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Diagnostic interviewing for family studies: comparing telephone and face-to-face methods for the diagnosis of lifetime psychiatric disorders

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Family studies require assessment of large numbers of family members, many of whom are geographically dispersed, live in different time zones, are not available during working hours, live in neighborhoods which are unsafe, or do not wish to have attention drawn to them by the presence of an interviewer in their home. For these reasons, telephone interviews are a potentially valuable and economical method. We present a comparison of results from telephone and face-to-face interviews conducted with 435 relatives of 193 probands from a family study. No significant differences were found between telephone versus face-to-face interviewed relatives in rates of RDC or of DSM-III-R diagnoses. Nor were differences found in the length of interviews; number of family history reports completed; or number of relatives requiring consensus diagnoses due to diagnostic disagreement. We conclude that telephone and face-to-face interviews yielded comparable diagnostic information in this family study and that telephone interviewing is an acceptable and valuable alternative method for the diagnosis of lifetime psychiatric disorder in relatives.

Keywords: Diagnostic interviewing – Telephone interviewing – Telephone method

INTRODUCTION

Family pedigree studies require interviews with large numbers of relatives. In contemporary society, family members often are geographically dispersed, may not be available during the work day, or may live in urban areas that are unsafe for interviewers. Relatives may not wish to have their confidentiality violated or attention drawn to them by the presence of an interviewer in their home. Moreover, given that the selection of relatives for interviews is based solely on the biological relationship irrespective of age or other conditions, some may be physically disabled or housebound due to a medical or psychiatric condition. For all of these reasons, telephone interviews represent a feasible alternative to face-to-face interviews with relatives. The telephone survey method is widely used to determine, for example, attitudes, perceptions, or consumer satisfaction, as evidenced by the more than 300 reports published over the past 10 years alone. The comparability of telephone and face-to-face methods for determining lifetime psychiatric diagnoses, however, has been less often tested. Eight recently published psychiatric studies (Stone *et al.*, 1987; Volberg and Steadman, 1988; Lehman *et al.*, 1988; Swedo *et al.*, 1989; Jacobs *et al.*, 1990; Zimmerman and Coryell, 1990; Coyne *et al.*, 1991; Robins and Reiger, 1991) report baseline or follow-up diagnoses based on telephone interviews, but only three studies (Paulsen *et al.*, 1988; Wells *et al.*, 1988; Reich and Earls, 1990) have empirically examined the comparability of these methods for determining lifetime psychiatric disorders.

Two of the three studies determined the agreement between diagnoses obtained in telephone versus face-to-face interviews within subjects. Paulsen *et al.* (1988) used the Schedule for Affective Disorders and Schizophrenia-Lifetime Version (SADS-L) to diagnose panic disorder, agoraphobia, major depression, and alcoholism in 39 relatives of four probands with panic disorder and compared the diagnoses obtained from the face-to-face method with those obtained via telephone interviews conducted 12-19 months later. Kappas were between 0.69 and 0.84, and the authors concluded that the telephone method achieved

diagnostic results that were essentially equivalent to those obtained via the face-to-face interview method. Wells *et al.* (1988) used the telephone method to readminister the depression section of the Diagnostic Interview Schedule (DIS) approximately 3 months after the initial face-to-face interview of 230 community participants in the National Institute of Mental Health Epidemiologic Catchment Area program. A kappa of 0.57 was obtained.

Reich and Earls (1990) used a different approach to consider the comparability of the telephone and face-to-face interview methods. They administered the SADS-L via either face-to-face or telephone method to 50 adolescent children from families in which parents had diagnoses of alcohol dependence, antisocial personality disorder or medical conditions. There were no significant differences in the frequency of diagnoses received by the 25 telephone-interviewed and 25 face-to-face interviewed subjects for the diagnoses of attention deficit disorder, oppositional defiant disorder, conduct disorder, depression, separation anxiety disorder or overanxious disorder. Reich and Earls concluded telephone interviewing was a valid methodologic strategy for adolescents.

Aneshensel *et al.* (1982) compared the telephone and face-to-face methods for administering symptom checklists to subjects. They administered the Center for Epidemiologic Studies-Depression Scale (CES-D) to a community sample of 546 adults assigned to either a telephone or face-to-face interview. In demographically comparable groups, no significant differences were found by method of interview in the proportion of subjects classified as depressed, the mean depression score, or in subjects' responsivity to specific items. While a present-state symptom checklist differs markedly from a lifetime diagnostic instrument, results from this study may indicate the extent to which subjects will report symptom-related information via telephone.

These studies suggest that the telephone and face-to-face methods may obtain equivalent diagnostic information. However, the results are not conclusive. The strongest findings (Paulsen *et al.*, 1988) are based on a relatively small sample size. The 1-year test-retest reliability of the DIS, reported to be 0.45, can be assumed to have significantly influenced, in either direction, the results of the single large-scale ($n=230$) study by Wells *et al.* (1988). In both of these studies, the face-to-face method always preceded the telephone administered interview. Thus, learning effects—in this case, familiarity with the diagnostic instrument gained during the face-to-face interview—were not controlled and may have accounted for the consistency of responses across the two methods. Reich and Earls (1990) also used a relatively small sample and considered only childhood diagnoses. These results may not be applicable to diagnostic information obtained from adults via telephone interviews.

Recently, we reported results of a large-scale family study on the relationship between panic disorder and depression (Weissman *et al.*, 1992) in which the Schedule for Affective Disorders and Schizophrenia-Lifetime Version modified for the study of anxiety disorders (SADS-LA) (Mannuzza *et al.*, 1986) and modified Family History-Research Diagnostic Criteria interview (FH-RDC) (Andreasen *et al.*, 1977) were administered to relatives of probands using either the telephone or face-to-face method. In this paper, we compare the outcomes obtained by these two methods. The findings augment previous work. The sample is large, including 435 relatives of 193 probands, and uses the SADS-LA (Mannuzza *et al.*, 1986, 1989). Relatives were blindly and independently diagnosed according to both NIMH-RDC (Gershon *et al.*, 1982) and DSM-III-R (American Psychiatric Association, 1987), and a range of diagnoses are represented.

METHODS

Probands

Subjects for this analysis included 435 adult first-degree relatives of 193 probands. Complete study methodology is detailed by Weissman *et al.* (1992). Probands were drawn from two specialty clinics in the Yale/New Haven area as well as from the New Haven site of the Epidemiologic Catchment Area (ECA) study, were from the same geographic area, White, between the ages of 18 and 70, and were likely to meet diagnostic criteria for depression and/or panic disorder. Persons were accepted as probands if they met demographic and diagnostic inclusion criteria and agreed to participate. Acceptance into the study was independent of the proband's willingness to have family members interviewed, the family size, and diagnoses of family members.

Following their diagnostic interview, probands were placed in one of four diagnostic categories: panic disorder with no history of depressive illness (Panic-Only); panic disorder with a history of major depressive disorder (Panic + MDD); early onset depression (EOD), defined as onset of depressive disorder before the age of 30 years; and never mentally ill (NMI). Relatives in this study are grouped according to the diagnosis of their family's proband and data tables reflect this grouping.

Interviewers

Diagnostic interviewers held a master's degree in social work, a doctoral degree in clinical psychology, or were advanced graduate students in doctoral-level clinical psychology programs and had a minimum of 2 years prior clinical experience. Training for administering the SADS-LA included 40 h of lectures, small group workshops, viewing of videotaped interviews, role-play interviewing, assigned homework and supervised interviews.

Midway through the completion of this study, the principal investigator (M.M.W.) moved from Connecticut to New York. During this transition the New York coordinator underwent 3 months of supervision by the Connecticut coordinator, after which they jointly trained the New York interviewers. Interviewer meetings to ensure reliability were held weekly for the first 3 months, and monthly thereafter (see Weissman *et al.*, 1992, for details).

A test-retest reliability study of interviewers' diagnoses was conducted. Thirty-six relatives from the family study were interviewed twice by different interviewers 4-10 days apart using the SADS-LA. Relatives were randomly selected for this study and interviewers were assigned on the basis of availability. Kappa coefficients between interviewers on the presence or absence of diagnoses was acceptable (for panic disorder 0.65 and for MDD 0.92).

Scheduling of diagnostic interviews

Permission for contact with living relatives was obtained from the proband. Relatives of consenting probands were called by a clinical interviewer who was blind to proband diagnostic status. When relatives were reached by telephone, they were told that a study of family health was being conducted and that their names had been provided to us by their participating relative. They were asked if they would be willing to participate in an interview during which they would be asked questions regarding their own feelings and behaviors at different times in their lives (SADS-LA), as well as questions about selected family members' past and current feelings and behaviors (modified FH-RDC). Relatives' questions regarding the nature of the interview were answered at this time. When relatives agreed, it was explained that the interview would take from 2 to 4 h to complete. For relatives living within approximately 30 miles of the study site, an in-person interview, to be conducted in the relative's home, was suggested first. For relatives living more than 30 miles from the study site, by protocol a telephone interview was suggested. Availability of the relative for the coming 4 weeks was determined, the interviewer's availability was considered and when a mutually agreeable time was found, the interview was scheduled. Subjects were reminded of the confidential nature of the interview and were encouraged to choose a time when their privacy would be ensured. The method of interview used with any given relative was based solely on the relative's proximity to the study site. When the location of the study changed from Connecticut to New York mid-way through the study's completion, the distance from the sample increased and thus, the number of telephone interviews increased.

Diagnostic assessment and best estimates

Relatives were interviewed using the SADS-LA (Mannuzza *et al.*, 1986) by a trained member of the research team who was blind to proband's diagnostic status. The instrument collected sufficient information to make Research Diagnostic Criteria (RDC) for all diagnoses and asked additional questions to determine DSM-III and DSM-III-R diagnoses. Relatives were also administered a modified FH-RDC (Andreasen *et al.*, 1977).

All final diagnoses were determined by the best estimate process which required the independent review of all available information for each case by either one or two psychiatrists or Ph.D. clinical psychologists who were unaware of the status of the subject (whether proband or relative), blind to proband diagnosis and method of data collection, and were not involved in data collection for that case. If the initial best estimator's diagnoses substantially agreed with the interviewer's diagnoses, then the first best estimator's diagnoses were considered final, and no second best estimator examined the case. However, if there was a substantial discrepancy between the interviewer and the initial best estimator (i.e. a diagnosis given by one that was not given by the other) then a second best estimator made blind, independent diagnoses, and the two best estimators met and arrived at consensus diagnoses of the case. The reliability of best estimate diagnoses for 81 cases of interviewed relatives was examined by comparing the RDC diagnoses independently determined for each case. The overall kappa for agreement between two of four best estimators who completed these 81 cases was 0.90 for panic and 0.66 for MDD.

Final sample

The final sample for this paper consisted of 435 direct-interviewed relatives of 193 probands; 277 were interviewed via telephone and 177 were interviewed face to face.

Data analysis

The progress and completion of pedigree and diagnostic data was monitored using a data management system (Adams *et al.*, 1990) designed for this study. Because probands were chosen for inclusion in the original study according to their affectedness status, relatives are stratified throughout by proband diagnostic group.

Frequencies of categorical demographic variables, unadjusted prevalences of reported illness in the telephone and face-to-face interviewed groups, and among categorical diagnostic characteristics were compared using chi-square tests of significance. In cases where 25% or more of expected cell counts in a 2×2 table were below 5, Fisher's Exact Test was used and two-tail probabilities were applied. Differences among continuous variables were calculated using ANOVA procedures with four levels of proband diagnostic group and two levels of interview type. Adjusted odds ratios were calculated from binary logistic regressions of each diagnosis on interview type, control-

ling for relatives' age, marital status and socio-economic status, as well as for proband group. All analyses were carried out using SAS Version 606.

RESULTS

Table I shows the social and clinical demographic composition of telephone and face-to-face interviewed relatives stratified by proband group. Telephone and face-to-face interviewed groups did not differ with regard to sex, education, treatment history or source of referral for study participation in any proband group. Significant differences were found in only three out of 35 comparisons and differences in results by method were not consistent among proband groups for any of the demographic variables.

Tables II and III give unadjusted lifetime rates of relatives' diagnoses by interview type for RDC and DSM-III-R diagnoses, respectively. There were no significant differences by face-to-face versus telephone method between the rates of disorder in relatives obtained for any of the RDC (Table II) or DSM-III-R (Table III) diagnoses.

Odds ratios adjusted for the significant demographic differences in age, socio-economic status and marital status were calculated from a set of binary logistic regressions comparing the rates of each disorder obtained via telephone and face-to-face methods. Proband diagnosis was also included in this regression model. When diagnosis rates obtained from telephone interviews were compared with those obtained in face-to-face interviews, none of the adjusted odds ratios differed significantly from 1.0. Thus it was suggested that interview method did not influence the rates of any diagnosed psychiatric disorders in relatives.

In addition to the rates of diagnoses in relatives produced by these two methods, we examined the comparability of the telephone and face-to-face methods in relatives with respect to length of interview, number of FH-RDCs completed on other family members, and number of relatives requiring consensus diagnoses. When telephone and face-to-face interviews were compared, mean length of interview varied by 2-9 min, mean number of family history reports obtained per relative ranged between four and six, and percentage of relatives per group requiring consensus diagnoses varied by 3-5%. None of these differences was found to be significant.

TABLE I. Demographic characteristics of relatives by method of interview (face-to-face versus telephone) stratified by proband group

Relative characteristics	Proband diagnostic group									
	Panic ($n=74$)		Panic + MDD ($n=179$)		EOD ($n=88$)		NMI ($n=94$)		Total ($n=435$)	
	Face ($n=27$)	Telephone ($n=47$)	Face ($n=68$)	Telephone ($n=111$)	Face ($n=24$)	Telephone ($n=64$)	Face ($n=39$)	Telephone ($n=55$)	Face ($n=158$)	Telephone ($n=277$)
Age	54.2	40.6*	43.1	43.5	42.1	39.0	45.2	39.2	43.6	42.8
% male	37.0 (10)	53.2 (25)	39.7 (27)	37.8 (42)	20.8 (5)	29.7 (19)	41.0 (16)	41.8 (23)	36.7 (58)	39.4 (109)
% currently married	70.4 (19)	68.1 (32)	55.9 (38)	61.3 (68)	45.8 (11)	67.2 (43)	30.8 (12)	63.6 (35)*	50.6 (80)	64.3 (178)
Education										
Grad. Prof.	3.7 (1)	10.6 (5)	7.4 (5)	9.0 (10)	8.3 (2)	14.1 (9)	15.4 (6)	20.0 (11)	8.9 (14)	12.6 (35)
Coll. Grad.	22.2 (6)	27.7 (13)	10.3 (7)	21.6 (24)	12.5 (3)	29.7 (19)	12.8 (5)	27.3 (15)	13.3 (21)	25.6 (71)
HS Grad.	40.7 (11)	51.1 (24)	66.2 (45)	51.4 (57)	70.8 (17)	46.9 (30)	64.1 (25)	49.1 (27)	62.0 (98)	49.8 (138)
< HS Grad.	33.3 (9)	10.6 (5)	16.2 (11)	18.0 (20)	8.3 (2)	9.4 (6)	7.7 (3)	3.6 (2)	15.8 (25)	11.9 (33)
Hollingshead SES										
I & II	14.8 (4)	34.0 (16)*	17.7 (12)	23.4 (26)	16.7 (4)	40.6 (26)	28.2 (11)	43.6 (24)	19.6 (31)	33.2 (92)
III	37.0 (10)	46.8 (22)	35.3 (24)	44.1 (49)	54.2 (13)	37.5 (24)	38.5 (15)	34.6 (19)	39.2 (62)	41.2 (114)
IV & IV	48.2 (13)	19.2 (9)	47.1 (32)	32.4 (36)	29.2 (7)	21.9 (14)	33.3 (13)	21.8 (12)	41.1 (65)	25.6 (71)
Treatment history										
Any inpatient	7.4 (2)	4.3 (2)	13.2 (9)	10.8 (12)	4.2 (1)	7.8 (5)	0	1.8 (1)	7.6 (12)	7.2 (20)
Any outpatient	48.2 (13)	46.8 (22)	63.2 (43)	53.2 (59)	70.8 (17)	54.7 (35)	30.8 (12)	41.8 (23)	53.8 (85)	50.2 (139)
Proband source										
Depress. clinic	N/A	N/A	11.8 (8)	18.0 (20)	54.2 (13)	40.6 (26)	N/A	N/A	13.3 (21)	16.6 (46)
Anxiety clinic	85.2 (23)	76.6 (36)	73.5 (50)	64.0 (71)	N/A	N/A	N/A	N/A	46.2 (73)	38.6 (107)
ECA	14.8 (4)	23.4 (11)	14.7 (10)	18.0 (20)	45.8 (11)	59.4 (38)	100.0 (39)	100.0 (55)	40.5 (64)	44.8 (124)

*$p \leq 0.05$.

TABLE II. Lifetime rates/100 of RDC psychiatric diagnoses in relatives by method of interview (face-to-face versus telephone) stratified by proband group

	Proband diagnostic group									
	Panic (*n*=74)		Panic+MDD (*n*=179)		EOD (*n*=88)		NMI (*n*=94)		Total (*n*=435)	
	Face (*n*=27)	Telephone (*n*=47)	Face (*n*=68)	Telephone (*n*=111)	Face (*n*=24)	Telephone (*n*=64)	Face (*n*=39)	Telephone (*n*=55)	Face (*n*=158)	Telephone (*n*=277)
RDC diagnoses										
MDD	25.9 (7)	36.2 (17)	38.2 (26)	35.1 (39)	58.3 (14)	40.6 (26)	15.4 (6)	20.0 (11)	33.5 (53)	33.6 (93)
Minor depression	14.8 (4)	17.0 (8)	22.1 (15)	21.6 (24)	16.7 (4)	28.1 (18)	5.3 (2)	14.6 (8)	15.8 (25)	20.9 (58)
Depressive personality	3.7 (1)	6.4 (3)	4.4 (3)	1.8 (2)	12.5 (3)	14.1 (9)	2.6 (1)	3.6 (2)	5.1 (8)	5.8 (16)
Bipolar disorder	0	4.3 (2)	5.9 (4)	4.5 (5)	4.2 (1)	0	2.6 (1)	1.8 (1)	3.8 (6)	2.9 (8)
Panic disorder	14.8 (4)	31.9 (15)	14.7 (10)	10.8 (12)	8.3 (2)	4.7 (3)	2.6 (1)	0	10.8 (17)	10.8 (30)
Phobia	25.9 (7)	31.9 (15)	19.1 (13)	18.0 (20)	20.8 (5)	18.8 (12)	7.7 (3)	14.6 (8)	17.7 (28)	19.9 (55)
Generalized anxiety	25.9 (7)	19.2 (9)	10.3 (7)	12.6 (14)	20.8 (5)	15.6 (10)	0	10.9 (6)	12.0 (19)	14.1 (39)
Alcoholism	25.9 (7)	31.9 (15)	26.5 (18)	18.0 (20)	16.7 (4)	18.8 (12)	7.7 (3)	9.1 (5)	20.3 (32)	18.8 (52)
Drug abuse	7.4 (2)	12.8 (6)	19.1 (13)	13.5 (15)	16.7 (4)	18.8 (12)	2.6 (1)	0	12.7 (20)	11.9 (33)

TABLE III. Lifetime rates/100 of DSM-III-R psychiatric diagnoses in relatives by method of interview (face-to-face versus telephone) stratified by proband group

	Proband diagnostic group									
	Panic (*n*=74)		Panic+MDD (*n*=179)		EOD (*n*=88)		NMI (*n*=94)		Total (*n*=435)	
	Face (*n*=27)	Telephone (*n*=47)	Face (*n*=68)	Telephone (*n*=111)	Face (*n*=24)	Telephone (*n*=64)	Face (*n*=39)	Telephone (*n*=55)	Face (*n*=158)	Telephone (*n*=277)
DSM-III-R diagnoses										
MDD	33.3 (9)	40.4 (19)	39.7 (27)	43.3 (48)	53.3 (14)	48.4 (31)	15.4 (6)	27.3 (15)	35.4 (56)	40.8 (113)
Bipolar disorder	0	4.3 (2)	7.4 (5)	5.4 (6)	4.2 (1)	0	2.6 (1)	1.8 (1)	4.4 (7)	3.3 (9)
Dysthymia	3.7 (1)	12.8 (6)	8.8 (6)	10.8 (12)	16.7 (4)	25.0 (16)	2.6 (1)	3.6 (2)	7.6 (12)	13.0 (36)
Panic disorder without agoraphobia	18.5 (5)	29.8 (14)	17.7 (12)	11.7 (13)	4.2 (1)	4.7 (3)	2.6 (1)	3.6 (2)	12.0 (19)	11.6 (32)
Phobia (agora./sim./soc.)	18.5 (5)	23.4 (11)	20.6 (14)	17.1 (19)	16.7 (4)	17.2 (11)	10.3 (4)	12.7 (7)	17.1 (27)	17.3 (48)
Generalized anxiety	11.1 (3)	0	2.9 (2)	0.9 (1)	4.2 (1)	0	0	0	22.2 (35)	19.1 (53)
Alcohol abuse/dependency	25.9 (7)	31.9 (15)	26.5 (18)	18.0 (20)	20.8 (5)	20.3 (13)	12.8 (5)	9.1 (5)	13.3 (21)	11.6 (32)
Drug abuse/dependency	7.4 (2)	12.8 (6)	19.1 (13)	13.5 (15)	16.7 (4)	17.2 (11)	5.1 (2)	0	19.6 (31)	17.7 (49)

DISCUSSION

We compared results obtained from telephone and face-to-face interviews of 435 relatives of 193 probands for a family study. There were no significant differences in rates of disorders in relatives. Variables reflecting characteristics of telephone versus face-to-face interviews (mean length of interview, mean number of family history reports obtained), and clarity of information obtained (number of relatives requiring consensus diagnosis due to diagnostic

disagreement between best estimators blind to method of interview) also did not differ significantly. When adjusted odds ratios were calculated comparing the risk of each disorder by telephone and face-to-face interviews, no significant differences were found. We conclude that the telephone and face-to-face interviews produced diagnostically comparable information.

These results are consistent with those previously reported. Reich and Earls (1990) found no differences in the rates of psychiatric disorders in adolescents interviewed via telephone or face to face. Paulsen *et al.* (1988) and Wells *et al.* (1988) reported that the diagnostic agreement between face-to-face and telephone methods was adequate to high. In so far as the SADS-LA was used in combination with a large sample (435 adult interviewed relatives of 193 probands) this study augments these previous findings.

Limitations

As in previous studies reviewed, this study took advantage of existing data. Each relative was interviewed only once, either by telephone or face to face. Thus, a test-retest design was not employed and a direct comparison of diagnoses obtained, within subjects, via telephone and face-to-face interviews, could not be made. A second limitation is that for three of the diagnostic categories, rates of illness are low and the statistical comparison is not robust. This is true for RDC and DSM-III-R bipolar disorder, RDC depressive personality and DSM-III-R generalized anxiety disorder.

From a broader perspective, the telephone interview method has the potential for limiting the type of diagnostic information obtained from subjects. Some clinical signs (vs symptoms), such as behavioral mannerisms and physical appearance, are impossible to assess via telephone, perhaps reducing the potential for diagnosis of some disorders. The design of this study does not allow for an examination of this issue and it is an important area for future investigation.

No study has yet been reported that was explicitly designed to determine the differences between telephone and face-to-face methods for administering an instrument which assesses psychiatric diagnoses over a lifetime. To fully test the comparability of the telephone versus face-to-face method, the same instrument should be administered twice to the same subject by the same interviewer using a different administration method each time (telephone or face to face). The order of the two methods of administration should be counterbalanced, the length of time between the two administrations should be nearly identical across subjects, and the interval between first and second interviews should be long enough to allow subjects to forget specific questions, but not long enough to substantially increase the likelihood of additional episode onsets. A rating of visual signs observed in face-to-face interviews should also be made so the influence of those signs on final diagnosis could be determined.

Implications

The telephone method is a promising alternative for the diagnosis of family members in large-scale pedigree and linkage studies. It offers a practical means by which to interview geographically dispersed family members. For those who do not wish others to know of their participation in a psychiatric study or to know their psychiatric history, the telephone method offers increased confidentiality. It is also useful for subjects who must be interviewed while temporarily at a distance from the study site, or for family members who are housebound because of physical or mental illness. For family members whose motivation to participate in a pedigree study may be less than that of a proband, the convenience of a telephone interview can make the difference between participation and refusal.

Accurate and economical alternative methods for lifetime diagnostic interviewing of family members are a continuing necessity for family studies. Our data suggest that the telephone method yields information that is diagnostically comparable with that obtained from face-to-face interviews when administering the SADS-LA and thus offers a valuable alternative to the face-to-face method.

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