1992). The CIDI (Robins, Wing, Wittchen, Helzer, et al. 1988) includes the entire Diagnostic Interview Schedule (DIS) (Robins, Helzer, Croughnan et al. 1981) and the Minimal State Examination (Folstein, Folstein and McHugh 1975) and, as such, yields data comparable to data from studies that have used the DIS. In

this study we only report DSM-III-R diagnoses for substance dependence disorders; the other mental disorders included have been examined in detail elsewhere (Muñoz, Vázquez, Koegel, et al. 1998). The Madrid instrument also included the List of Threatening Experiences Questionnaire (LTE-Q) (Brugha and Cragg 1990), supplemented with items specific to the situation of homelessness, and the Scale of Physical Health, used by the Washington DC NIDA drug study (Thornberry, Ardini and Dennis 1992) that have been included in some other papers (Muñoz, Vázquez, Bermejo et al. 1999; Vázquez and Muñoz 2001; Vázquez, Muñoz, Sanz and Dennis in press).

The baseline instrument of the Course of Homelessness study relied upon the DIS for DSM-III-R psychiatric diagnoses. Additional questions focused on demographics, current subsistence activities, residential history and family background, homelessness history, past and current service use, and employment and income. Results from the Course of Homelessness Study have been reported elsewhere (Koegel, Melamid and Burnam 1995; Koegel, Sullivan, Burnam et al. in press; Marshall et al. 1996; Schoeni and Koegel 1998).

### ■ Analysis plan

A unique aspect of the present study is that instead of comparing final results from each study, we combined the data sets from each study and conducted new statistical analyses. To combine the data, we followed a two-part procedure. First, we identified and renamed demographic and life history variables from each study that used similar wording and a comparable metric. Second, we renamed both the item-by-item questions and the derived diagnostic variables associated with the CIDI and DIS sections. Regarding use and abuse of alcohol and other substances, we compared, item-by-item, sections I (alcohol) and L (psychotropic substances) from the CIDI (Madrid) with sections M (alcohol) and P (drugs) from the DIS, and selected all items with equivalent content and comparable scoring procedures. Our comparison was facilitated by the fact that the CIDI provides the corresponding DIS code for each item.

Once the items had been selected and combined in a common database, we defined the variables to be compared. We included variables that are directly comparable – that is, they correspond to equivalent-content items and have the same response categories. These variables include sociodemographic profile variables and DSM-III-R lifetime and 12-month prevalence rates of alcohol and drug dependence. We used the DSM-III-R definition of "dependence", which bases diagnosis on the occurrence of various social-adjustment, emotional and health problems in the subject, to define a series of dichotomous variables that reflect problems related to the consumption of alcohol and drugs. These new variables are: *social problems*, *emotional problems*, and *health problems*. The definition of the new variables appears in Table 1.

For nominal-level data, we used chi-square analyses to test differences between cities. For 2 x 2 tables, if the expected value of the cells was < 5, Fisher's exact test was calculated. For interval- or ordinal-level data, we used *t*-tests to test differences between cities. Prior to calculating the *t*-tests, we computed Levene's tests for equality of variance. If the variances for the two cities were not the same, we used the separate variance formula to calculate the *t*-test; if they were the same, we used the basic pooled variance formula. To prevent the possibility of an increased rate of Type I errors, we used the Bonferroni procedure to adjust significance levels for each group of analyses presented below.

## Results

### ■ Sociodemographic profile

Table 2 presents the sociodemographic profiles of the sampled homeless in Madrid and Los Angeles. These groups differ significantly on four aspects. First, on average, the homeless in the Madrid sample are 5 years

**Table 1** Definition of new variables from DIS and CIDI

New variables	Items (CIDI and DIS)	
	Alcohol	Drugs
Social problems	<ul style="list-style-type: none"> <li>– Effects on work, school or child-care</li> <li>– Complaints by family members, doctor, friends, ...</li> <li>– Neglecting activities in order to drink</li> <li>– Problems at work or at school</li> <li>– Fights</li> <li>– Arrests</li> <li>– Breaking up with friends or family members</li> <li>– Driving problems</li> </ul>	<ul style="list-style-type: none"> <li>– Effects on work, school or child-care</li> <li>– Neglecting activities in order to consume drugs</li> <li>– Problems with family members, friends, at work, at school or with the police</li> </ul>
Emotional problems	<ul style="list-style-type: none"> <li>– Lack of interest</li> <li>– Depression</li> <li>– Suspiciousness</li> <li>– Bizarre ideas</li> </ul>	<ul style="list-style-type: none"> <li>– Lack of interest</li> <li>– Depression</li> <li>– Suspiciousness</li> <li>– Bizarre ideas</li> </ul>
Health problems	<ul style="list-style-type: none"> <li>– Hepatitis</li> <li>– Stomach, vomiting blood, ...</li> <li>– Tingling feet</li> <li>– Memory</li> <li>– Pancreatitis</li> <li>– Other problems</li> </ul>	<ul style="list-style-type: none"> <li>– Overdose, persistent cough, convulsions, infections, hepatitis, abscesses, AIDS, cardiac problems, injuries, sprains</li> </ul>

Note: subjects were considered to have a problem whenever they scored at least one of the items within each problem category

**Table 2** Sociodemographic profile

	Madrid	Los Angeles
N	262	1,548
Gender (% females)	21.5	17.3
Age (%)**		
18–30 years	23.6	27.8
31–40 years	29.0	39.8
> 41 years	47.5	32.4
Mean age**	42.0 (12.8)	36.8 (9.8)
Mean number of children	1.4 (6.3)	1.6 (2.0)
Mean years of school***	8.4 (9.1)	11.5 (2.8)
Marital status (%)**		
Married	6.5	7.3
Widowed	4.6	2.8
Divorced/Separated	24.5	38.9
Never married	64.4	50.9
Actually living as a couple (%)	6.7	9.5
Now employed**	7.4	29.8

Note: significant differences between cities based on chi-square analyses or t-test. Significant levels adjusted by Bonferroni procedure: \* = 0.05; \*\* = 0.01. For interval- or ordinal-level data, standard deviations are in brackets

older than the LA sample (42 vs. 36.8). Second, the LA sample is better educated – an average of 11.5 years of schooling compared with 8.4 in Madrid. Third, more of the LA sample were employed at the time we collected the data (nearly 30% compared with about 7.5% in Madrid). However, the question on employment was slightly different in both studies: in the LA study, subjects were asked about working for pay within the last 30 days, whereas in the Madrid study, subjects were asked if they were currently employed. This minor difference may explain, in part, the difference found in terms of employment rates. Finally, homeless in the Madrid sample were more likely to have never married and less likely to have been divorced.

The samples did not differ significantly on any of the

remaining variables: gender, number of children, living as a couple.

### ■ Lifetime and 12-month prevalence of substance-dependence disorders

Table 3 shows the data describing DSM-III-R (APA 1987) lifetime and 12-month prevalence of substance-dependence disorders in each sample. In practically every category, the LA sample shows significantly higher lifetime and 12-month prevalence rates than the Madrid sample. In the case of lifetime prevalence of any substance abuse, the LA rate is higher than the Madrid rate (72.6 vs. 36.5); the same pattern holds for alcohol dependence (60.3 vs. 28.3). The difference is even more dramatic in the “any drug except alcohol” category, where the LA rate is much higher than the rate in Madrid (49 vs. 12.8)

The lifetime prevalence data corresponding to each substance show the same trends: the percentage of persons suffering from dependence is always higher in LA, in the case of marijuana, stimulants, PCP and cocaine significantly so. Indeed, in the latter category, the LA rate is extraordinarily higher compared to the Madrid rate (34.2 vs. 2.5).

The 12-month prevalence data are much more evenly distributed. The Madrid and the LA samples do not differ significantly with regard to dependence on marijuana, stimulants, opioids, PCP, hallucinogens and inhalants. The Madrid sample has a significantly higher rate of sedative dependence; in the remaining categories (alcohol and cocaine), the Madrid dependency rates are lower.

Given that the sampled homeless in Madrid and Los Angeles differed significantly on four sociodemographic variables (age, education, current employment

**Table 3** DSM-III-R lifetime and 12-month prevalence of substance dependence (%)

	Lifetime		12-Month	
	Madrid	Los Angeles	Madrid	Los Angeles
Any substance dependence	36.5	72.6**	27.8	56.4**
Alcohol	28.3	60.3**	22.1	42.2**
Any drug (excluding alcohol)	12.8	49.0**	8.7	32.1**
Marijuana	4.1	20.2**	2.5	6.6
Stimulants	2.5	8.6*	1.7	1.7
Sedatives	4.5	6.2	3.7	1.2*
Opioids (+ heroin)	5.4	12.2	4.5	5.5
Cocaine	2.5	34.2**	1.7	25.5**
PCP	0.0	3.3*	0.0	0.4
Hallucinogens	0.4	3.0	0.4	0.3
Inhalants	0.0	1.2	0.0	0.3
Others	0.0	0.9	0.0	0.1

Note: significant differences between cities based on chi-square analyses. Significant levels adjusted by Bonferroni procedure: \* = 0.05; \*\* = 0.01

status and marital status), it could be that differences between samples on lifetime and 12-month prevalence of substance-dependence disorders were due to those sociodemographic differences. To rule out this alternative explanation, we conducted several statistical analyses to examine whether there was any significant relationship of substance-dependence disorder and city of sample with any of the four sociodemographic variables mentioned above, and whether there was any relationship between the first two variables after controlling for those sociodemographic variables. The first step in these analyses was to test the null hypothesis of no three-way (or higher) interaction present in our data involving substance-dependence disorder, city of sample and any of the four sociodemographic variables. This was done by carrying out hierarchical loglinear analyses to fit a saturated (or complete) model for each substance-dependence variable listed in Table 3 and to test whether any three-, four-, five- or six-way interactions were significant. These analyses did not reveal any significant three-way (or higher) interaction. Then, we ex-

amined the relationship between substance-dependence disorder and city of sample after controlling, in turn, for age, education, current employment status and marital status. To do this, we calculated the Mantel-Haenszel statistic for  $2 \times 2 \times K$  tables. This statistic allows one to test whether there is any relationship between two dichotomous variables after controlling for one control variable. With this statistic, we could assess the relationship between substance-dependence disorder and city of sample through the odds ratio, estimate a common odds ratio across the K levels of age (education, current employment status or marital status) and obtain a chi-squared test of the null hypothesis that this common odds ratio is 1. The results obtained with the Mantel-Haenszel statistic corroborated the results provided by chi-square analyses and displayed in Table 3. As an illustration, Tables 4, 5, 6 and 7 show common odds ratio of suffering from substance dependence after controlling for age, marital status, current employment status and education for LA homeless relative to Madrid homeless.

**Table 4** Odds ratio of DSM-III-R lifetime and 12-month substance dependence after controlling for age

	Lifetime		12-Month	
	Common odds ratio	M-H Statistic	Common odds ratio	M-H Statistic
Any substance dependence	4.47	115.40***	3.27	62.99***
Alcohol	3.96	89.01***	2.61	35.58***
Any drug except alcohol	6.12	97.51***	4.57	46.79***
Marijuana	5.52	31.51***	2.49	4.2
Stimulants	3.59	9.72*	0.92	0.02
Sedatives	1.45	1.07	0.29	8.23
Opioids (+ heroin)	2.39	9.85*	1.22	0.23
Cocaine	18.77	89.51***	18.43	60.37***
PCP	–	5.82	–	0.23
Hallucinogens	7.52	4.81	0.58	0.03
Inhalants	–	1.43	–	0
Others	–	0.89	–	0.46

Note: common odds ratio greater than 1 indicates that the odds of suffering from substance dependence is greater for LA homeless relative to Madrid homeless across all the three age groups. M-H Statistics = Mantel-Haenszel chi-squared test of the null hypothesis that the common odds ratio is 1; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$  (significance levels corrected by Bonferroni technique); – = could not be calculated due to structural zeros

**Table 5** Odds ratio of DSM-III-R lifetime and 12-month substance dependence after controlling for marital status

	Lifetime		12-Month	
	Common odds ratio	M-H Statistic	Common odds ratio	M-H Statistic
Any substance dependence	4.64	118.47***	3.39	66.16***
Alcohol	3.87	85.05***	2.58	34.21***
Any drug except alcohol	6.5	106.21***	4.99	54.35***
Marijuana	6.2	36.71***	3.03	6.61
Stimulants	3.55	9.22*	1.08	0.01
Sedatives	1.29	0.39	0.29	7.61
Opioids (+ heroin)	2.35	8.13	1.25	0.28
Cocaine	19.91	94.87***	19.86	64.61***
PCP	–	6.64	–	0.13
Hallucinogens	6.8	3.68	0.86	0.2
Inhalants	–	2.82	–	0.1
Others	–	0.89	–	0.9

Note: common odds ratio greater than 1 indicates that the odds of suffering from substance dependence is greater for LA homeless relative to Madrid homeless across all the four marital status groups. M-H Statistics = Mantel-Haenszel chi-squared test of the null hypothesis that the common odds ratio is 1; \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001 (significance levels corrected by Bonferroni technique); – = could not be calculated due to structural zeros

**Table 6** Odds ratio of DSM-III-R lifetime and 12-month substance dependence after controlling for current employment status

	Lifetime		12-Month	
	Common odds ratio	M-H Statistic	Common odds ratio	M-H Statistic
Any substance dependence	5.68	74.32***	4.03	39.28***
Alcohol	4.3	44.48***	2.74	17.11***
Any drug except alcohol	7.67	54.98***	6.06	28.19***
Marijuana	13.18	20.18***	6.67	3.76
Stimulants	4.69	4.67	1.48	0
Sedatives	0.89	0	0.31	3.87
Opioids (+ heroin)	4.8	7.58	2	0.9
Cocaine	28.59	47.77***	38.31	33.13***
PCP	–	3.1	–	0
Hallucinogens	3.49	1.01	0.34	0.02
Inhalants	–	0.52	–	0.05
Others	–	0	–	1.54

Note: common odds ratio greater than 1 indicates that the odds of suffering from substance dependence is greater for LA homeless relative to Madrid homeless across the two current employment status groups. M-H Statistics = Mantel-Haenszel chi-squared test of the null hypothesis that the common odds ratio is 1; \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001 (significance levels corrected by Bonferroni technique); – = could not be calculated due to structural zeros

**Table 7** Odds ratio of DSM-III-R lifetime and 12-month substance dependence after controlling for education (years of school)

	Lifetime		12-Month	
	Common odds ratio	M-H Statistic	Common odds ratio	M-H Statistic
Any substance dependence	4.39	76.13***	2.62	30.61***
Alcohol	4.48	73.17***	2.25	18.58***
Any drug except alcohol	4.24	50.84***	3.08	20.83***
Marijuana	4.41	18.12***	2.25	2.18
Stimulants	1.93	1.53	0.7	0.09
Sedatives	0.74	0.4	0.24	8.05
Opioids (+ heroin)	3.06	5.42	0.81	0.14
Cocaine	10.37	51.76***	11.11	36.92***
PCP	–	1.43	–	0.02
Hallucinogens	3.21	0.66	0.36	0.03
Inhalants	–	4.07	–	0
Others	–	0.11	–	3.73

Note: common odds ratio greater than 1 indicates that the odds of suffering from substance dependence is greater for LA homeless relative to Madrid homeless across all the education groups. M-H Statistics = Mantel-Haenszel chi-squared test of the null hypothesis that the common odds ratio is 1; \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001 (significance levels corrected by Bonferroni technique); – = could not be calculated due to structural zeros

**Table 8** Proportion of persons in Los Angeles (LA) and Madrid (MA) with drug-dependence disorders, who also experienced drug-related problems

	Social problems		Emotional problems		Health problems	
	LA	MA	LA	MA	LA	MA
Marijuana	93.3 (235)	100 (8)	55.7 (193)	87.5 (8)	23.3 (90)	0.0 (3)
Sedatives	85.6 (68)	87.5 (8)	30.0 (73)	62.5 (8)	50.6 (46)	50.0 (6)
Opioids (+ heroin)	100 (162)	91.7 (12)	98.5 (93)	90.0 (10)	97.9* (79)	50.0 (4)
Cocaine	97.3 (472)	100 (4)	93.7 (367)	75.0 (4)	72.0 (169)	– (0)
Alcohol	96.2 (901)	89.7 (68)	50.7** (899)	76.1 (67)	34.7** (899)	4.5 (67)

Note: significant differences between cities based on chi-square analyses (significant levels adjusted by Bonferroni procedure): \* = 0.05; \*\* = 0.01. Ns are shown in parenthesis

## ■ Substance-related problems

Table 8 summarizes our analysis of substance-dependence-related problems. Based on the diagnostic structure of the DSM-III-R, we had identified three groups of problems usually related to substance abuse and dependence: social problems, emotional problems and health problems (as defined in Table 1). We focused our attention on those substances that had high prevalence rates – alcohol, marijuana, sedatives, opioids and cocaine. We eliminated those with low rates – PCP, stimulants, hallucinogens and inhalants – from the analysis in both samples.

There are relatively few significant differences between the samples on these problem dimensions. The LA sample has significantly higher rates of health problems associated with use of opioids and alcohol, and a lower rate of emotional problems associated with alcohol.

## ■ Relationships between substance abuse and age at the time of first homelessness

Table 9 compares age at onset of alcohol- and drug-related disorders and age at onset of sample members' first episode of homelessness. The samples differ significantly on this latter dimension: homelessness first occurs almost 5 years earlier in LA. We see the same trend towards earlier development of substance dependence in LA, but these differences do not reach statistical significance.

Table 10 shows the relationship between the time when homeless people first experienced substance-de-

**Table 9** Differences among the homeless suffering from substance-dependence disorders in the ages at the first onset of those disorders. Includes differences in the age at first homelessness

	Madrid	Los Angeles
Alcohol dependence	22.7 (13.8)	18.6 (5.2)
Drug dependence	23.5 (9.6)	21.5 (7.3)
Age at first homelessness**	34.9 (12.2)	28.9 (11.0)

Note: significant differences between cities based on t-tests. Significant levels adjusted by Bonferroni procedure: \* = 0.05; \*\* = 0.01. Standard deviation in brackets

pendence disorders and the time when they first experienced homelessness. In both cities, about 80 % of the alcohol-dependent homeless experienced symptoms of alcohol dependence before having experienced their first homelessness episode. All of the drug-dependent individuals in the Madrid sample experienced symptoms of drug dependence before first experiencing homelessness, compared to approximately 70 % of the LA sample.

## Discussion

Cross-national comparisons of homelessness are important for a myriad of reasons, not the least of which is the opportunity to explore whether and how homelessness and the profile of the homeless population varies in contexts affected by different economic, political, social and cultural influences. Unfortunately, the variation in methods employed by the few well-designed studies that do exist have made it difficult to undertake such comparisons. The effort reported here took advantage of a

**Table 10** Proportion of homeless in Los Angeles (LA) and Madrid (MA) suffering from a DSM-III-R substance-abuse disorder who experienced that disorder before, in the same year or after experiencing homelessness

	Before (%)		Same year (%)		After (%)		N	
	LA	MA	LA	MA	LA	MA	LA	MA
Alcohol dependence	78.2	81.8	6.2	3.0	15.6	15.2	908	66
Drug dependence**	70.5	100.0	10.0	0.0	19.5	0.0	756	31

Note: significant differences between cities based on chi-square analyses (significant levels adjusted by Bonferroni procedure): \* = 0.05; \*\* = 0.01

unique situation that allowed data from two similarly designed studies of homelessness in two different countries to be merged into a single data set. While the universe of identically measured variables was a limited one, allowing comparisons only on demographic profile, psychiatric disorders (see Muñoz et al. 1998), substance dependence, and onset and duration of homelessness, this study represents an important first step in understanding cross-national variation in homelessness.

Several differences were apparent in the demographic profile and homelessness histories of the individuals in the LA and Madrid samples. On average, those in the Madrid sample were older than those in the LA sample, were less well educated and were much less likely to be currently employed. In addition, they had first experienced homelessness at a later age (see Table 2). These differences may have less to do with variation in how homelessness manifests itself in Spain and the US than they do with broader differences between the two countries that affect the population overall. For instance, until 1986 schooling in Spain was compulsory only until the age of 14, while schooling in the US is compulsory through age 18. Likewise, differences in the rates at which homeless people in the two cities are working for pay is probably a function of the sharply different employment rates in each city at the time the data were collected, close to 20% in Madrid (Juarez, Cobo, González et al. 1994) and less than 8% in LA (CA Employment Development Department 1999) as well as the fact that the Spanish labor market legislation is more rigid than that of the US. Similarly, the later age at which people first experience homelessness in Madrid is very possibly related to the fact that the age at which young adults are expected to be living independently of their parents and supporting themselves is far older than is the case in the United States. As a matter of fact, the average emancipation age of Madrid youngsters is 28.5 years old (Vázquez, Muñoz and Rodriguez 1999). Clearly, and not surprisingly, homelessness in each of these countries takes on a distinctively national cast. Nevertheless, it is interesting to note that the age at first onset for alcohol and drug dependence is very similar in both samples (Table 9), despite the fact that the first episode of homelessness appears later in the Madrid sample than in the LA sample (34.9 years vs. 28.9 years). This seems to indicate that the major differences in age of onset have to do with the condition of becoming homeless rather than with the morbidity problems, including mental disorders (Muñoz, Vázquez, Koegel et al. 1998).

With regard to substance-use disorders, the homeless in Madrid and Los Angeles manage to be both similar and different. The homeless in both cities are alike in having high rates of alcohol- and drug-related disorders. This finding is consistent with those that have emerged from many point-in-time samples of largely single homeless adults in both the United States (Fischer and Breakey 1991; Lehman and Cordray 1996) and in Europe (Fichter et al. 1996).

While rates of substance dependence are high in both

samples, alcohol and drug problems are clearly more endemic among the LA homeless (see also Kovess and Maguin-Lazarus 1999, for similar results in a Paris homeless study). In practically every category of substance dependence, the LA sample has significantly higher lifetime and 12-month prevalence rates. These differences were most striking in the case of lifetime cocaine dependence, where prevalence among the LA homeless was much higher than that of the Madrid homeless. Such differences might at least in part be a function of differences in the availability and popularity of particular drugs. Unfortunately, there are no reliable data, based on structured interviews linked to DSM or ICD diagnoses, on the prevalence of alcohol and drug-related disorders among the general population of Madrid, making it impossible to determine whether the two samples differ in the extent to which they are disproportionately substance dependent.

Alcoholism is a disorder with considerable cross-cultural consistency in terms of patterns of symptoms (Helzer and Canino 1992). In fact, in our study, there are few differences between the two samples in the prevalence of *problems* due to substance use, with two exceptions. LA homeless subjects have significantly more health problems related to alcohol dependence than the Madrid homeless; the Madrid sample has significantly more emotional problems. The lower rates of social and health problems in Madrid may be influenced by the fact that wine is cheaper – and less health damaging – than other alcohol substances and that, in general, drinking is a social and dietary act in the Mediterranean culture (Babor 1992). As this author states: “in spirit-drinking countries the pattern of drinking problems [is] characterized by alcohol-related accidents, social disruption and public intoxication” (1992, p. 39).

There are limits to the extent to which cross-sectional data, as those presented in our study, can answer questions related to the sequencing of substance dependence and homelessness, which leads us to interpret these data cautiously. For a minority of individuals in both cities (with the exception of drug-dependent individuals in Madrid), substance dependence followed first episode of homelessness. This suggests that at least for some people, substance dependence may reflect a way of coping with the stresses of a homeless lifestyle or may have resulted from a heightened exposure to substances related to their homelessness. Still, it is clear from the data presented here that the vast majority of the homeless in both Madrid and Los Angeles were experiencing significant substance abuse problems *before* they first became homeless. While it is tempting to conclude that substance dependence “caused” homelessness in these cases, we hasten to emphasize that the relationship between substance dependence and homelessness is undoubtedly a complex one, making these data difficult to interpret. It is actually far more likely that both homelessness and substance-abuse disorders are to some extent twin products of a complicated set of factors in the life histories of homeless people. Moreover, substance

dependence, like serious mental illness, early childhood experiences and a host of other factors, is probably best viewed as one of many factors that increase one's *vulnerability* to homelessness, rather than a direct cause of pervasive homelessness itself (Koegel, Burnam and Baumohl 1996). It is interesting to note that a similar time pattern has been found in our samples in regard to the sequencing of mental disorders and homelessness: in both cities (Madrid and LA), homelessness was far more likely to follow the emergence of mental health problems than to precede it (North et al. 1993; Sullivan et al. 1995; Muñoz, Vázquez, Koegel et al. 1998).

We conclude by highlighting the fact that comparative studies of homelessness across different contexts are an important source of insights into significant factors related to homelessness (Shlay and Rossi 1992). These insights are essential if we are to design effective preventive strategies that address the economic, social and psychological problems of those at risk (Dennis et al. 1999), and that reflect the specific cultural context in which these problems occur. We encourage researchers to take advantage of opportunities to compare existing cross-national sources of data, as we did here, but also stress that more refined understandings of the contextual factors affecting homelessness will require studies that are specifically designed and conducted with this purpose in mind.

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