

THE DRINKING OF EARLIER AND MORE RECENT RUSSIAN IMMIGRANTS TO ISRAEL: Comparison to Other Israelis

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ABSTRACT: *Objectives. Russia has a high level of per capita alcohol consumption, while the level in Israel is low. Since 1989, over 820,000 Russian Jews immigrated to Israel. In the 1970's and early 1980's, a smaller wave of immigration from Russia to Israel occurred (approximately 170,000). The drinking of earlier immigrants was compared to recent immigrants and other Israelis. Methods: Data came from a 1995 national survey of Israeli household residents. Of 4984 Israeli respondents, 292 were Russian immigrants who arrived since 1989 and 131 were Russians who immigrated earlier. Groups were compared with logistic regression. Results: Recent Russian immigrants were more likely to drink in the last 12 months, to drink frequently and to get drunk than other Israelis. The earlier Russian immigrants were not more likely than other Israelis to report drinking in the last 12 months or frequent drinking, but were more likely to report 30-day drinking and getting drunk. In direct comparison of recent and earlier Russians, recent immigrants reported more frequent drinking than earlier immigrants. Conclusions: The results for drinking and frequency of drinking are consistent with acculturation effects as well as other*

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explanations. Further investigation in studies with appropriate designs will be necessary to clarify the meaning of these results.

INTRODUCTION

Large migrations between countries with contrasting alcohol consumption patterns provide an opportunity to investigate the relationship of cultural and genetic influences on drinking and alcohol use disorders. The large immigration of Jews from the Former Soviet Union (FSU) to Israel constitutes one such opportunity. Israel has one of the lowest levels of alcohol consumption in the world. Per-capita consumption figures reflect only beer and wine, but showed that in 1995, Israel ranked 46th out of 51 countries (Verhoek, 1995). This is consistent with earlier findings on alcohol in Israel. For example, Kandel and Sudit (1982) showed that drinking levels were lower in Israel than in the U.S. Dohrenwend et al. (1992) showed that Israeli rates of alcohol disorders were far lower than U.S. rates measured at approximately the same time (Helzer et al., 1991).

In contrast, Russia has one of the highest per capita alcohol consumption levels in the world (Trembl, 1997). Drinking in Russia has received considerable international attention from the public health community over the last few years because of the marked effects of alcohol consumption on morbidity and mortality in the FSU (e.g., Notzon et al., 1998). Historical sources show that Russia has a long history of heavy drinking and alcohol problems (White, 1996). In the mid-1980's, alcohol consumption and accompanying health problems temporarily declined in Russia in response to a successful program initiated by the Gorbachev regime. This program was initiated in part because of the widespread alcohol-related health problems present in the Soviet Union at the time. Because the program aroused huge public opposition (Skolnikov and Nemtsov, 1997), it was retracted, leading to a large subsequent increase in drinking (White, 1996; Leon et al., 1997). Thus, except for the mid-1980's (when immigration to Israel was almost non-existent), any emigrants leaving the FSU left a country with very high rates of alcohol consumption.

Since 1989, Israel has received over 820,000 immigrants from the FSU, where recent Russian immigrants currently constitute about 15% of Israel's population (Sicron, 1998). These new immigrants are now adjusting to a culture that represents a marked contrast to their former environment in many ways, including per capita alcohol consumption. As recently reviewed (Rahav et al., in press), anecdotal information consistently suggested that the recent wave of Russian immigrants drink more than other Israelis. Further, marketing research conducted by Israeli alcohol beverage manufacturers showed that until recently, the preferred beverage of the Russians was vodka, reflecting their country of origin (Lauri, 1999). The anecdotal information was recently confirmed through analyses of data from a 1995 Israeli national survey (Rahav et al., in press). Rahav et al. showed that the recent Russian immigrants were significantly more likely to be current drinkers and to drink more frequently than other Israelis. The recent immigrants showed a trend towards higher likelihood of getting drunk in the prior 12 months, but the result did not reach statistical significance. Included in the "other Israeli" group were all other immigrants, including Russians who immigrated to Israel prior to 1989.

The empirical investigation of Rahav et al. did not address the fact that a smaller but still significant wave of immigrants from Russia arrived in Israel in the 1970's and early 1980's (Della Pergola, 1993). This earlier wave included about 170,000 individuals (Sicron, 1998). Apparently, the drinking patterns of this earlier group never attracted much attention in Israel. However, given the high level of alcohol consumption in the FSU in the 1970's and early 1980's in conjunction with the longer stay in Israel of the earlier immigrants, their drinking patterns are also of interest. Since no empirical information was available on drinking among individuals who emigrated from the FSU to Israel prior to 1989, we investigated this issue. We compare immigrants from the earlier wave of immigrants to the non-Russian Israelis, as well as to the more recent Russian immigrants who arrived since 1989. We used data from the same 1995 Israeli national survey that provided the data for our earlier report.

METHODS

SAMPLE DESIGN

The 1995 Israeli national household survey of drinking and drug use, designed at Tel Aviv University, was one of a series of national surveys sponsored by the Israel Anti-Drug Authority, a government agency. The sample was designed to represent adult Israeli household residents between the ages of 18 and 40, excluding individuals who lived on a kibbutz (about 2.5% of the population), individuals in military service not living at home, and institutionalized individuals. The country was divided into areas, and clusters of 10 households were selected within areas. Areas were stratified by city size so that individuals were represented from large (e.g., population >20,000), intermediate or small cities (Rahav and Teichman, 1995). Within each sampled household, one adult within ages 18–40 was selected. Women were oversampled to constitute 60% of the sample. For half of the households sampled, household members were sampled by the Trolldahl and Carter method. In the other half, the first available adult within the age range was selected. The two halves of the sample showed no significant differences on any of a range of demographic variables. In-person interviews for the survey were administered by trained interviewers in Hebrew or Arabic. Therefore, individuals speaking only Russian were not included (see below for discussion). While outright refusals to participate were very rare, tabulations were not kept on households where no one was ever home. Thus, individuals who were rarely home were probably underrepresented in the sample, and a household response rate was not available. The lack of this response rate is also discussed below. The full sample numbered 5998, about 1/1000 of the population of Israel. This full sample included Arabs. Because the research question focused on Jewish groups (almost no Russian immigrants live in Arab areas), Arab respondents were not included in the subset analyzed below. This left a sample of 4984 subjects.

SUBJECTS

As shown in Table 1, females represented about 60% of the sample, as intended. About one-third of the subjects were between 18 and 24, with the rest older. Compared to other Israelis, a considerably higher proportion of both earlier and more recent

TABLE 1
Demographic and Other Characteristics of Recent and Earlier Russian Immigrants to Israel and Other (Jewish) Israelis

<i>Characteristic</i>	<i>Other Israelis (N = 4561)</i>	<i>Recent Russian Immigrants (N = 292)</i>	<i>Earlier Russian Immigrants (N = 131)</i>	<i>Total (N = 4984)</i>
Age				
18–24	34.6	29.1	14.5 ^a	33.7 ^b
25–34	38.0	37.3	38.9	38.0
35–41	27.4	33.6	46.6	28.3
Sex				
Male	40.0	42.5	35.4	40.1
Female	60.0	57.5	64.6	59.9
Marital Status				
Married	53.0	59.5	68.8	53.8 ^b
Unmarried	47.0	40.5	31.2	46.2
Education				
Less than HS	2.8	1.7	2.3	2.7
HS	70.3	38.7	46.6	67.9
More than HS	26.9	59.6	51.2	29.4
Religiosity				
Low or none	40.8	81.4	57.3 ^a	43.7 ^b
Intermediate	42.1	16.2	32.1	40.3
High	17.1	2.4	10.7	16.0
Drank Alcohol in Last 12 Months				
Yes	61.9	79.5	68.7 ^c	63.1 ^c
No	38.1	20.5	31.3	36.9
Got Drunk in Last 12 Months				
Yes	8.8	14.4	15.3	9.3 ^b
No	91.2	85.6	84.7	90.7
Drank Alcohol in Last Month				
Yes	45.3	62.7	56.5	46.6 ^b
No	54.7	37.3	43.5	53.4
Times Drank in Last 12 Months				
0	38.1	20.5	31.3 ^a	36.9 ^b
1–24	37.8	36.0	44.3	37.9
25+	24.1	43.5	24.4	25.2

Notes. ^aSignificant difference between earlier and recent Russian immigrants, $p < 0.001$.

^bSignificant difference between all three groups, $p < 0.001$.

^cSignificant difference between earlier and recent Russian immigrants, $p < 0.05$.

Russian immigrants reported education beyond high school. Both immigrant groups were less likely to be religious than the other Israelis and more likely to be married, although the group differences in marital status were not as sharp as the differences in education or religion.

MEASURES

The measures were derived from the interview used in the study, which had been developed over the course of several previous surveys. Russian immigrant status was defined from two items, one the country of birth, and the other the year of immigration to

Israel. All subjects born in eastern Europe who immigrated in 1989 or more recently comprised the group of recent Russian immigrants. Subjects born in the same area who immigrated prior to 1989 comprised the group of Russian immigrants from the earlier wave. An item on religiosity was collapsed to indicate three levels of adherence to religious observance: observance of most or all requirements, observance of some requirements, and not observant. This was used as a continuous variable in the analyses.

Alcohol consumption measures were modeled on questions of Johnston et al. (1995). These have been shown to have good reliability (Barnea et al., 1987). Separate questions covered wine (excluding wine that was part of ritual religious observance), beer and hard liquor within the last 12 months and within the last 30 days. Respondents were asked the number of times they drank beer, wine and liquor during the reference periods on seven-point scales (e.g., "How many times did you drink beer during the last 30 days?"). Frequency of getting drunk as self-defined by respondents was also ascertained. Due to the skewed distributions of these variables, we dichotomized them. We also created a 3-level variable representing the number of times of drinking in the last year, categorized as never, 1–24 times, and 25 or more times.

ANALYSIS

Most of the outcome variables were in binary form. Thus, logistic regression models were run using SAS (PROC LOGISTIC). The binary outcomes included (1) any drinking during the past year vs. none, (2) any drinking during the past month vs. none, and (3) getting drunk during the past year vs. not. To formally test the fit of the logistic regression models, Hosmer–Lemeshow goodness-of-fit tests were used (Hosmer and Lemeshow, 1989). *P*-values greater than 0.05 indicate adequate model fit. We tested the association of recent and earlier Russian immigrant status with the alcohol outcome variables, using the other Israelis as the comparison group. We also used logistic regression to test differences between the two Russian groups. In the comparison of the two Russian groups, the more recent immigrant group was used as the comparison. In all analyses, we controlled for age, gender, education, marital status, and level of religiosity.

We had one 3-level ordinal outcome representing the sum of the number of times the respondent drank during the past year. To test the association between the Russian groups and this outcome, a generalized logit model was used. This model compared two groups of drinkers (1–24 times, and 25 or more times during the past year) to the baseline group (non-drinkers). A cumulative logit model could have been used, but we chose the generalized logit model because it provided more precise information on the odds for each of the two levels of drinking compared to the no-drinking group. The generalized logit model was fitted using SAS (PROC CATMOD). Age, gender, education, marital status, and level of religiosity were included as control variables. Odds ratios and 95% confidence intervals were obtained from the regression parameters for each of the two levels compared to the baseline group of non-drinkers.

RESULTS

As shown in Table 1, a higher proportion of Russian immigrants reported drinking in the last 12 months and in the last 30 days than other Israelis. The proportion of earlier

TABLE 2

Alcohol Outcomes among Recent and Earlier Russian Immigrants Compared to Other Israelis: Logistic Regression Models

Variable	Odds Ratios (95% Confidence Intervals)		
	Drinking, 12 Months (N = 4884)	Drinking, 30 Days (N = 4884)	Getting Drunk (N = 4866)
Age (continuous)	1.01 (0.99–1.02)	1.02 (1.01–1.03)	0.98 (0.96–1.00)
Male gender	4.11 (3.58–4.71)	4.09 (3.61–4.64)	2.66 (2.18–3.26)
Higher education level	1.33 (1.17–1.52)	1.25 (1.10–1.41)	0.97 (0.79–1.19)
Lower religiosity	1.58 (1.45–1.73)	1.58 (1.44–1.72)	1.64 (1.40–1.92)
Married vs. all others	0.89 (0.76–1.04)	0.89 (0.77–1.04)	0.51 (0.40–0.66)
Recent Russian immigrants	1.78 (1.31–2.43)	1.54 (1.18–2.01)	1.46 (1.01–2.10)
Earlier Russian immigrants	1.28 (0.85–1.92)	1.56 (1.06–2.30)	2.31 (1.38–3.86)
Goodness-of-fit test	6.90 (0.55)	14.53 (0.07)	8.67 (0.37)

immigrants reporting these behaviors was intermediate between the more recent immigrants and the other Israelis. Similar proportions of recent and earlier immigrants reported getting drunk in the last 12 months, a proportion that was higher than that reported by the other Israelis. A much higher proportion of the recent immigrants reported drinking 25 or more times in the last 12 months than either the earlier immigrants or the other Israelis. Unadjusted odds ratios based on the data in Table 1 indicated the association between recent Russian immigrant status and the drinking variables when compared to the other Israelis. These were as follows: drinking in the last 12 months, OR = 2.4 (95% CI 1.8–3.2); drinking in the last month, OR = 2.0 (95% CI 1.6–2.6); frequent drinking (e.g., 25+ times in the last 12 months vs. less), OR = 2.4 (95% CI 1.9–3.1); getting drunk, OR = 1.6 (95% CI 1.2–2.3). The corresponding odds ratios were also calculated for the group of earlier Russian immigrants. They were as follows: drinking in the last 12 months, OR = 1.4 (95% CI 0.9–2.0); drinking in the last month, OR = 1.6 (95% CI 1.1–2.2); frequent drinking (e.g., 25+ times in the last 12 months vs. less), OR = 1.0 (95% CI 0.7–1.5); getting drunk, OR = 1.8 (95% CI 1.1–2.9).

Table 2 shows the multivariate statistical comparisons between each of the Russian immigrant groups and the other Israelis for the following outcomes: drinking in the last year, drinking in the last 30 days, and getting drunk within the last year. Similar to the results found previously, the recent Russian immigrants were significantly more likely to drink in the last year and to drink in the last 30 days. In contrast to the prior report, in which we showed a trend for getting drunk that did not quite reach statistical significance, the recent immigrants were significantly more likely than other Israelis to report getting drunk at least once in the last 12 months.

When compared to the other Israelis on the dichotomous outcomes, the results for the earlier immigrants were similar to the recent immigrants in some but not all ways. The earlier immigrants did not differ significantly from other Israelis on drinking in the last 12 months. However, they did differ from other Israelis in their probability of drinking in the prior 30 days and on this variable, the magnitude of effect for the two immigrant groups was almost exactly the same. The earlier group was significantly more likely to report getting drunk than other Israelis. The Hosmer–Lemeshow goodness-of-fit tests showed that the models provided an acceptable fit to the data.

TABLE 3

Russian Immigrant Status: Relationship of More Frequent and Less Frequent Drinking^a to No Drinking, Multicategory Logistic Regression Model

Variable	Odds Ratios (95% Confidence Intervals)	
	Less Frequent	More Frequent ^a
	vs. No Drinking	vs. No Drinking
Age (continuous)	0.99 (0.98–1.01)	1.03 (1.02–1.05) ^{***}
Male gender	2.58 (2.22–3.00) ^{***}	9.27 (7.80–11.01) ^{***}
Higher educational level	1.26 (1.10–1.44) ^{**}	1.49 (1.26–1.75) ^{**}
Lower religiosity	1.39 (1.26–1.52) ^{***}	2.12 (1.88–2.39) ^{***}
Married vs. all others	0.97 (0.82–1.15)	0.73 (0.60–0.89) ^{**}
Russian (recent immigrants)	1.45 (1.05–2.07)[*]	2.38 (1.68–3.39)^{***}
Russian (earlier immigrants)	1.39 (0.89–2.15)	1.06 (0.62–1.79)
Goodness-of-fit	12.11 (0.15)	10.24 (0.25)

Notes. ^aMore frequent = 25+ times in last 12 months; less frequent = 1–24 times in last 12 months.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

The odds ratio for the “drunk” variable was much larger for the earlier immigrants than for the more recent ones. However, the proportion of respondents who endorsed this item in the two immigrant groups was similar (Table 1). Therefore, we investigated the reason that this might have occurred. We computed unadjusted odds ratios and examined the corresponding fourfold tables within subgroups of the sample defined by dichotomized demographic variables. The odds ratios corresponded to expectation given the proportions shown in Table 1 when all subgroups were examined with the exception of gender. Separate analyses by gender indicated a potential source of the seemingly aberrant results. When male new immigrants were compared to male “other” Israelis, 27.2% of the male new immigrants responded positively to the item on getting drunk compared to 14.9% of the male other Israelis. This yielded an unadjusted odds ratio of 2.2 (95% CI 1.4–3.3). The proportion of females reporting getting drunk among the newer immigrants and the other Israelis (4.8% and 5.5%, respectively) did not yield an odds ratio significantly different from 1.0.

When the male earlier immigrants were compared to the male other Israelis, they were found to have a very similar proportion reporting getting drunk, 13.0% and 14.9%, respectively. This did not yield an odds ratio significantly different from 1.0. However, among the females, 16.7% of the earlier immigrants compared to 5.5% of the other Israelis reported getting drunk, yielding a significant odds ratio (3.42, 95% CI 1.89–6.22). It was due to the females in the sample that the overall odds ratio was higher for the earlier immigrant group. Despite the significance of the odds ratio, we note that the proportion of positives among the female earlier immigrants (16.7%) consisted of only 14 respondents.

Table 3 shows the results when the 3-level outcome variable was used, drinking 25+ times in the last 12 months, drinking 1–24 times and not drinking at all (the reference category). Consistent with our previous report, the more recent immigrants were significantly more likely than other Israelis to report either of the two drinking levels than to report no drinking. The earlier Russian immigrants did not differ from the other Israelis.

TABLE 4
 Earlier Russian Immigrants Compared to More Recent Russian Immigrants: Logistic Regression Models (*N* = 421)

Variable	Odds Ratios (95% Confidence Intervals)			
	Drinking, 12 Months	Drinking, 30 Days	Drunkenness	Drinking 25+ Times
Age	1.15 (0.85–1.57)	1.26 (0.96–1.67)	0.59 (0.40–0.86)	1.16 (0.86–1.56)
Male gender	3.32 (1.92–5.73)	3.87 (2.44–6.16)	3.22 (1.80–5.74)	6.58 (4.10–10.57)
Higher education level	1.82 (1.13–2.95)	1.49 (0.96–2.30)	1.40 (0.78–2.50)	1.80 (1.11–2.92)
Lower religiosity	1.38 (0.92–2.08)	2.18 (1.48–3.22)	1.13 (0.67–1.91)	2.55 (1.57–4.16)
Earlier Russian immigrants	0.69 (0.41–1.53)	1.05 (0.65–1.70)	1.48 (0.79–2.79)	0.49 (0.29–0.84)
Goodness-of-fit test	10.56 (0.16)	11.30 (0.19)	11.19 (0.13)	8.49 (0.29)

Note. Age was divided into three groups: <24, 25–34, 35–40 to improve model fit. Education was divided into two groups: college (or higher education) and high-school (or lower education).

Table 4 shows the direct comparisons of earlier and more recent Russian immigrants. The much reduced sample size (only 421 instead of several thousand) precluded finding statistical significance for effects that were not strong. In the only comparison that attained statistical significance between the two Russian groups, the earlier Russian immigrants were shown to be less likely than the recent immigrants to report drinking 25+ times in the last 12 months. Note that three alterations in the models were required to obtain adequate model fit across all the outcome variables shown in Table 4. These alterations were removal of marital status, dichotomization of education into those with college education or higher versus all others, and trichotomization of age. The size of the odds ratios was affected by these changes only by a trivial amount.

DISCUSSION

Wide variation exists in per capita alcohol consumption between countries (Verhoek, 1995) and between ethnic groups within countries (Knupfer and Room, 1967; Room 1968; Dawson, in press). Both socio-environmental and genetic factors are known to affect drinking and alcohol dependence. If a large group of immigrants from a high-consumption to a low-consumption country can be studied in the early years after immigration, factors may be identified that influence whether drinking practices change or not in the new country. However, a difference must first be demonstrated between the drinking patterns of the new immigrant group and the patterns in the receiving culture. The above analyses indicate that the recent immigrants from the FSU to Israel are more likely to drink alcohol, and to drink more frequently than other Israelis. Further, in the models presented above, they were significantly more likely to report getting drunk than other Israelis, a result that had just missed statistical significance in the earlier report. The earlier immigrants were also significantly more likely to report getting drunk than other non-Russian Israelis, although as noted, this effect was based on a relatively small number of respondents. A reduced sample size precluded significance for weak effects when the two Russian groups were compared to each

other. However, the recent Russian group was significantly more likely to report drinking 25+ times in the prior 12 months than the earlier group.

Many explanations can be given for the differences between the earlier and more recent Russian immigrants when compared to the other Israelis on any drinking or frequent drinking in the last 12 months. The first explanation is that earlier immigrants were also more likely to drink and to drink frequently on arrival from the FSU. However, for any of these earlier immigrants, the passage of a greater amount of time since their immigration may have resulted in greater acculturation to Israel and a change in their drinking patterns compared to recent immigrants. The second explanation is that differences in drinking patterns in the two groups existed prior to immigration. Two pieces of information are consistent with this second explanation. First, more of the earlier immigrants originated from geographic regions of the FSU where heavy drinking was uncommon. For example, many of them came from Georgia, where many non-Jews are Muslim and therefore drink very little. Unfortunately, the specific country of origin of these immigrants was not ascertained in the survey. Second, the earlier immigrants were much more likely than the recent immigrants to leave Russia for idealistic reasons that included identification with Israel (Gitelman, 1997). Thus, those who left earlier may have been less culturally integrated into mainstream Russian culture and thus less likely to drink in patterns similar to those of other Russians. Data are not available from the 1995 survey to directly support or refute any of these explanations. However, questions on geographic origin, reasons for immigration and drinking prior to immigration should all be included in a study designed to address this issue directly.

In our earlier report (Rahav et al., in press), the recent Russian immigrants showed a trend towards more drunkenness than other Israelis, but the odds ratio did not reach statistical significance. In this report, the corresponding odds ratio was statistically significant. This occurred because in the earlier report, we included the earlier immigrants in the other Israeli group, while in this report, they were kept separate. As noted above, the proportions of earlier and more recent Russian immigrants who reported getting drunk were very similar (Table 1). Therefore, although the number of earlier immigrants in the sample was small, our inclusion of them in the "other" Israeli group diminished the group difference sufficiently to reduce the statistical effect to only a trend in the earlier report.

At the same time, we found that the odds ratio for getting drunk was higher for the earlier immigrants than for the more recent immigrants when each group was compared to the other Israelis. As described above, this finding appears to have resulted from a small number of positive cases among the females in the earlier group of Russian immigrants. Before attempting to explain this unexpected result, we feel that it should be replicated in a study designed to address these issues directly. If replicated, then attempts to explain the finding would definitely be in order. Replication efforts would be enhanced by giving respondents a definition of what is meant by "drunk." An example of this is found in the Alcohol Use Disorders and Associated Disabilities Interview Schedule (AUDADIS, Grant et al., 1995). In the item on getting drunk in the AUDADIS, being drunk was defined to respondents as "times when your speech was slurred, you felt unsteady on your feet, or you had blurred vision after drinking." In the 1995 Israeli survey, the term, "drunk" was self-defined, so it is not clear what respondents meant by their answers. Avoiding differences in interpretation due to gender and/or language should enhance the validity of the results.

Some methodological aspects of this study must be noted. First, the effects of non-response on the results cannot be ruled out due to the lack of a final household response rate. If heavy drinkers in each of the three comparison groups were unequally likely to be at home, non-response bias may have occurred. Additionally, the absence of weights creates the possibility that individuals representing different proportions of the underlying population may have unduly influenced the results. These shortcomings must be taken into account by considering the present findings preliminary. However, the findings come from the only data currently available. Stronger support for the findings will clearly be provided from any future survey in which response and weighting information is available.

The possibility that the recent Russians were underrepresented in this survey must also be considered. Because interviews were not conducted in Russian, immigrants who spoke only Russian were excluded. This problem would mainly apply to the immigrants who arrived since 1989, thus potentially excluding the most recent arrivals and immigrants with the lowest degree of acculturation to Israel (and thus potentially the heaviest drinkers). The representation of recent Russian immigrants in the sample (5.9%) compared to their representation in the population as a whole at approximately the same ages, 10%–11% (Sicron, 1998) suggests that this occurred. The problem seems less applicable to the earlier immigrants, whose representation in this sample (2.6%) is more similar to their representation in the population as a whole (3.4%).

The findings of this study pertain only to alcohol consumption and not to DSM-IV (American Psychiatric Association, 1994) or ICD-10 (World Health Organization, 1992) alcohol dependence. Such information would add considerably to knowledge in this area. The drinking patterns investigated in this report are not specifically pathological, and should not be construed as such.

Due to the sample design, there are some segments of the Israeli population to whom the results cannot be generalized. These include individuals over 40 or living in institutions, individuals in the military living away from home (usually those between the ages of 18 and 21), or to the homeless. Also, a small percentage of the immigrants were entitled to immigrate to Israel because they were married to a Jewish spouse, but were not Jewish themselves. This may have influenced the findings, but to an unknown extent, since the information on such situations was not included in the data set. Future studies should include this information.

As mentioned above, the earlier and more recent immigrants differed significantly on religiosity. Religiosity is known to be related to drinking. However, when we controlled for this effect in the multivariate models, our group differences were still found. Thus, level of religiosity itself does not appear to fully explain differences in drinking between earlier and more recent immigrants and other Israelis.

Given the upper age limit of the subjects in the 1995 survey (40 years), some of the subjects from the earlier wave were quite young when they arrived in Israel. Therefore, one could question the inclusion of these subjects in a study of immigrant patterns of drinking in Israel. However, the drinking of the country of origin could potentially have exerted an influence through modeling effects of the parents of these immigrants. The degree to which this might have happened cannot be determined from the present data.

In the United States, several studies of acculturation level and drinking patterns among immigrant groups such as Japanese and Mexicans (Caetano, 1987; Caetano and

Medina-Mora, 1988; Kitano et al., 1992; Tsunoda et al., 1992) have shown straightforward effects for females but mixed findings for males. Studying acculturation effects for males in the United States is complicated by the extensive variability among different groups of male drinkers, resulting in a very complex background "culture." In Israel, a country where drinking practices are more homogeneous among males, acculturation effects may emerge more clearly for both genders. The results found for drinking and frequency of drinking are consistent with an acculturation hypothesis. However, they are also consistent with other potential explanations as well. An appropriately designed study could provide the data to clarify this issue.

Numerous strengths of this study improve the state of knowledge about the drinking practices of recent and earlier Russian immigrants compared to other Israelis. First, the sample size allowed the testing of several models controlling for a wide range of factors. Second, the questions were asked in a structured, systematic way for all respondents, using items that had been previously tested. Third, the data analytic methods allowed for full investigation of the relationships and different statistical approaches to different dimensions of the relationship between group membership and drinking status. Fourth, this is the only general population data known to us on the drinking patterns of Jewish Russian immigrants.

Standard "wisdom" about Jewish drinking is that Jews drink very little, and that their low levels of consumption are due to cultural reasons. A study recently conducted in Israel indicated that a specific gene, ADH2*2, was strongly associated with reduced drinking levels (Neumark et al., 1998). The results were obtained from two separate samples of Israelis, Jerusalem household residents and drug patients with considerably heavier drinking histories than average Israelis. Both the study of ADH2*2 and the present study suggest that the "standard wisdom" about Jewish drinking needs rethinking and further development. The relatively high prevalence of a gene associated with reduced drinking levels in Jewish groups (Horn et al., 1998; Neumark et al., 1998) suggests that physiological factors may play a larger role in Jewish drinking than previously suspected. At the same time, environment appears to have an influence as well, as indicated by the higher levels of drinking among the recent immigrants from the FSU, where per capita alcohol consumption is extremely high. The study of a change in environment in conjunction with ADH2*2 may provide an opportunity to learn more about gene/environment interaction than is generally possible when studies focus only on genetic or environmental factors.

In a recent newspaper article about the Russians (Lauri, 3/12/99), "100 Things To Know About 1,000,000 Immigrants." four of the 100 points concerned vodka. The article described very substantial increases in vodka production and consumption in Israel since 1989. However, the article also included what may be a foreshadowing of acculturation and changes in drinking patterns. In the article, the marketing manager at a major Israeli liquor company was quoted as saying that until 2 years ago, Russians drank only vodka, but "today the trends have changed. Today, they also put wine on the table." A change in beverage preference to a choice that more closely matches the receiving culture may foreshadow acculturation in drinking patterns. Thus, a study of acculturation and drinking among these immigrants appears timely.

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