Original Article

Extroversion/Introversion personality trait and language proficiency; success and failure: voices from students of medical sciences

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Abstract

Background: There are two major personality types in the worldview of social life. The first is an outgoing person who easily blends in with the community, commonly termed an extrovert. In contrast, a second type is a person who chooses to interact or communicate with certain people and takes a long time to blend in, termed an introvert.

Methods: The current mixed methods study included 277 students of medical sciences, who completed two questionnaires and participated in a semi-structured interview investigating participants' traits toward language learning. The current study used a Student Information Questionnaire (SIQ), the Eysenck Personality Questionnaire (EPQ), language proficiency test scores of the English Bridge Course, and a semi-structured interview.

Results: Extrovert students outperformed in speaking skills with a mean difference of $P<0.001$. Introverts did slightly better in reading and listening skills (75.16) than extroverts (51.41), with the mean difference of $P<0.001$. Writing skills did not show a stronger correlation with either of the traits (63.60) than the extroverts (59.99), however, introverts slightly outperformed and no major difference was found between the extroverts' and introverts' comprehensive language proficiency scores, however, the extroverts did relatively better than their counterparts with almost higher mean scores. The EPQ evaluation revealed that out of the total 277 participants, 146 (46%) were extroverts, 105 (36%) were introverts and 26 (18%) showed no considerable inclination towards either personality. Introverts showed higher mean scores for listening skills (75.87) than extroverts (45.90) with a mean difference of $P<0.001$.

Conclusion: This study has contributed to the notion that personality types affect language learning by suggesting that the factor of the type of instruction is a significant role player as well. The findings also verified that selecting a learner-friendly type of instruction in academic settings and at the academic levels might benefit all students, including introverts and extroverts.

Introduction

Second language acquisition is not merely the process people take to learn a second language or additional languages, rather it is the scientific discipline that is allocated to different angles of the process. This discipline is important not only for researchers in the field of second language acquisition, how people learn and acquire another language but also for researchers from other disciplines, such as psychology, education, and neuroscience, which only covers the true association of the field in almost all trends of human life cycles. Many researchers argue that learners have a variety of characteristics that ultimately result in by and large accomplished learning of the second language including optimism following fantastical goals, persistence, creativity, self-discipline, desire to improve, and commitment to learning.[1]

Ellis claims that such factors as personality, learning styles, and attitudes can leave an impact on learners' progress in second language acquisition.[2] Lightbown and Spada,[1] Ellis,[2] and Doughty & Long[3] mention several other factors such as intelligence, personality, language aptitude, motivation, learning strategies, and learning styles as some of the most striking individual differences known to influence the second language learning. Some researchers argue that intelligence plays a pivotal role in learning a second language since, according to Lightbown and Spada,[1] this term is assigned to learners' performance on a variety types of tests and assessments.

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Language aptitude counts as another important role player in second language acquisition. Some experts believe that certain learners possess an exceptional 'talent' for language learning. Ellis states that language aptitude is ''the extent to which learners possess a natural ability for learning a second language''.[3] Some experts also focus on motivation as the most important factor in second language acquisition and they believe in its influences on the degree of 5 attempts that learners make to learn a second or a foreign language.[3]

Learning styles as an important factor in language learning and have long been studied and raised many controversies.[3] The issue of personality types, according to Boeree,[4] exists as long as psychology does, ever since the ancient Greeks brought about four types of personality – sanguine, choleric, phlegmatic, and melancholy temperament. The sanguine type of personality is marked by eager hopefulness, confident optimism, and some type of pleasant personality. The choleric type is marked by a hot temper and includes people who are easily moved to unreasonable or excessive anger, whereas the phlegmatic one characterizes lazy, slow, dull, and unemotional individuals.

The final temperament is the melancholy one, and these personality-type individuals are usually sad or depressed. This theory moved many famous modern theorists, such as Eysenck,[5] (as quoted in Boeree[4]). Nowadays, many scholars explore different personality types from different angles. This has prompted the appearance of the personality theory that assumes every individual is different and characterized by their own unique and attitudinal pattern of traits and temperaments.[6]

In general, there are two major personality types in the worldview of social life. The first is an outgoing person who easily blends in with the community he/she lives in, commonly termed an extrovert. In contrast, a second type is a person who chooses to interact or communicate with certain people and takes a long time to blend in or is termed an introvert. Another understanding of an extroverted personality is the willingness of a person to direct attention outside of himself so that all interests, and attitudes are more determined by events outside of him, and decisions are made based on outside triggers. At the same time, introverts are inclinations whose attention is more inward.

The concepts of introversion and extroversion can significantly contribute to the understanding of second language learning especially in academic settings. Eysenck also claims that these types of traits depend upon the balance between inhibition and excitation.[5] A high grade of inhibition defines the brain process where it calms itself down, either while relaxing or in a big trauma, whereas a high grade of excitation is the time when the brain keeps itself alert and awake. Extroverts have high inhibition, meaning that in case of critical condition, their brain would be unprocessed to the trauma, and very little is recalled, whereas introverts' brains would remember every bit that already happened.[4] Zafar et al conclude that, according to this theory, extroverts are easy inhibitors, which means that they are more susceptible to mental distractions and have restricted long-term memory compared to introverts who possess long-term memory.[7]

Personality assessment is considered one of the most difficult measurements, therefore one could face baffled perspectives toward the most ideal personality type for learning a language. Similarly, the field experts have not yet reached a consensus on determining the most useful strategies for language learning. This only proves that these very specific factors in language learning need to be dealt with appropriately. Recognition of student personality types in particular will contribute to the teachers' better understanding of the classroom dynamics and the ability to determine what kinds of classroom activities and strategies would most fit the student's type in the class.[8]

Concerning the extroversion/introversion type of personality, some studies suggested that students with extrovert personalities are more successful at language learning,[9-13] whereas others stand up for the idea that there is no clear correlation between any personality trait and success in learning a language.[14-19] In the 1970s, some linguists hypothesized that extroverts in comparison with introverts are more potent language learners since they take more chances to practice language by exploiting the data they are apportioned with and deliver more output.[20-22] Hence, it can be presumed that extroverts as higher output generators should be fit for learning an FL more quickly than their thoughtful counterparts. On the other hand, many psychologists have the opinion that extroversion is somehow an impediment in terms of learning a language.[23-26] The focus of this supposition could be a solid biological ground saying that extroverts have a lower level of cortical arousal, and in the meantime get more easily impeded; i.e. a defenseless factor to mental diversion. Furthermore, their long-term memory is far more restricted than introverts who benefit from having a more extensive long-term memory range. These biologically decided diversities cause some diverse behavioral tendencies for both traits. Eysenck and Eysenck[24] have additionally watched that it is introverts attain superior academic achievement on composed tests in research as compared to extroverts, in this manner proposing that the previous are better language learners.

The present study aims to find out examples of personality marking in language elements and skills, giving significance to extroversion and its counterpart, introversion, which are said to have an impact on the language learning process and learners' language proficiency on one hand and elaborate on the ways teachers step in to get to know the personality traits for better interaction.

Value

This study may be helpful in terms of determining the contributions of learner's personalities to their language proficiency. In addition, the results might help distinguish how learners individually differ from each other and how these differences are reflected in their EFL mastery. This recognition may encourage university teachers to provide appropriate settings for learners to actively participate in EL learning activities. Learners, who differ from each other in the way they approach the task of language learning may also gain self-awareness in terms of the connection between their personality traits and language proficiency.

The convenience sample included 300 male and female participants aged 18 to 46 years. The researchers developed a language proficiency test that contains four sections including listening and reading comprehension, speaking, and writing to choose participants with the same level of English language proficiency. According to the results of the placement test, 79% of the participants were intermediate English language learners and 19% of them were upper-intermediate English language learners. Excluding the upper-intermediate ones left us with a sample of 272 intermediate participants.

Objectives

Every individual follows distinct alternatives to use language skills to communicate based on varying traits of personality often not perceived or consciously taken by both teachers and students Therefore, the current study aims to address the medical sciences students' extroversion and introversion traits regarding learning the English language.

Materials and Methods
Instruments

The current study used a Student Information Questionnaire (SIQ), the Eysenck Personality Questionnaire (EPQ), language proficiency test scores of the English Bridge Course, and a semi-structured interview. The description of each instrument is presented here.

The Student Information Questionnaire

The SIQ was used for the collection of personal data including name, registration number, and gender. The SIQ also comprised items about the students' linguistic background and their exposure postures to ESL.

Eysenck Personality Questionnaire

The EPQ is an instrument employed widely for self-reporting personality inventory initiated by HJ Eysenck in 1975. It is designed to measure the major dimensions of the personality domain Extraversion/Introversion, Neuroticism, and Psychoticism or Tough-mindedness. This instrument comprises 57 yes/no items and yields total scores for extraversion /Introversion as well as a validity score. A variety of researchers[27] have supported the view that the EPQ is a reliable and valid instrument in psychological areas.[28,29] Four key components led us to pick the EPQ: (1) its exceptional reliability when used in an academic context over the last 35 years: (2) its relatively short time to complete: (3) its yes-no response format and relatively uncomplicated scoring mode, and (4) its cross-cultural bias-free feature through the question structure which prevented students' confusion that could thereby divert the measurement of extraversion and introversion. Hence, 21 items obtained from the questionnaire related to extraversion were selected and given to the participants. It was found that the questionnaire was appropriate for the study and did not require any alteration or adaptation.

Language proficiency test

The researchers developed a language proficiency test that contains four sections including listening comprehension (20 items to be scored out of 20), reading comprehension (10 items with a total score of 20), speaking (oral interview item to be scored out of 30) and writing (essay item with a total score of 30). As a criterion-referenced test designed with multiple-choice questions, the participants have 50 minutes to answer the questions. The scoring system places students as follows: Pre-Elementary: 00-20 Elementary: 21-35 Pre-intermediate: 36-60 Intermediate: 61-85 Upper-Intermediate: 86-100.

English Bridge Course

The English Bridge Course is a course offered to university students before their regular courses. The communicative language teaching method fits this course using technology. The course includes language four skills as well as vocabulary modules. The attention is paid to Each component primarily in the class holding the view of providing students with comfortable uses of the English language in the academic and professional settings of the university. Quizzes, assignments, two Continuous Assessment Tests (CATs), and a Term-End exam conducted during the course were employed to test the participants' listening, speaking, reading, and writing skills. Data concerning the subject proficiency was collected using the above-mentioned scores as determined and recorded in the four skills, as well as the overall achievement in ESL.

Semi-structured interview

Semi-structured interviews and open-ended questionnaires were used for qualitative data collection. The questionnaire included The EPQ is an instrument employed widely for self-reporting personality comprises 57 yes/no items and yields total scores for extraversion /Introversion as well as a validity score as well as SIQ holding a short list of questions including the enjoyable activities in the classroom, a change that they would like to see, whether they have any supportive classmates, their

motivations, adequate or inadequate facilities, and so.– often one to two pages with space for student replies - that is administered to gather information about the students in your class (Supplementary file 1). The semi-structured interview and open-ended questionnaire were conducted following the study objectives. The pre-determined set of open questions provided the opportunity for the interviewer to explore particular themes or responses further. Questionnaires and interviews were performed in Persian to foster the validity of the collected data and to avoid participants' possible misunderstanding or failure to express their full opinions because of their limited English proficiency.

Procedure

The present study trended a cross-sectional concurrent mixed method descriptive survey that investigated two personality traits of language learners (medical, dentistry, and pharmacology students) from Hormozgan, Iran, at a particular period. Initial approval was sought from university principals according to the university's ethical guidelines. Data collection started with the language proficiency test to ascertain that the participants were at the same level of English language background knowledge (Intermediate students were the participants of the present study). As a lecturer at the University of Medical Sciences, one of the researchers had direct contact with the students there. This opportunity of being a member of the research society includes the trust that exists among the researchers and the participants. The participants of the study remained aware of the objectives, procedure, and limitations, hence they were invited to take part in the study voluntarily. After they agreed to participate, the students were assured that their part in the project was optional and unrelated to their university courses. To protect participants' privacy and confidentiality, all identifiers were removed and pseudonyms were used, the questionnaires were distributed personally to participants by one of the authors in their classrooms, allowing 30 to 40 minutes to answer the questions.

The researchers were present to explain the items and to answer participant questions. Next, interviews were conducted to obtain more information on participant attitudes. These semi-structured interviews, which took place orally, were conducted at various time intervals with 277 volunteer participants. All interviews were conducted in Persian, to assure comprehension of the questions. The interviews were audio-recorded, transcribed, and translated to extract reliable data. The data were transcribed in Persian and then translated into English. Interview transcripts were sent to a proficient bilingual colleague to get proofreading confirmation. Responses were coded to find related categories, themes, patterns, and relationships. The interview allowed the researchers to probe the hidden aspects of participants' attitudes.

At the questionnaire step, they were pilot-tested by administering them to 272 students selected randomly from the sample population who attended the project. The SIQ underwent some modifications according to the comments and suggestions, hence some pieces of unnecessary information were removed. Next, the questionnaires were handed over to the participants in their class. A two-hour class time was allocated to the students (1) to fill out the EPQ for the measurement purpose of extroversion-introversion aspects and (2) to complete a SIQ for demographic and experiential data collection. All of the returned questionnaires were used anonymously for statistical analysis of mean, standard deviation, one sample t-test, and Pearson correlation.

SPSS 16 software was used for the analysis of data. To analyze the characteristics of the obtained data, each measurement tool was set up for descriptive statistics calculation. It was followed by inferential statistics, in which correlation coefficients were calculated for all the data to account for the relationship between the variables. In addition, correlation analysis using the ETA coefficient was employed to view the trends of variables association with one another in a nonlinear fashion. There is a coefficient of non-linear relation. For linear relationships, ETA is equal to the correlation coefficient (Pearson's r). For non-linear relationships that count is greater; therefore, the difference between ETA and r yields a measure of the extent of the non-linearity of the relationship. Descriptive Statistics and Correlation Descriptive statistics, including significant inclination and dispersion of scores indicators, were calculated for each instrument individually., the correlation between extroversion\introversion and language proficiency was determined using the collected data.

Results

Broken out by sex, 36.3% of participants (n = 125) were male, and 63.7% (n = 152) were female. In all, 65% of participants were medical students (n = 180), and 35% were students of dentistry (n = 97) (Table 1).

Extraversion/introversion total count

The EPQ evaluation as given in the following table reveals that out of the total 277 participants, 146 (46%) were extroverts, 105 (36%) were introverts and 26 (18%) showed no considerable inclination towards either

Table 1. Participants' distribution in terms of gender and field of study

Variables	Level	No.	%
Sex	Male	125	36.3
	Female	152	63.7
Field of study	Medicine	180	65
	Dentistry	97	35
Total		554	-0.28

personality.

Listening proficiency

Here, introverts showed higher mean scores for listening skills (75.87) than extroverts (45.90). The mean difference was statistically significant ($P<0.001$). Extroverts showed a strongly negative correlation with the listening skill score as indicated by ETA and r values (r = -0.696, ETA = 0.763, 0.595). The 95% confidence interval for the mean difference ranged from 25.71 to 33.77 indicating that the difference is not only statistically significant but also practically meaningful. Therefore, introverts did better at listening proficiency than their counterparts.

Speaking proficiency

The extroverts showed much higher mean scores for speaking skills (73.98) than the introverts (51.40), (Table 2). The mean difference was statistically significant ($P<0.001$). The correlation between extroverts' speaking skills was also strong (r = 0. 599, ETA = 0.628, 0.59). The high speaking score of the extroverts revealed that the extroverts were more potent L2 speakers. The 95% confidence interval for the difference ranged from 20.23 to -12.97, including that extroverts scored significantly higher. The negative mean difference suggests that extroverts had higher speaking scores. Also, a Pearson correlation analysis was conducted to examine the relationship between extroversion and speaking scores. The results showed a moderate to strong positive correlation with r = 0.599 which is statistically significant at the 0.01 level (two-tailed) indicating that higher extroversion scores are associated with higher speaking scores. Additionally, the ETA coefficient = 0.628 further supports a strong relationship between extroversion and speaking ability.

Reading proficiency

Pearson's coefficient and ETA values (r = 0. 670, ETA = 0.739, 0.645) show a strong relation between extroversion and reading. The correlation between extroverts' reading skills also showed a strong trend (r = 0.670). The introverts showed higher mean scores for reading skills (75.16) than the extroverts (51.41). The mean difference was statistically significant ($P<0.001$). Therefore, the mean difference of 16.25 indicates that introverts seemingly outperformed extroverts in reading skills. Additionally, the independent samples t-test for equality of means of the introverts' and extroverts' reading scores appears with a high t-value of 10.7652 indicating a strong difference between the two groups. The low P value (<0.05) statistically shows a significant result.

Writing Proficiency

No major differences were highlighted for either personality in writing proficiency, the main reason could be due to the absence of an active plan for professional or specialized teaching of this skill in the Iranian system of education, though the introverts scored slightly higher (63.60) than the extroverts (59.99) (Table 3). The mean difference was statistically significant though ($P<0.001$). However, as Pearson's coefficient and ETA values show, the relationship between extroversion and writing was weak (r = 0.215*, ETA = 0.480, 0.245). This led us to conclude that extroversion could not count as a major factor affecting writing proficiency. Independent samples t-test for equality of means of the introverts' and extroverts' writing proficiency scores show that the confidence interval provides a range in which the true population mean difference lies within 95% confidence with a lower bound of -10.9991 and upper bound of -1.9800.

Comprehensive language proficiency

The calculation of the relationship between the two scores of extroversion and the Term-End Exam (TEE) determined comprehensive language proficiency. No major difference was found between the extroverts' and introverts' scores, however, the extroverts did relatively better than their counterparts with almost higher mean TEE scores (60.49) than the introverts (58.31). The mean difference was statistically significant ($P<0.001$). Extroverts did fairly better in comprehensive language proficiency, (r = 0.549*, ETA = 0.61, 0.598) (Table 4). Independent samples t-test for equality of means of the introverts' and extroverts' Term-End exam scores indicates a 95% confidence with a lower and upper bound of -14.23890 and -942110 respectively. The negative mean difference implies that introverts scored significantly lower than their counterparts by approximately 12.28 points. The statistically significant p-value confirms that the observed difference is unlikely due to the random variation.

Discussion

The results of the study as per the tabulated information and data analysis, show that there exists a worth noting relationship between extroversion-introversion inclination and how they view learning a language,

Table 2. Descriptive statistics (Speaking score)

	Mean	Standard deviation
Introverts	51.40	8.761
No Considerable Inclination	58.69	10.67
Extroverts	73.98	11.1

Table 3. Descriptive statistics (writing score)

	Mean	Standard deviation
Introverts	63.60	14.06
No considerable inclination	58.21	14.89
Extroverts	59.99	10.50

Table 4. Descriptive statistics (Term-End exam scores)

	Mean	Standard deviation
Introverts	58.31	6.199
No considerable inclination	61.68	7.601
Extroverts	60.49	7.113

especially English language proficiency. The findings of the current study verified the accepted theory that there exists a relationship between personality and ESL proficiency. In particular, statistically significant relationships were found based on the obtained scores for the four major language skills which suggested a correlation between the independent variables of extroversion/introversion.

The data supported the results of some studies that previously concluded an overall tendency for extroverts with higher scores in ESL speaking tests.[30,31]

In terms of listening skills, introverts seemed to do better. It is likely since introverts like activities which not involve many people, i.e., listening, writing, and reading. They feel more comfortable and focused on their activity. In this activity, what the students have to do is to focus on other people speaking so that they can get the information which is brought by the speaker. Concerning introvert characteristics who are careful and thoughtful, of course, they will be better in these aspects. With their characteristics, they were easier to pay attention and concentrate on what other people said.

The findings of the current study are also in line with Zafar and Meenakshi,[32] who suggested that "Extroverted individuals may be more fluent when speaking in a second language. When fluency in oral performance is concerned, people can feel that extroverted students achieve greater fluency in an oral production task compared to introverts". It was also found that in terms of learning styles, as in the current study results shown in Table 2, introverts are mostly auditory learners; it verifies that auditory learners, prefer to learn by listening. So in formal instruction settings, they would rather to listen more than to see more.[33]

Klingner et al[34] suggested that reading comprehension is a complicated mental process of constructing meaning by bringing together several skills concerning decoding, word reading, fluency, the using background knowledge, vocabulary, and past experiences. The participants provided examples by showing that introverts may learn through reading various genres of books to expand their vocabulary. The results obtained by the current study in terms of reading proficiency also show that introverts obtained better reading scores than extroverts.

In a study conducted by Vehar[35] it was confirmed that there is a trivial difference in reading test performance between individuals with extroverted and introverted personality trait. A small yes significant correlation was observed between personality test scores and reading abilities, particularly among male introverts which

supports the findings of the present study. Introverts performed five times better than extroverts. Supporting the findings of the current study, Gass et al[36] argued that an introvert personality is happier with books than with other people, while an extrovert is the opposite.

Concerning writing skills, the present study found that introverts scored slightly higher than their peers, this finding is in agreement with the study of Jensen and DiTiberio[37] who found extroverts write with little planning, not writing from outlines; their writing process is quick, that is, they write down immediately whatever comes to their mind without so much contemplation. They further state that the difficulties that many extroverts have with writing are linked with the isolation as well as the lack of oral feedback in the writing process; writing seems too isolated a process for them which causes them to be blocked.

The results of this study are also in line with the findings of a study conducted by Carrell et al[38] in which they found that introverts obtained better scores than extroverts in writing courses during both the first and second semesters. Likewise, these results confirm Jahanbazi's investigation in Iran in which the findings of his study confirmed that introverts were more successful than their counterparts in the overall writing quality.[39] Findings also lend support to Callahan's claim that writing for extroverted learners seems to hide behind speaking, whereas, introverts are better at expressing themselves through writing rather than speaking.[40] In a similar vein, the findings of this study assert the results of another study conducted by Layeghi on the relationship between learners' extroversion/introversion personality types and their performance in argumentative writing concerning the content and form; where he found that introverts significantly outperformed extroverts in both form and content.[41]

Ultimately, given comprehension language proficiency the results outlined by this study contradict the conclusions obtained by many psychologists that introverts would have an advantage over extroverts concerning overall academic performance.[42-44]

The findings of the current study show there is a slight difference in general language proficiency between extroverts/introverts, however, the extroverts outperformed the introverts. The results also support the applied linguists' premise that extroversion is considered a positive trait toward learning a language Certainly, Further investigation of such theories would prove more conclusive with the inclusion of larger sample sizes. Simultaneously, theories that stand on the opposite of the conventional argument elaborating on reasons why introverts may, in certain conditions, do better than extroverts in ESL four key skills proficiency also require closer investigation. Consequently, what they articulated was mostly the results of these two cognitive behaviors.

The extroverts needed communication with others in active processes, so employing mostly social strategies

in language learning. The introverts, on the other hand, needed to remain in the communication phase but in an inactive process of learning. The extroverts, and the introverts, who selected the language learning strategies and activities that matched their type of personality well achieved the most and succeeded in improving their language proficiency.

Conclusion

While both personality groups have strengths and weaknesses in different ESL subjects, it is worth noting that the collected data uncovered these differences are somewhat insignificant in some cases. For example, writing proficiency scores among either trait showed very little variation. Hence, it seems that neither of the two personality traits brings up any advantage to the learner in this case.

The current study, conducted with Iranian medical, dentistry, and pharmacology students revealed that the extrovert students obtained a relatively better score than the introverts in both speaking skills and overall language proficiency. This supports the applied linguists' premise that extroversion could count as a rather more positive trait for language learning. Given the findings identified in this study, a pedagogical implication might outline a scheme for ESL teachers to take different teaching methods. Specifically, teachers could design practical lesson plans to augment both communication and learning in the classroom. The results of the current study will pave the way for ESL instructors to combine the more extroverted students with introverted ones to gradually encourage the latter group to be more outgoing and take part in class more actively. On the other hand, extroverted students may interactively gain better concentration skills as a result of working with introverts.

To sum up, while the results contradict the claim that ESL academic superiority revolves solely around extroverts, as proven by the higher listening, reading, and writing scores of introverts than their extroverted counterparts, they also support the applied linguists' argument that extroversion is a positive trait for language learning. Therefore, not only current teachers and educators but also teacher education programs should have the knowledge and understanding of individual differences, and personality types. The awareness of differences will result in a more diverse, richer curriculum design in language teaching contributing to the student's preferences, helping the alteration of negative attitudes toward learning language, and ultimately bringing about better instructional methods. This study has contributed to the notion that personality types affect language learning by suggesting that the factor of the type of instruction is a significant role player as well. The findings also verified that selecting a learner-friendly type of instruction in academic settings and at the academic levels might benefit all students, including introverts and extroverts.

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Supplementary Files
Supplementary file 1. Semi-structured interview questions.

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