

Positioning paper “Whispp and stuttering”

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www.whispp.com

About Whispp

Whispp is an assistive voice technology startup founded by Joris Castermans who stutters himself. Whispp's mission is to enable people with a voice disability and people who stutter heavily, to express themselves freely at times and in situations where they find it comfortable or important. The idea of Whispp's AI technology is that whispered speech is converted into one's clear and natural voice without delay. The premise of this is that whispering has a positive effect on speaking stress and degree of stuttering.

Purpose and content of this document

This document is intended as a discussion paper with which we would like to engage in an open, positive and constructive manner with anyone who wishes to do so. Primarily it is intended to learn from people who stutter themselves, speech therapists, stutter therapists and scientists. Other experts and interested parties are of course also welcome and we are always open to valuable collaborations.

In this paper, we first tell about our 'vision' on stuttering and the principles and values that are important to us. We share how Whispp's technology can make a positive contribution and, on the other hand, we address the possible negative effects.

Relaxed (video) calling by whispering with Whispp

A number of studies¹ have investigated the direct positive effect of whispering on stuttering. Whispp combines this positive effect with the current possibilities of AI (artificial intelligence) speech technology. Since the majority of people who stutter find talking on the phone very stressful², the initial idea was born to develop a phone app that converts whispered speech into one's own normal voice without delay. Later - spurred on by the COVID pandemic - video calling was also added as a promising application. Whispp enables stuttering people to make relaxed (video) calls while whispering, allowing the conversation partners to hear their own natural voice without delay.

Our vision of stuttering and Whispp's place in it

As far as we are concerned, stuttering is actually only to a small extent about the external, explicitly audible aspect of it. However, mainly the social-emotional effects of it affects people who stutter (to a greater or lesser extent). The consequences of not being able to express oneself properly, easily and fluently from a young age can be significant, especially when there is severe stuttering and one is sensitive by nature. It can lead to insecurity, a negative self-image and a reduced sense of self-development and happiness. Speaking, moreover, takes a lot of energy every day.

Whispp founder Joris Castermans has been stuttering himself since childhood and has experienced the negative effects of stuttering first-hand. Without wanting to glorify it - certainly not - the stuttering has also made him stronger, in his own words, and has helped shape him into who he is

¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2756326/>: Bloodstein(1950), in his survey of conditions that reduce stuttering, found that about 52% of persons who stutter who responded (n = 46) reported they had very little or no stuttering when whispering. [Johnson and Rosen \(1937\)](#) originally reported about an 84% reduction in words stuttered during whispered oral reading. This finding was essentially replicated in a more recent study by [Rami, Kalinowski, Rastatter, Holbert and Allen \(2005\)](#), although there are also reports of lesser reductions ([Bruce & Adams, 1978](#); [Perkins, Rudas, Johnson & Bell, 1976](#))

² <https://www.sciencedirect.com/science/article/pii/S0094730X99000194> : A study of the use of and attitudes towards the telephone by persons with stuttering impairment is presented. Data was collected by survey (postal questionnaire). Results indicate that making calls may be more problematic than answering them. Avoidance-like behaviours were more prevalent amongst younger adult stutterers than their older counterparts. Severe stutterers use the telephone least. Many stutterers surveyed see telephoning as being more problematic than 'face-to-face' communication and give a range of reasons for this. Telephoning difficulties can have wide ranging effects. Some implications of these findings are discussed.

today. It has become a part of his identity. What Dutch patient organization [Stichting Support Stotteren](#) often receives from the employer is that people who stutter are described more than average as go-getters and reliable employees³. Of course, this all seems like hollow words when you yourself suffer a lot from your stuttering, your happiness suffers because of it and when you just want to get rid of it.

First of all, we want to emphasize that we emphatically do not see Whispp as a "panacea" or a "quick-fix" to never stutter again. We see it as a tool that can be used in situations where it helps the user and feels good for them. Speaking fluently is not a goal in itself, but creating peace of mind so that you can express yourself better, easier and with less energy is.

Whispering sounds different from your normal voice because it lacks the source sound of the vocal cords and the resonances of the rest of the speech system (throat, mouth, tongue, cheeks and lips). Thus, when you whisper, you do not use your vocal cords but articulate in the same way as when you speak normally. So whispering is not a trick or something you have to learn. You can do it naturally and the words you articulate while whispering are (up close) easily understood. We therefore think whispering is actually as natural as normal speaking and much more natural than it might sound at first.

There are many people who have benefited from stutter therapy and have found - particularly also through 'acceptance' of their own stuttering - a way to cope better with their stuttering. Unfortunately, reality is not so makeable for everyone because acceptance simply doesn't give them enough. Many severe stutters - and perhaps you recognize yourself in this - unfortunately continue to struggle with their stuttering throughout their lives despite many therapies. We expect that especially these people, whose stuttering has a major impact on their lives and life's happiness, will have a greater need for the (occasional) use of Whispp. It does not necessarily mean, however, that someone who stutters heavily (physically), also suffers greatly from it. Whispp is not intended for children and should only be used by (young) adults.

Results of past user survey

Based on the completion of a questionnaire before Whispp was launched, it appeared that of a group of 155 people who stutter (ranging from mild to severe) 76% indicated that they would be interested in the Whispp app. Among the subgroup of people who describe their own stuttering as "severe" to "very severe," this percentage is as high as 88% of those surveyed. 77% responded that when they whisper they stutter much less to not at all. These figures reinforce our confidence that Whispp actually meets an important need among this target group.

Below are a number of responses from stuttering respondents about the added value of situations in which they want to use Whispp:

Life changing when it works. I have so much to say but hold back. When I can whisper my voice is predictable and I would talk sooooo much more.

That way I could finally call my friends or family more often without all the stress and anxiety. When the phone rings at home, I often don't dare to answer.

Reducing my anxiety speaking on the phone and increasing confidence communicating on the phone.

To have a normal phone call, with less stress and effort. More comfortable for me as for the person who doesn't have to be so patient with me.

When you need to have a quick phone call.

This app could for me work just like my correction glasses that give me daily relief.

I want to improve my speech nonetheless, but for some extreme cases where good speech is important, I'd love to use the app.

This would be really helpful when making some important calls

Tool in the toolbox, knowing that there always be an option to carry out communication.

Would allow me to focus on the content of my speech, not how I am saying it.

It could make a difficult conversation easier for me.

Having the ability to be a functional parent.

³ <https://www.allesoverstotteren.nl/solliciteren/108-stotteren-en-subsidie-voor-werkgevers.html>

Possible caveats and points of attention about using Whispp

However, in addition to the positive reactions about the added value of Whispp, a number of points of attention have arisen in our conversations with people who stutter, stutter therapists and scientists. Of course, we cannot make any claims at this time and these insights are important input for shaping and conducting our further scientific research, but below we provide our initial reaction to the concerns raised. We are very interested in your opinion so please feel free to contact us!

1. The feeling of hiding yourself behind technology

Several people who stutter have indicated that with the possible use of Whispp, it would feel like hiding themselves behind the technology. It potentially creates a fake image of the speaker and does not represent the "real me".

Whispp is all about making (video) calls with your smartphone or with your laptop. People are basically used to that, so you don't need to buy and use any other equipment than you are already used to. All you do is whisper instead of just speak. Of course you can, but you also don't have to put in headphones or earbuds, unlike, say, SpeechEasy where you hear the distorted sound in your earbuds. You only hear your own whispered speech through the air, without any distortion. It remains the natural sound that you produce yourself and our experience is that hearing your own whispered speech is very soothing.

We hope that the conversion of whispered speech to normal speech (for the interlocutors) sound as true as the user's real voice. We hope that this will make it feel like you are not hiding yourself but rather making your own voice heard, even more so than when you stutter. In the app you can listen to your personalized Whispp voice first, so that you can be sure that you do not sound strange at the other end of the line. In combination with the aspect mentioned earlier that whispered articulation feels very natural, you can just be yourself, express yourself more easily and thus show more of yourself.

When starting a phone call or video call, with a short spoken text, we emphasise that the call is being established with the Whispp whisper-to-speech conversion. What we would also like to advise people is to be open and transparent about the fact that you are using Whispp in a first conversation anyway.

2. Promoting avoidance behavior.

An important starting point of stuttering therapies is not to avoid stuttering and to dare to stutter in order to reduce the fear of it.

The use of Whispp can indeed be seen as avoiding ordinary speaking. Telephone conversations, however, are already often avoided, especially by people who stutter heavily. We hope that the use of Whispp could help to engage in these speech situations, thus reducing avoidance behaviour and making phone calls more enjoyable. Incidentally, as far as we are concerned, not being 'allowed' to avoid certain conversation situations actually conceals a value judgment and can feel patronizing. Because if it is your own convincing choice, it can feel very good to avoid words or situations for a while, to consciously let go of the rules and not 'having to do' anything for a while. Of course, this should not become a habit because that will eventually maintain and even increase the tension and fear of stuttering.

3. Creating dependency

Several people have indicated that if you use Whispp too often, you might become too dependent on it. That it could become 'addictive'.

This is certainly not a claim and of course it still requires a lot of research but we hope that actually just the opposite will happen. Imagine if - if you stutter heavily - you could spend, say, 10-20 minutes a day expressing your emotions and your story without any barriers! What a liberation and relaxation that can give! This alone can simply make you happier and possibly more confident. We hope that - in addition to the immediate functional benefit at the time of actual use - this also provides a positive spin off (carry-over effect) for everyday speaking and general well-being, with Whispp thus acting as a catalyst.

Monitoring the degree of use in the Whispp app and providing personalized notifications could be an addition to detecting too intensive use. What is meant by too intensive use is personal and can possibly be determined on the basis of a number of questions about the impact of stuttering on life and a number of questions about the personality of the user. We could also develop a number of functionalities in the app that can have a coaching effect. Think of a logbook where you can give the day or week a grade in relation to the experience of your speech and you can dictate notes while whispering.

We would further like to explore whether whispering and the Whispp app can add value as part of stutter therapy whereby it is thus used under the guidance of the speech and language therapist and the building of some dependency can be monitored.

Our approach and future research

The technology of Whispp is still young. We are therefore entering a phase in which we would like to do future research on the effectiveness of Whispp for people who stutter severely. We work fact based, ethically sound and as much as possible scientifically based to be able to communicate faithfully about possible undesirable (short and long term) side effects. Especially not making - in any way - false promises towards potential users has our highest priority. We believe that only by providing accurate and complete information people are able to make an informed decision about whether or not to use Whispp in the future.

From Whispp, we explicitly will not focus on further investigating the medical or neurological explanation behind the reduction of stuttering in whispering. We take it as a given, a starting point whose effects on stuttering and well-being we wish to further investigate.

Ultimately, we hope to use future studies to gain insights into the following key questions:

1. *To what extent does Whispp help people who stutter heavily to participate (in business and/or private) more easily and effectively communicatively?*
2. *To what extent does Whispp contribute to the quality of life of people who stutter heavily?*
3. *What type/profile of individuals who stutter heavily benefit most from Whispp?*
4. *Are there negative (physical or social-emotional) side effects for people who stutter heavily when communicating with Whispp. What principles and additional functionalities in the Whispp app can be of added value here?*

Do you stutter yourself or are you a professional working in this field, please reach out to us when you have additional questions, suggestions or would like to explore potential collaboration.

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