A Comparison of Diagnoses Obtained From In-Person and Telephone Interviews, Using the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA)*

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ABSTRACT. Objective: The aim of this study was to compare the prevalence of psychiatric diagnoses when the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA-II) interview was administered in person with the prevalence when the SSAGA-II was conducted by telephone. **Method:** As part of the Collaborative Studies on the Genetics of Alcoholism, SSAGAs were administered either by telephone (n = 1,294) or in person (n = 1,484) to adult relatives of probands (42.3% male). The two modes of interview were compared with respect to reported lifetime prevalence of (1) Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) alcohol dependence; (2) other DSM-IV substance-dependence diagnoses (nicotine, marijuana, cocaine, opioid, stimulant, sedative); and (3) DSM-IV nonsubstance diagnoses (i.e., antisocial personality disorder, major depressive disorder, mania, panic, social phobia, obsessive-compulsive disorder, and generalized anxiety disorder). These analyses took into account the potential confounds of gender, age, race, education, income, marital status, and potential within-family correlation. **Results:** Diagnostic prevalence rates for alcohol dependence and major depressive disorder were lower for telephone interviews than for in-person interviews (7% and 2%, respectively); there were no other significant differences. **Conclusions:** When circumstances dictate (e.g., subject out of area, subject preference), telephone administration of the SSAGA should be considered. (*J. Stud. Alcohol Drugs* **70:** 623-627, 2009)

AN INTERVIEW CONDUCTED BY TELEPHONE costs less than one administered in person (Weeks et al., 1983), and the accumulated savings can be considerable for large-scale research projects. In addition, the telephone facilitates access to subjects who prefer this option, live far from the research center, reside in unsafe environments, or are not available during workday hours. These logistic advantages, however, must be balanced against the possibility that information gathered by telephone may not be comparable to information collected in person. The equivalence of these two approaches is a particularly salient issue for investigations that incorporate both modes of administration.

There are theoretical advantages to each form of interview. Telephone interviews, because of their greater anonymity and social distance, may elicit more honest answers (deLeeuw and van der Zouwen, 1988). Conversely, in-person interviews have been argued to enhance the establishment of a greater degree of rapport and trust, which encourages more truthful responding (Aquilino, 1994). This conundrum has a long history (Wallin, 1949), and it is likely that both phenomena come into play. The balance of their effects depends on a number of complex factors, such as the extent to which questions are personal, the degree of item social desirability, the respondent's assurance of confidentiality, and the presence of bystanders (deLeeuw and van der Zouwen, 1988; Pridemore et al., 2005; Schwarz et al., 1991).

Investigations of standardized psychiatric interviews generally have obtained moderate to good diagnostic agreement between telephone and in-person administration. These studies have used subjects from a wide variety of settings, including Veterans Affairs male patients (Aziz and Kenford, 2004), college-age men (Cacciola et al., 1999), outpatients at a health maintenance organization mental health clinic (Simon et al., 1993), volunteer acquaintances of Veterans Af-

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fairs staff (Watson et al., 1992), and participants in the Epidemiologic Catchment Area survey (Wells et al., 1988). In these studies, participants have been given both a telephone and an in-person version of the same interview, with the two administrations usually counterbalanced and conducted about a week apart.

Agreement between telephone and in-person psychiatric interviews, as measured by the kappa statistic (Fleiss et al., 2003), has been good for substance-use disorders in general (mean = .92), using the Diagnostic Interview Schedule (DIS; Watson et al., 1992), and for alcoholism in particular (.84), using the Schedule for Affective Disorders and Schizophrenia–Lifetime (SADS-L; Paulsen et al., 1988). For the diagnoses of depression and dysthymia, agreement has ranged more widely (<.20-.76) in studies using the DIS (Watson et al., 1992; Wells et al., 1988), Structured Clinical Interview for DSM (SCID) disorders (Cacciola et al., 1999; Simon et al., 1993), and SADS-L (Paulsen et al., 1988). Anxiety disorders as a group have exhibited moderate agreement between telephone and in-person DIS interviews (mean κ for eight disorders = .62; Watson et al., 1992). Specific anxiety disorders, including posttraumatic stress disorder (PTSD), as measured by the Clinician Administered PTSD Scale (Blake et al., 1995), and agoraphobia, as measured by the SADS-L, have exhibited κ's between .69 and .75 (Aziz and Kenford, 2004; Paulsen et al., 1988). Importantly, most investigators have reported that mode-of-administration kappas are similar to test-retest kappas and interjudge reliability coefficients (Cacciola et al., 1999; Simon et al., 1993; Watson et al., 1992; Wells et al., 1988), suggesting that cases of moderate or poor agreement between telephone and in-person interviews are attributable more to inherent psychometric limitations of the instruments than to the effects of interview administration per se.

The present study was undertaken to examine the comparability of diagnostic information collected in person and by telephone in the Collaborative Study on the Genetics of Alcoholism (COGA; Begleiter et al., 1995; Nurnberger et al., 2004), using a polydiagnostic psychiatric interview, the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA; Bucholz et al., 1994). This instrument was derived in part from instruments that were used in telephone studies cited earlier, including the DIS (Robins et al., 1981), SADS (Endicott and Spitzer, 1978), and SCID (Spitzer et al., 1992). The SSAGA exhibits good reliability, as measured by 1-week test-retest κ's for alcohol- and substance-dependence diagnoses (.70-.90), major depression (.65), and antisocial personality disorder (.70; Bucholz et al., 1994). The SSAGA also has demonstrated satisfactory validity, based on comparisons with the Schedule for Clinical Assessment in Neuropsychiatry (Wing et al., 1990), with κ's for DSM, Third Edition, Revised (DSM-III-R; American Psychiatric Association, 1987) alcohol, cocaine, opioid, and stimulant dependence; panic disorder; antisocial personality disorder; and lifetime depression ranging from .62 to .85 (Hesselbrock et al., 1999). Additional evidence for the validity of the SSAGA was obtained from an investigation of clinician's best estimate diagnosis of COGA participants, against which the SSAGA compared favorably (Bucholz et al., 2006).

Because of its excellent psychometric properties and detailed coverage of psychopathology, the SSAGA has been used in more than 250 studies in the United States and has been translated into nine foreign languages. Because the instrument has enjoyed widespread acceptance and serves as the main instrument to assess psychopathology in COGA and other investigations, it was important to compare the prevalence of psychiatric diagnoses among individuals administered the SSAGA by telephone with the prevalence among those administered the SSAGA in person. Although COGA participants did not each receive both forms of interview, our design, which has been employed in epidemiological surveys of psychiatric status and substance use (Aquilino, 1992; Dansky et al., 1995), controlled for potential between-group confounds associated with demographic and socioeconomic factors.

Method

Subjects

The current analysis was based on data collected during the second phase of COGA, a National Institute on Alcohol Abuse and Alcoholism (NIAAA)–funded, genetic investigation of alcohol dependence and related disorders. Participants were recruited from the surrounding areas of six research institutions (the University of California at San Diego, the University of Connecticut, the University of Iowa, Indiana University, Washington University in St. Louis, and the State University of New York at Brooklyn) and were adult (age ≥18) relatives of alcohol-dependent probands from high-risk families. Probands in these families were ascertained through treatment centers and met criteria for DSM-III-R alcohol dependence and Feighner definite alcoholism (Feighner et al., 1972). In addition, high-risk families contained at least two additional first-degree relatives who met these same criteria. Probands were excluded from the current analyses because most had been interviewed in person and all were alcohol dependent by definition, thereby confounding type of administration with prevalence of alcohol dependence. The sample in the current analysis consisted of 2,778 adults (42.3% men; mean [SD] age = 40.4 [14.8] years).

All COGA participants were required to speak English, be free of extensive or recent intravenous drug use, and have no life-threatening or incapacitating medical illness (except conditions that were alcohol related). Participants signed informed consent in accordance with institutional review board requirements at their respective sites. Further

details about ascertainment and study design can be found elsewhere (Begleiter et al., 1995; Nurnberger et al., 2004).

Interview

The SSAGA, developed by COGA (Bucholz et al., 1994), provides a detailed assessment of alcohol-use disorders and a wide range of other psychiatric diagnoses. The SSAGA covers a variety of diagnostic classification systems, including DSM-III-R; DSM, Fourth Edition (DSM-IV; American Psychiatric Association, 2000); Feighner (Feighner et al., 1972); and the International Classification of Diseases-10 (World Health Organization, 1992). COGA interviewers consisted of lay individuals who received extensive training and editorial review at each of the six sites and obtained additional guidance from monthly conference calls. The SSAGA was administered by telephone to 46.6% of the subjects in the current sample because of participants' preference, distance from the assessment site, interviewer safety, and/or limited participant availability. The two versions of this interview were identical.

Analyses

Subjects administered the telephone and in-person SSAGA were compared with respect to six demographic and socioeconomic variables—gender, race, age, marital status, education, and income—to determine whether there were systematic differences between individuals administered each type of interview. In addition, interviewers' estimate of data quality was compared for telephone and in-person SSAGAs with a 4-point quality scale. This measure, completed by examiners at the end of the interview, was dichotomized to indicate either a reasonable degree of confidence (1 = "no difficulty," 2 = "some problems, but most ratings reasonably accurate") or serious concerns (3 = "major difficulty in conducting exam," 4 = "impossible to rate with any confidence").

Finally, in-person and telephone participants were compared for the prevalence of seven interview-based DSM-IV substance-dependence diagnoses (alcohol, nicotine, marijuana, cocaine, opioid, stimulant, sedative) and seven nonsubstance diagnoses (antisocial personality disorder, lifetime major depressive disorder, mania, panic disorder, social phobia, obsessive-compulsive disorder, and generalized anxiety disorder). Substance-dependence diagnoses were computed among individuals who had used that particular drug or alcohol at least once to control for potentially confounding differences between telephone and in-person subjects' exposure. Nonsubstance diagnoses excluded cases that occurred solely under the influence of drugs, alcohol, or medical conditions.

For each diagnosis, in addition to computing prevalence based on mode of interview separately, we fitted logistic regression of prevalence on mode of interview with potential confounders (gender, age, race, education, income, and marital status) as covariates, using generalized estimating equations to take familial clustering into consideration whenever numerically feasible. The degree of agreement was judged with Wald's Type 3 chi-square test on the mode of interview and its corresponding estimated odds ratio (OR) with 95% confidence intervals (CI).

Results

Subjects who were administered interviews by telephone did not differ significantly from those interviewed in person with respect to age, gender, income, or marital status. Individuals administered telephone interviews, however, had significantly more education (13.3 vs 12.5 years; $p \leq .0001$) and were more likely to be white (90.1% vs 72.7%, $p = .0001$) than subjects assessed in person. The percentage of interviewers who rated the SSAGA as at least reasonably accurate (1 or 2 on the 4-point quality scale) was high for both telephone and in-person administration (92.5% and 93.1%, respectively); these percentages were not significantly different.

The prevalence of DSM-IV alcohol dependence was significantly higher among individuals interviewed in person (26.63%) than among those interviewed by telephone (19.73%; adjusted OR = 1.39, CI: 1.14-1.69, $p = .001$). In addition, the prevalence of lifetime major depressive disorder was significantly higher among individuals interviewed in person (16.24%) than among those interviewed by telephone (14.45%; adjusted OR = 1.28, CI: 1.02-1.61, $p = .034$). None of the remaining 12 DSM-IV psychiatric diagnoses exhibited significant differences ($p < .05$) in prevalence between telephone and in-person interviews. Overall, 10 out of the 14 differences (71.4%) were in the direction of numerically lower prevalence rates by telephone (Table 1).

To examine the two significant findings more directly with respect to gender, analyses were conducted for major depressive disorder and alcohol dependence separately for men and women. Major depressive disorder prevalence no longer exhibited significant differences between in-person and telephone mode for either men (9.4% vs 8.1%; adjusted OR = 1.22, CI: 0.77-1.93) or women (21.5% vs 18.5%; adjusted OR: 1.27, CI: 0.98-1.66). Prevalence of alcohol dependence among users remained significantly greater when reported in person than when reported by telephone for both men (36.2% vs 29.4%; adjusted OR = 1.32, CI: 1.02-1.72) and women (19.2% vs 13.1%; adjusted OR = 1.47, CI: 1.10-1.96).

Discussion

The majority of diagnostic prevalence rates did not differ significantly between telephone and in-person SSAGA ad-

TABLE 1. Prevalence of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, diagnoses

Diagnoses	In person	Telephone	Odds ratio point estimate (95% confidence interval)[b]
Substance dependence	(n^a)	(n^a)	
Alcohol	26.63% (n = 1,453)	19.73% (n = 1,272)	1.386 (1.136-1.692)
Nicotine	38.26% (n = 1,333)	33.16% (n = 1,167)	1.225 (0.999-1.502)
Marijuana	17.35% (n = 1,049)	17.68% (n = 871)	0.819 (0.624-1.074)
Cocaine	32.43% (n = 478)	20.51% (n = 434)	1.388 (0.983-1.961)
Opioid	16.17% (n = 266)	11.32% (n = 159)	1.296 (0.661-2.540)
Stimulant	16.51% (n = 424)	14.84% (n = 384)	1.060 (0.701-1.604)
Sedative	9.12% (n = 285)	6.70% (n = 209)	1.244 (0.611-2.534)
Nonsubstance	n = 1,484	n = 1,294	
ASPD	10.44%	7.34%	1.077 (0.817-1.419)
MDD	16.24%	14.45%	1.280 (1.019-1.608)
Mania	0.27%	0.46%	0.863 (0.227-3.290)
Panic	0.94%	1.24%	0.853 (0.408-1.783)
Social phobia	3.44%	2.86%	1.202 (0.787-1.836)
OCD	0.67%	0.39%	2.196 (0.740-6.515)
GAD	0.07%	0.15%	0.680 (0.053-8.729)

Notes: ASPD = antisocial personality disorder; MDD = major depressive disorder; OCD = obsessive-compulsive disorder; GAD = generalized anxiety disorder. [a]Denominator for individual substance analyses based on subjects who have tried substance at least once; [b]estimated odds ratio of mode of interview based on logistic regression controlling for demographic covariates (gender, age, race, education, income, and marital status).

ministration, in line with telephone studies of other psychiatric interviews based on similar items (e.g., SADS-L, SCID, DIS). The 1%-3% difference in prevalence of major depressive disorder between in-person and telephone interviews may reflect measurement error, because this discrepancy is similar in magnitude to test-retest reliability for depression (Bucholz et al., 1994). Even so, the implication of a 6%-7% discrepancy in prevalence of alcohol dependence (before correction by covariates) is not clear. As with all statistical findings, this finding needs to be replicated in other studies—preferably by administering both types of interview to the same individuals. In addition, the practical or research significance of a 6%-7% difference is difficult to determine. Consultation with COGA geneticists revealed no consensus on the minimum difference in substance-dependence prevalence necessary to substantially affect genetic discovery.

Our investigation has several strengths. Analyses were based on a large, economically and ethnically diverse sample of adults recruited at several sites across the United States. Interviewers were highly trained in the administration of the SSAGA. Unlike some investigations, our telephone interview did not incorporate fewer or different questions than the in-person version. Also, we did not employ the procedure whereby subjects interviewed in person are provided confidential questionnaires for sensitive sections, whereas subjects interviewed by telephone are asked to provide verbal responses to these same items (e.g., Aquilino, 1992); Finally, when calculating significance values for odds ratios, we took into account potential confounds associated with sociodemographic factors and with correlated family data.

Because our analyses were based on families densely affected for alcohol dependence, the generalizability of these findings to families of lower risk is uncertain. In addition, subjects in the current study were interviewed in only one mode, as has been done in some epidemiological telephone survey studies (Aquilino, 1992; Dansky et al., 1995). In contrast, most psychiatric studies of telephone-administered interviews administer both modes to all participants. The latter design permits more detailed and accurate comparisons. An additional drawback with our design was the nonrandom assignment of subjects to interview mode, which, as indicated above, we addressed by using demographic covariates. We cannot rule out the possibility, however, that other differences between our two samples remained partly responsible for the discrepancies in prevalence of diagnoses.

In sum, these analyses suggest that investigators should consider telephone SSAGAs in situations where expense, subject availability, subject preference, or interviewer safety preclude an in-person interview. Caution is warranted in assessing alcohol dependence and possibly major depressive disorder, pending further studies, and it is recommended that the telephone respondent have complete privacy to ensure confidentiality and minimize distractions (Rohde et al., 1997). If an investigator is concerned that the mode of interview is an issue for data consistency, the type of interview could be incorporated as a covariate in study analyses. This consideration applies not only to the SSAGA but also to any psychiatric interview administered in more than one mode.

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