

Music, Speech and Stuttering

On 16th October 1989 I was in a lobby of a Moscow hotel trying to book accommodation for few days. I do not know how it was during the Stalin period and in the 1960s, but during the late 1970s and the 1980s, as I remember, it was always a huge problem finding a place in any of the Moscow hotels. “No Vacancies” was a universal reply at any Moscow hotels even if the hotel was half empty. Overpaying and bribing personnel at the counter was the usual way to get accommodation, but this method could not always guarantee you a place. There were plenty of stories and jokes about how people were getting accommodation in Moscow hotels. This time my position was very strong, as I had an official invitation from the Federal Clinic of Speech Pathology to attend the symposium “Treatment and Rehabilitation of Patients with Speech Disorders” in Moscow, and my name was on the list of guests.

“Which hospital do you work at?” asked a woman at the counter without looking at me, busily filling a form.

“I do not work at the hospital. I work at Tbilisi State University,” I answered.

“At the University? What is your profession?”

“I am musicologist.”

She stopped writing and looked at me.

“You are in the wrong place. We are accepting only speech pathologists who have arrived in Moscow for the symposium. We do not have space for any other guests.”

“I also was invited to this symposium”.

“What does music have to do with speech pathology?”

So I gave a brief summary of my proposed conference speech at the hotel counter. I am not sure whether my explanation of the possible links between the distribution of polyphony and stuttering prevalence impressed her, but she nodded when I mentioned the well-known fact the stutterers do not stutter when they sing. So the link between music and stuttering was established. She checked my name one more time against the list she was given from the conference organizers and I was in.

I was actually prepared for the question I was asked in the lobby of the Moscow hotel by my mother few months before. “What does music have to do with speech pathology?” she asked me when I told her I was interested in speech pathology. I believe there is a deep connection between the evolution of human musical abilities, the origins of articulated speech and the prevalence of stuttering, and in this section I’ll try to establish this connection.

Theoretically speaking it is clear that studies of different forms of speech pathology could give us valuable information about the development of articulated speech in human prehistory. Let me briefly explain.

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The genetic nature of stuttering is well established (see Bloodstein, 1993:2; 1995:122-123). Another well known, although generally forgotten, idea about the onset of stuttering links this form of speech pathology with our evolutionary past. According to Robert West, human speech is a function overlaid on ancient systems for eating and respiration (and I would add “and singing”), and because it is one of the latest abilities we acquired, it is one of the most readily lost or impaired (see Bloodstein, 1993:179). This idea is widely accepted by speech pathologists. At least, I can say that I have never seen anyone criticizing this idea.

Therefore, from an evolutionary point of view stuttering could be considered as a “speech counterpart” of the “Wagner ear phenomenon”. In “Wagner ear phenomenon” normal (or even outstanding) musical abilities coexist with inferior pitch production. In stuttering normal (or even outstanding) intellectual and language abilities coexist with an absence of fluent and smooth speech. So, both phenomena are connected with the problems of **correct sound production** (and not cognitive ability). At the same time there is an important evolutionary difference between these two phenomena:

- The replacement of pitch language by articulated speech in human prehistory must have resulted in the loss of the survival value of precise pitch control (in a simple words – singing in tune). In a certain sense, we may say that a good musical ear is a relict of our past (see also Mithen, 2005:245, 260). This change must have resulted in a gradual **increase** in individuals with problems of precise pitch control (or individuals with “Wagner ear phenomenon”) since the advance of fully articulated speech as a language medium.

- On the other hand, as fine articulation obtained a high survival value in human society, gaining primary importance in social life since the replacement of pitch language by articulated speech, it would be logical to anticipate the eventual *decrease* of the number of stutterers throughout human history. In a certain way, as Livingstone suggested, we “could still be in the process of adapting to this change” (Livingstone, 1973:29). In this context it is interesting that speech pathologists note the tendency towards reduced numbers of stutterers in contemporary society (See the section “Is the incidence of stuttering declining?” in: Van Riper, 1971:51-52; See also Bloodstein, 1995:140-141). Wendell Johnson attributed this change to the influence of his diagnosogenic theory (see later), Charles Van Riper – to the impact of new methods of speech pathology, and some to the influence of S. Freud theory (Bloodstein, 1993:133). According to the general consensus of contemporary speech pathologists, genetic factor has a major role in the onset of stuttering, and speech pathologists and existing methods cannot actually “cure” stutterers. The main aim of the contemporary speech pathology is to help a person to adapt to the speech problem and to lesser the social impact of stuttering.

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Speech, choral singing and stuttering

On the evening of 13th of December of 1986 I was sitting in the Moscow apartment of Valeri Alexeev discussing the possibility of the asynchronous shift to articulated speech of different human populations.

It was only couple of days later after I found out about the presence of vocal polyphony among the Ainus, and we were discussing the possibility of an asynchronous shift of different human populations to articulated speech from both a musical and a physical anthropological point of view for long eight hours. It was during our conversation on that exciting evening, that an idea came to my mind.

“Valeri Pavlovich”, I told him, “What about stuttering? If some human populations shifted to speech earlier than others, they might have less stuttering individuals in the population”.

It was about three years after that memorable evening discussion in Valeri Alexeev’s apartment that I was checking into the Moscow hotel as a participant in the International Conference on Speech Pathology. During these three years I was extremely lucky that the leading Russian expert on speech pathology, the head of the Moscow Federal Centre of Speech Pathology, Viktor Sklowsky, became very interested in the possible links between choral singing and stuttering. He invited me to his clinic on July 14th and 21st, 1989, checked their records and was impressed to find out that they actually did not have any natives of the Central Asian republics, despite the fact that as the central Moscow clinic, they had a great number of patients from every corner of the Soviet Union, including international patients. Then he and one of his leading researchers, Tatiana Vazel, discussed the information that was apparently brought to their attention by one of their employees, a Russian speech pathologist who visited China some time ago. According to her information, there were no stutters and no speech pathologists in China. This was all interesting, but a long and serious research program was needed to check all these anecdotal bits of information. It was important to check (1) whether there was a difference between different populations in the prevalence of stuttering, and (2) whether this difference was statistically significant. Sklowsky invited me to the International Conference on Speech Pathology in October and asked me to deliver a talk during the last session of the conference on the 19th October.

It was after my talk that some of the international guests, mostly speech pathologists from England and the USA, talked to me and gave me the exciting information I could not get anywhere in Moscow or Soviet Union. Let us not forget that the Soviet Union was effectively cut off from the western world during the Communist period, and even the widely known books of Charles van Riper or Oliver Bloodstein were inaccessible to Russian speech pathologists. This conference was one of the first major occasions when Western speech pathologists met their Russian colleagues.

Before we discuss the available information on the stuttering prevalence in different human populations, let me explain the nature of the possible link between the stuttering prevalence and our model of the asynchronous model of the speech

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origins. The actual logic behind my suggestion that some populations must have a smaller number of stuttering individuals than others is quite simple:

- Stuttering is the legacy of our evolutionary past. Humans stutter because articulated speech was the last major acquisition in human evolution. We stutter because the time span after our ancestors started speaking is relatively small in evolutionary terms.
- The evolutionary pressure for fluent articulated speech on individuals in human society is obvious. According to special literature, stuttering can cause social withdrawal, loneliness, and causes a minor reduction of the reproductive success of the stutterer population in comparison to the non-stuttering population. Viewed in evolutionary terms, this could be one of the reasons why stuttering is reducing with every century and millennia. So the historical dynamic is the **reduction** of the number of stuttering individuals.
- According to my model, different populations shifted to articulated speech in different times. The time when this shift occurred might be quite different: about 300.000 years for East Asian populations, about 40.000-32.000 years for European populations, and even less for sub-Saharan populations.
- Such a vast difference in the time span spent after acquiring articulated speech (possibly ten-fold or even bigger between East Asian and sub-Saharan African populations) must have resulted in different numbers of stuttering individuals between East Asian and sub-Saharan African populations. To put it simply, the number of stuttering individuals must be relatively higher among sub-Saharan African populations (and Europeans) than East Asian populations.

In the next section we will briefly review the existing literature on the prevalence of stuttering in different regions of the world.

Stuttering in different cultures: A shadow of “milk-drinking syndrome” again?

As you would expect, most of the studies in stuttering were done in European countries. There are quite detailed accounts of the incidence and prevalence of stuttering in most European countries (these two are different, although linked, factors. Prevalence is the number of stutterers found in a population at any given time and is easier to estimate). Speech pathologists agree that about 0.8% or 1.0% of the adult population of most European countries have fluency problems. Stuttering among children is much higher (about 5%), and as a rule, most children stop stuttering without any help as they grow older.

Regarding the distribution of stuttering in different parts of the world, contemporary specialists tend to agree on the universality of stuttering (review in Bloodstein, 1995:136-142). Speech pathologists generally agree that the European figure (around 1%) is the universal for all regions of the world. However, there are few important studies and recent publications pointing to **obvious differences in the distribution of stuttering among the different populations**. Let me briefly discuss two different populations: Native American and sub-Saharan African populations. Stuttering among Native American and African populations were a popular theme of discussions among speech pathologists and this is reflected in a number of studies and publications on this subject.

Native Americans. The problem of stuttering among North American Indians was one of the central and hottest problems of speech pathology for a few decades of the 20th century.

James Hunt was arguably the first scholar to note almost 140 years ago that American Indians did not stutter (Hunt, 1967/1861). This fact was re-discovered in the well-documented studies by Wendell Johnson and his students in the middle of the 20th century (Johnson, 1944, 1959; Snidecor, 1947; Stewart, 1959). Johnson claimed that American Indians did not have stuttering individuals and even had no word for “stuttering” (Johnson, 1944).

What was the theoretical background behind this bold assertion? Johnson was the author of a revolutionary approach towards stuttering, suggesting that the main cause of stuttering was a cultural factor, not a genetic factor.

According to Johnson’s theory:

- (1) All human children have a difficult and sensitive period when they are acquiring speech.
- (2) Different societies and even different parents have different attitudes towards this vulnerable period of childhood development.

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- (3) In some cultures adults pay too much attention to this normal stage of childhood development and they put unnecessary pressure on a child. They punish a child, pointing out that s/he is stuttering, and actively try to stop a child from stuttering.
- (4) This pressure, punishment and the label “stutterer” deeply enters the child’s mind and is the actual reason for the fear of speech and social withdrawal. So this is the main reason why stuttering does not go away and stays with a person for all his or her life.
- (5) “Stuttering starts in the ears of parents, not in the mouth of children” was Johnson’s famous slogan.

Johnson’s theory was appropriately labeled as the “diagnosogenic theory of stuttering”, and it dominated speech pathology for a few decades from the 1940s up to the most of the 1970s. During this period Johnson conducted studies in different cultures and found impressive differences in the incidence of stuttering. He also claimed to have found a correlation between societies where the child-rearing practice was very relaxed and where the stuttering incidence was very reduced or even absent. His research was mostly based on the populations of the United States, and the main focus of his studies centred on two populations: European Americans and Native Americans. Johnson and his students claimed that they failed to find even one full-blooded Indian who had a fluency problem. Indians, according to Johnson, do not stutter, because Indian parents are very relaxed about the speech of their children, and even during adulthood Indian social culture and etiquette appreciates more silence than intense verbal communication. According to Johnson’s theory, the decisive factor in the onset of stuttering was **cultural, not genetic**.

From the end of the 1970s the genetic approach towards the genesis of stuttering prevailed, and Johnson’s theory of the importance of child-rearing practices in the onset of stuttering was mostly marginalized. Genetic theory favored the idea of the **genetic factor** as the decisive element in the onset of stuttering. According to the genetic theory, cultural practices are not so important, and it is up to the genes to decide the level of fluency of each individual. Any major differences in the incidence of stuttering between different populations were beyond the explanatory capabilities of the “genetic theory of stuttering”, and unfortunately the cross-cultural studies of the incidence of stuttering in different populations were mostly marginalized.

Proponents of genetic theory had a major victory over the diagnosogenic theory when they found that Johnson's and his students’ claim about the full absence of stutterers among Indians was an exaggeration (Lemert, 1953; Zimmermann et al. 1983). At least some stuttering individuals were found among the tribes that Johnson and Snidecor claimed had no stutterers. It was suggested that among Indians it was usual to hide individuals with health problems. Most importantly, it was also found, that Native Americans from the tribes Nootka, Kwakiutl and Salish had not only a couple of stutterers, but quite high (usual for European and American populations) number of stuttering individuals (Lemert, 1952, 1953).

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It is difficult to summarize the actual prevalence of stuttering among native Americans. According to Stewart, although there are Native Americans who stutter, their actual number might be much lower than among European Americans (1985:314). It is puzzling that despite the unparalleled interest of speech pathologists in stuttering Indians the rate of prevalence of stuttering among most Indian tribes are still not available (see Finn & Cordes, 1997:222). We can only assume that stuttering is present in all known tribes, but the actual prevalence (at least in some of the tribes) is considerably lower.

Sub-Saharan populations. The first bit of informal information about stuttering among African populations I learned during the Moscow International Conference of Speech Pathologists, when one of the leading speech pathologists, Ehud Yairi from the USA, pointed out to me publications dealing with the prevalence of stuttering among West African populations. According to these publications, the stuttering prevalence was much higher in West Africa. Later, when I was already in Australia, I found the published results of well-documented studies of the prevalence of stuttering among sub-Saharan African populations, both among African Americans and among African populations. According to some of these publications the number of stutters is unusually high among African-American populations (see Bloodstein, 1993:65-66, 1995:136; Cooper & Cooper, 1993:194-196; Finn & Cordes, 1997:222). The same publications also noted the very high incidence of stuttering in the countries of the West Indies, consisting mostly of the populations of sub-Saharan African descent. According to some studies, the difference in the prevalence of stuttering between African-American and European Americans reaches the ratio of 3:1 and even 4:1 (See Cooper & Cooper, 1993:194-195).

Available data shows that the prevalence of stuttering among some sub-Saharan African populations is even higher than among African Americans, reaching in some populations 5.5% and even 9.2% (Cooper & Cooper, 1993:195-196; Nwokah, 1988; Finn & Cordes, 1997:222-223). Some authors conclude that the incidence of stuttering among Nigerians and West Africans may be the highest in the world (Cooper & Cooper, 1993:195; Nwokah, 1988). The only known to me study that claimed that stuttering among the African population is not higher than among Europeans, came from Aron (1962). Summarizing prevalence studies, E. Cooper and C. Cooper conclude: "On the basis of the data currently available, it appears the prevalence of fluency disorders varies among the cultures of the world, with some indications that the prevalence of fluency disorders labeled as stuttering is higher among black populations than white or Asian populations" (Cooper & Cooper, 1993:197). [By the way, despite this very clear conclusion, authors do not provide any data on stuttering prevalence in Asian population of USA.]

Unfortunately, no data is available regarding stuttering in Pygmy populations. According to Simha Arom, an expert on Pygmy vocal polyphony, he has never met a stuttering pygmy during his long fieldworks among pygmy groups (personal communication from 7th July 2006). Jacqueline M. C. Thomas, a linguist who had been studying different pygmy groups for three decades also does not remember

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seeing a stutterer pygmy, although she reported that Pygmies do have a word “stutterer” (personal communication from 7th July, 2006).

Stuttering among Native Americans and sub-Saharan African populations are relatively well researched in a special literature. Unfortunately, other major regions of our planet have not been so extensively studied, so the data is very small, or sometimes completely absent. For example, according to the data collected by Morgenstern more than half a century ago, there is no (or a very low incidence) of stuttering among Australian Aborigines and Polar Eskimos (Morgenstern, 1953; Bloodstein, 1995:132).

What about stuttering among the Chinese?

Data about the prevalence of stuttering among the Chinese is absolutely crucial for our discussion. According to my model, the ancestors of Chinese populations (bearers of the most monophonic tradition on our planet) shifted to articulated speech the earliest, therefore the prevalence of stuttering among Chinese populations must be considerably lower than among European and particularly sub-Saharan African populations.

From the very first discussion with Valeri Alexeev in his Moscow apartment, when the idea of the possible differences of the prevalence of stuttering between different populations emerged, the question of stuttering among the Chinese tantalized me. As soon as the idea was born, the search for the information started. First Valeri Alexeev tried to recall whether he saw a stutterer while he was in China, later during my meeting and discussion with Viktor Sklowsky and Tatiana Vizel at the Moscow Clinic of Speech Pathology, we tried to get some information on stuttering among the Chinese (or some other East and Central Asian populations, genetically connected to Chinese). I was constantly trying to get **any** information on this topic. I remember very well how thrilled I was when I discussed the problem of stuttering with my good friend, Kazakh ethnomusicologist Alma Kunanbay, on November 16th, 1987, in Leningrad (currently Sankt-Petersburg). She spent all her childhood and most of her adult life in Kazakhstan and was absolutely sure that she has never met a Kazakh person who had a fluency problem. “I can not even imagine a Kazakh person who would stutter”, Alma told me and when I reminded her of our conversation after fifteen years, in 2003 (she is currently lecturing at Stanford University), she repeated that she still has never seen a Kazakh stutterer. On that day back in 1987 Alma discussed this question with her school friend (who was visiting her in Leningrad), and they both remembered only two stutterers in their class, both of them being Russians.

When I arrived in Australia “stuttering among the Chinese” was one of the central themes I researched at university libraries and then on the Internet. No publications were available on this subject. China did not exist in the world of speech pathology. Even the profession of speech pathologist seemed nonexistent in China

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(this was later confirmed to be true!). In this desperate search for information any ethnic Chinese, any person with any connections to China, was of interest to me. My search for Chinese stutterers became a popular theme of family jokes. I ended up going to Chinese restaurants and acupuncture centres and asking ethnic Chinese if they knew a Chinese stutterer. Their reaction was very interesting. They usually could not understand what I was asking them, although they sometimes spoke better English than I. When I tried to demonstrate what stuttering is, they usually got the impression that I was asking about retarded individuals. When I told them that I was not speaking about retarded individuals, and that some of the brightest people in human history (like Charles Darwin, or Winston Churchill) were stutterers, they were totally confused.

In my search for information I contacted leading Australian speech pathologists including Mark Onslow, Ashley Craig, Sue O'Brien, and Michelle Lincoln among them. I am very grateful for their time and interest, although their responses confirmed that there was no information on the prevalence of stuttering among Chinese.

A breakthrough came in 2000 when I contacted a "Multicultural Interest Group" with the help of Melbourne speech pathologist Annaliese Hastings, and later became a member of the "Speech Language and Hearing Association (Singapore)". The editor of the Speech Language and Hearing Association (Singapore) Newsletter Selena Young was most helpful. She provided me with contact details of most of the speech pathologists, mostly ethnic Chinese, working in hospitals or private practice in Singapore. I had the contact details of 53 speech pathologists and associates, working in Singapore (mainly), and also in Taiwan, Hong Kong and Malaysia. I wrote to them asking if they were willing to provide information about their working experience as speech pathologists in Chinese population. Responses were received from 33 individuals. Not all of them had experience with stutterers, and finally I had 28 professional speech pathologists, working with predominantly Chinese populations, who expressed readiness to provide information about Chinese stutterers from their clinical experience.

Out of 28 respondents 23 were from Singapore, 2 from Taiwan, 2 from Hong Kong and 1 from Malaysia. Most of the speech pathologists were ethnic Chinese, native speakers of Mandarin or/and Cantonese, who received their education and credentials in the USA, Australia or Great Britain. Four of them were associates from related spheres as well. Respondents answered the questionnaire mostly designed to illuminate the number of Chinese stutterers seen and treated, languages spoken by stutterers; whether or not they stuttered in all of the languages they spoke, the age and the gender of stutterers; the degree of the severity of stuttering; secondary characteristics of stuttering (e.g. facial and shoulder movement); comparison between the stuttering populations of Chinese and Indian populations according to their caseloads (the two biggest populations in Singapore); the results of treatment; working credentials of respondents; time spent with the Chinese population as a working speech pathologist; and whether any stutterers were seen outside their professional practice.

During the busy period of receiving the responses of 28 speech pathologists working with Chinese populations, I was very lucky to contact an American speech

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pathologist, Sheree Reese, associate Professor and the Clinic Director in the Department of Communication Disorder and Deafness at Kean University (New Jersey). She spent four weeks in China in August 1998 and published an article (together with Stefan Hoffmann and Li Sheng Li) on the Internet on the state of stuttering in China (Reese et al., 1998). From this article I learned that the state of stuttering research in China was in an embryonic state. Soon after our email contact we decided to work together on this subject, and Sheree designed the additional part of the questionnaire, containing questions on the working methods and the attitudes in Chinese populations towards stuttering individuals.

The result of our work was published as a part of the International Stuttering Association online conference in 2001 (Reese & Jordania, 2001). Regarding the incidence, the results of our research indicated the following:

- The referral rate among Chinese is very low. Fewer than 150 stutterers (148) were reported by all 28 speech pathologists (with a combined clinical experience of more than 110 years). This is less than one and a half stutterers per year in the caseloads of the working speech pathologists. Only two severe cases of stuttering were reported by all 28 speech pathologists during their entire working experience. Five respondents claimed they have never seen or treated a Chinese stutterer during their practice (although they had seen and treated other speech-related pathologies among Chinese populations). Another difference was a very higher male/female sex ratio of stutterers (6:1 against the more usual 3:1 in European populations).

- One of the respondents wrote: "Some Chinese friends of mine who are stutterers have tried and tested many therapists for a 'cure' to their stuttering". This answer suggests that there is a possibility that some of the Chinese stutterers, who did go to different therapists, might be represented in our list of 148 stutterers more than once (from different SLP's). Our questionnaire did not ask respondents to provide the names of stutterers, so it would be very difficult at this stage to identify cases of duplications. Of course, the existence of such duplications would further reduce the already very low referral rate.

- The number of hidden or "concealed" stutterers who do not seek professional speech therapy is not big as well. Only a few mild cases were reported by all 28 respondents, mostly ethnic Chinese, who spent most of their lives among Chinese, from school years to adult years. No moderate or severe cases were reported. Therefore, the information received from our respondents does not support the view that the main portion of Chinese stutterers never goes to speech pathologists and remains hidden in families.

- A comparison of the stuttering populations of Chinese and Indians in Singapore and Malaysia also points to a very small number of stutterers among the Chinese in comparison with Indian stutterers. For example, Anuj Thabar, a Singaporean speech pathologist of Indian origin (he was not among the 28 speech pathologists, as he contacted me later and worked predominantly with the Indian

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population), reported to himself have seen alone twice as many Indian stutters than all the 28 speech pathologists working with Chinese stutterers. Thabar reported 350 Indian stutterers from his practice, 70 of them severe stutterers (against 148 Chinese stutterers seen by 28 speech pathologists working with the Chinese population, with only 2 severe cases among them). These numbers might not be very accurate, but they seem to show the general tendency of prevalence. By the way, the size of the Chinese and Indian populations in Singapore is very different: Chinese comprise 76.4%, and Indians comprise 6.4% of the population. The total population of Singapore on July 1998 was under 3.5 million. The size of the Chinese population was about 2.8 million, with potentially more than 20 thousand stutterers among them (if the European mean estimate of 0.8% is valid in the Chinese population).

I also published a small paper in the newsletter of the Singapore Speech, Language and Hearing Association (Jordania, 2001) with similar conclusions regarding the very low incidence among Chinese.

Of course, we should not forget that, even if the incidence in China is much lower than in most of European countries and the USA, we are still looking at hundreds of thousands (or even millions) of Chinese stutterers, trying to cope with their condition without the help of available professional speech pathologists. Establishing the specialty of speech pathology in China would lead to more available means of therapy and would generally improve the life condition of hundreds of thousands (and maybe millions) of Chinese. Fortunately, as I have become aware, the profession of speech pathology has become established in at least some Chinese cities during the last couple of years with the help of the International Stuttering Association Outreach Working Group.

To summarize our informal and preliminary survey of speech pathologists, working with the Chinese population of Southeast Asia, we can say that the **prevalence of stuttering among the Chinese might be considerably lower than among European and particularly, among sub-Saharan African populations.**

Official attitude towards prevalence studies

The cross-cultural study of the stuttering phenomenon is not a mainstream research topic in contemporary speech pathology. Even when speech pathologists write about cross-cultural differences in stuttering prevalence, they often try to dismiss the existing differences in prevalence and attribute these differences to the methodological differences used in different studies. For example, summarizing prevalence studies from different regions of the world, Patrick Finn and Anne Cordes write: “Some cross-cultural variability is evident in the prevalence estimates, but much of that variability might be attributable to methodological variables such as the definitions of stuttering used in various reports, or whether reports were based on interview data or direct observations” (Finn, Cordes, 1997:224). Two questions would be logical to ask of the authors of these words:

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- (1) Can we accept a suggestion that the methodological differences between different researchers (mostly trained as professional speech pathologists in western universities), in estimating the prevalence of the populations with presumably the same prevalence, can cause the estimates to be as widely different as close to 0% and 9%?
- (2) Even if we accept that such methodological differences are possible for the professional speech pathologists trained in western universities, how can we explain the strange fact that all the scholars make mistakes by reducing the estimates when it concerns Native Americans, and grossly magnifying the estimates when they concern African populations and never the other way around?

Mainstream speech pathology is very reluctant to recognize the differences in stuttering prevalence in different regions of the world. According to the dominant view, there are only methodological differences between the different scholars making these estimates. Every population of the world has generally the same (European) prevalence.

One of the reasons for this reluctance to accept the differences in prevalence in different populations must be the prevailing genetic theory of the onset of stuttering. Genetic theory currently cannot explain the significant differences in stuttering prevalence between different populations. Faced with the obvious differences in prevalence in some populations, the only option that speech pathologists have is to recall the discredited diagnosogenic theory. But if diagnosogenic theory can be responsible for such vast differences in stuttering prevalence, then on what grounds can we declare the genetic factor as leading cause for the onset of stuttering?

The genetic nature of stuttering is well established and as time goes by, most likely more support will be found for the importance of genetic factor in the onset of stuttering. According to the model suggested in this book, we do not need the help of “diagnosogenic” theory of stuttering to explain these differences in the prevalence of stuttering in different populations of the world. I suggest that the significant differences in the prevalence of stuttering also have a genetic nature and can be explained **within the genetic theory**. So:

(1) The genetic factor is decisive in the onset and development of stuttering;

(2) Different populations of the world have different genetic inclinations towards stuttering.

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I believe that the correlation between the relaxed child-rearing practices and the lower incidence of stuttering, established by Wendell Johnson, exists, but the cause and the result of this correlation must be reversed. According to diagenetic theory, in low prevalence societies children do not stutter because parents do not pay attention to their articulation difficulties. I suggest that parents do not pay attention to the articulation problems of their children because in these societies there is a very little genetic predisposition towards stuttering and there are almost no adult stutters in the society. Psychological attitude towards stuttering in a society is crucial in this discussion. You would have a quite different reaction (depending on time and place) if your child, say, has an upset stomach, simple upset stomach. If this happens somewhere in New York or Melbourne, this is not something that would worry you too much, so most likely you would give a child a medicine that can help in such cases (or even do nothing) and expect everything will be all right soon. Imagine now this happening while you and your child are traveling somewhere in third world country, and you had been warned beforehand about the cases of cholera in this country. Most likely the same upset stomach will cause you much bigger worries. That's what I think has happened in interpreting the correlation of the parent's attitude towards stuttering and the actual stuttering prevalence in the society. I suggest that Stuttering does not start in the "ears of the parents", as Johnson suggested, it starts in the genes of a child.

Although I believe that the influence of cultural factors in stuttering prevalence is important, it is not responsible for the huge differences that exist in the prevalence of East Asian and American Indian populations on one hand, and sub-Saharan African populations on the other hand. I suggest that the impressive differences in stuttering prevalence are (at least partly) under the genetic control.

The same tendency to mostly neglect the possible difference in stuttering prevalence is obvious in the case of China as well. For example, Bloodstein mentions China as one of the cultures where stuttering is "widely known" (Bloodstein, 1993:62), although **no studies have been done to establish the stuttering prevalence among the Chinese by speech pathologists**, and the only proof Bloodstein refers to for this claim is the word "stutterer" mentioned by Laotze in a poem written 2500 years ago. According to Bloodstein there is "no reason to expect markedly different [*from the European 0.8%. J.J.*] figures from India or China, on the basis of general observation" (Bloodstein, 1995:131). Unfortunately, the author does not specify the nature of "general observation" he is relying on.

On the other hand, there are at least few published indications that the incidence of stuttering in China may be significantly reduced. "It appears to me, that if it be true, as has been asserted on very slender grounds, that *there are no stutters in China* (italics mine, J.J.), the circumstance is not so much owing to the sing-song, nor to the rhythmical structure of the Chinese language, but chiefly to its being a mono-syllabic tongue" wrote anthropologist J. Hunt more than 140 years ago (Hunt, 1967:38 [1861]). This is the same J. Hunt that wrote about the absence of stuttering among American Indians before Wendell Johnson's studies. The German author Oscar Hausdorfer mentioned as a well-known fact that there are no Chinese stutters in his 1933 book (Hausdorfer, 1933). Of course, we know now (and our research also

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pointed to this) that stuttering does exist in China, but the prevalence might be much lower than in Europe and particularly sub-Saharan Africa.

There are also two articles, published in the USA, which do not discuss the prevalence or incidence of stuttering among the Chinese but contain some potentially interesting observations regarding verbal communication among Asian-Americans. In an article, already discussed (Finn & Cordes, 1997), the authors write: "Taylor (1994) ... suggests that African-Americans place 'high value on the oral tradition' and tend towards 'emotional intensity in communication', while Asian-Americans tend towards 'respect for silence' (Taylor, 1994:54)". This seems interesting, as according to some publications, mentioned earlier, the incidence of stuttering among African-Americans is higher than in the general USA population, so these words from the article may imply that the prevalence of stuttering (at least the referral rate) among Asian Americans in the USA might be lower than among African Americans. The article does not provide any information about the incidence or referral rate.

In another article (Bebout & Arthur, 1997) the views of Chinese and American students on speech disorders are discussed. According to the results of the study, Chinese students in the USA believe that willpower is the most important element to fight fluency problems (unlike American students as a comparison group, who believe that the problem is innate and you can not do much to help yourself and become fluent). There is also an interesting note in the article stating that according to some Cantonese speakers "...they did not seek treatment for their own or their children's stuttering because such patterns would not have been considered a problem in their own country". These words imply that there might be a lower referral rate among the Chinese population in USA, although the article still does not actually say that Chinese stutterers in USA clinics are represented less than among the general population.

Of course, these scattered bits of information, including our own preliminary research of the prevalence of stuttering among Chinese, although based on the opinion of professional Chinese speech pathologists, is not sufficient to finally conclude that the world's biggest population has a much reduced number of stutterers. Fortunately, this question is not among the questions that cannot be answered precisely. More than a billion Chinese live on our planet, and a prevalence research among several thousand students from primary and secondary schools, conducted by professional and unbiased speech pathologists, should be able to give us a relatively precise answer to this question.

Reasons? Plenty of them!

Interestingly, there was no shortage of different explanations for the possibly reduced number of stutterers among the Chinese. These explanations were expressed by a very wide range of people, from the world's leading speech pathologist to ordinary people with some knowledge of Chinese culture. The most popular explanation, that the Chinese do not stutter because both Mandarin and Cantonese are tone languages ("stutterers do not stutter when they sing, and Chinese constantly

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‘sing’ as they speak”), obviously does not work, because West Africans also speak tone languages, but have arguably the highest stuttering prevalence in the world.

The monosyllabic and syllabic-timed character of the Mandarin and Cantonese languages was also suggested as the reason for the reduced prevalence, although this cannot explain the reduced prevalence among Native Americans or the Central Asian Kazakhs. Even infanticide was suggested, although stuttering is not something you would notice when a baby is just born.

There are some well-researched publications about stuttering in Japan (see review in van Riper, 1971:39; Bloodstein, 1995:131). It would be interesting to know if the Ainu (carriers of the polyphonic traditions unique to East Asia) somehow have a higher stuttering prevalence in Japan to investigate whether the potentially higher prevalence in Japan (supposedly higher than in China) is due to the Ainu substratum among the Japanese.

Conclusions

It is too early to draw the final conclusions. The cross-cultural prevalence of stuttering is not researched sufficiently. Although some regions of the world are researched quite well, from the other regions information is very limited, and there is no information whatsoever from a few regions. However, there are a few regions that have been researched and show quite clear differences.

- European and North American populations of European descent have about a roughly 0.8%-1% prevalence (Bloodstein, 1995).

- African American, sub-Saharan African and West Indies populations (with the major part of the population of African descent) show a higher prevalence (reaching up to 4%, 5% and even 9.2% in some populations). West Africa could be the region with the highest stuttering prevalence in the world. Unfortunately, no data is available regarding stuttering in Pygmy populations.

- At least some populations of North American Indians have a significantly reduced number of stuttering individuals.

- According to preliminary evaluation, Native Australians also have a much reduced number of stuttering individuals.

- The same can be true for some North Asian and Central Asian populations, although the available information can be treated only as preliminary.

- The same can be said about the biggest population of our planet – the Chinese. According to preliminary research, the number of stuttering individuals can be significantly reduced, although more detailed study is needed for more decisive results.

Therefore, the differences in the stuttering prevalence between different populations on our planet can turn out to be very significant. For example, the prevalence difference between some populations of West Africa and some populations of Native Americans can be more than 100 times bigger. In this context the use of the European prevalence (0.8%) to characterize the stuttering prevalence of the world population is hardly a reasonable policy.

It is not a bad thing to remember the dangers of generalization:

- Europeans can drink milk, but most of the world's populations cannot;

- European professional music started as monophonic and later, under the pressure of traditional polyphonic singing practice it became polyphonic, but this change from monophony to polyphony seems to be a unique occurrence in the history of music;

- European populations have a stuttering prevalence of about 0.8%-1% of, but big part of the populations of the world seem to have very different prevalence numbers (much lower among some Native Americans, or much higher among African populations and their descendants in different regions), and the differences between extreme cases could reach 10 000%.

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I am well aware of the possible reaction of speech pathologists to my bold declarations. Fortunately for all of us, my claim is not difficult to disprove – even a simple prevalence survey conducted in few schools with the Chinese children could easily eliminate the biggest of my arguments. But such a survey can provide the proof as well.

PS: What about polyphony?

So what about polyphony? We started discussing speech pathology in the first place because according to our model there must be a markedly different stuttering prevalence among major human populations due to the fact of the presence of choral polyphonic traditions: higher prevalence among the carriers of the polyphonic singing traditions and lower prevalence among carriers of the monophonic singing traditions. Or simply: “more polyphony – more stuttering”. Let us now have a look at the correlation of stuttering prevalence and the distribution of vocal polyphony.

- (1) The reduced number of stutterers among monophonic Native Americans, Australian Aborigines, and Polar Eskimos supports the idea of their earlier shift to articulated speech;
- (2) The significantly increased number of stutterers in polyphonic sub-Saharan African populations and their descendants in North and Central America supports the idea of their late shift to speech.
- (3) The incidence of stuttering in the most monophonic East Asia (mostly China) is still to be studied sufficiently. A preliminary survey suggested that the stuttering prevalence in China is also significantly reduced, but more studies are needed.

Even the information about the presence of the highest stuttering prevalence among Native Americans, reported in the 1950s and mentioned earlier (Lemert, 1953) confirms this correlation, because the Indian tribes that have been found to have a higher number of stutterers (Nootka, Kwakiutl and Salish) are known in ethnomusicology as the carriers of the traditions of polyphonic singing, relatively rare among North American Indians (see the discussion of polyphony among Native Americans in part 1, also see Nettl, 1961, and Halpern 1975).