Terms of reference

Mid-term evaluation of project 6064: *Developing Prototype Assistive Listening Technology for Remediating Developmental Dyslexia*

1. Introduction

Background on funding partner

Fondation Botnar is a Swiss-based foundation established in 2003 whose purpose is to improve the health and wellbeing of children and young people in growing secondary cities around the world. We do this by investing in sustainable solutions, and by connecting and catalysing the work of diverse partners. At Fondation Botnar, we are committed to cultivating and nurturing learning both within and outside of the organization so as to effectively contribute to the change we want to see.

Background on implementing partner ("grantee")

The research team is led by Professor Usha Goswami, Director of the University of Cambridge Centre for Neuroscience in Education (CNE). Professor Goswami is a world expert on reading development and dyslexia across languages. The 6-year research plan has required a team of 5 people, research associate for signal processing (Dr Sheila Flanagan), a second research associate for EEG/MEG (Dr Kanad Mandke) and a third research associate for behavioural testing (Dr Anji Wilson), supported by two research assistants, one for schools-based testing (Fiona Gabrielczyk) and one for EEG/MEG (Annabel MacFarlane). The project involves 120 children spread across 33 schools within 50 miles of Cambridge. Behavioural testing and interventions occur in schools, the EEG brain imaging occurs in the CNE laboratories, and the MEG brain imaging occurs in a central University facility about a mile away from the CNE labs.

Project description

Children with developmental dyslexia have impaired awareness of speech sounds in all languages so far studied. Our research suggests that their primary difficulty is in perceiving speech rhythm patterns. All languages use special rhythm games with young children to help language acquisition, for example English nursery rhymes (Jack and Jill went up the hill..) and German Kniereiterverse (Hoppe Hoppe Reiter...). Our research is aimed at developing the signal processing that can form the basis of assistive listening technology to remediate the impairments in acoustic rhythm perception in children with dyslexia, which we have documented at both the sensory (hearing) and neural (brain rhythms) levels. By manipulating the speech signal to amplify the rhythm patterns that the dyslexic children cannot

hear, we aim to enhance speech processing by the dyslexic brain, so that the developing language system is better-equipped to support reading acquisition.

Current state of project implementation

The project has just passed the half-way mark. The first 12 months (beginning September 2017) were spent in recruiting the target sample of 120 children (younger children with dyslexia are difficult to identify, as typically a diagnosis is not made until 9-10 years of age; we begin at ages 7-8 years). Baseline testing of the entire cohort (reading, language, auditory processing) was carried out over the school year September 2018 - July 2019. The research design was then to split the 60 dyslexic children into 3 groups of N=20, who would receive brain imaging in the summer holidays and then each receive an intervention sequentially over the following 3 years. We are currently in the middle of the second intervention.

Covid-19 has impacted the project negatively, as we had to leave schools very suddenly in March 2020, before the first intervention was complete. Most children in Intervention Group 1 had received about 75% of the planned intervention. We tried to gain efficacy data via behavioural post-testing, as our brain imaging labs were closed down. We spent the school Easter holidays creating online versions of our post-tests. However, only around half of the full sample had access to computers at home (N=67), as we have a low SES sample, so the remote participation data were insufficient to show any effects of the intervention. We could not conduct the planned brain imaging post-tests, as although our labs were briefly allowed to re-open, only 7 families attended in the end because of fears around Covid. We had many cancellations. Staff therefore spent time developing more online tasks, including online versions of the psychoacoustic tasks which is technically challenging, with a view to creating a Dyslexia Screening tool that can be administered online in the future.

For the second intervention, schools re-opened in September 2020 and we were able to give most of the children the next set of baseline tests, except in schools where they did not want any researchers (we were unable to see 19 children). However, another UK lockdown began on 5 January 2021, so we could not begin the intervention for Dyslexic Group 2 on time. The second intervention began as soon as schools re-opened on 8 March 2021, although few schools gave us immediate access. Accordingly, this intervention will run into the Summer Term, rather than ending at Easter as planned, reducing the time available for behavioural post-testing. We plan to mitigate this by only post-testing the N=20 dyslexic children who received the intervention, plus matched groups of N=20 age-matched controls and N=20 reading matched (younger) controls. This summer we will focus on getting pre-intervention brain imaging data for Group 3 dyslexics, who will receive the intervention in the following school year. Although our brain imaging labs are currently still closed, we expect to be open again by July 2021.

2. Evaluation objectives and questions

Mid-term evaluations commissioned by Fondation Botnar are meant to support and deepen the grantee's reflection on ways in which their research can, in the medium to long term, contribute to change in the lives of children and young people in low- and middle-income countries. That reflection should flow into the on-going project and its subsequent steps so as to maximise potential impact.

Furthermore, mid-term evaluations serve to document the status of the research carried out in the project in an accessible way. The scientific quality of the research undertaken by grantees has been reviewed by external experts in the specific field of each project. Therefore, the evaluation is not expected to assess the scientific merit of the project, or to replicate research undertaken by the project.

Evaluation questions

1. What is the place and relevance of the project in the field of the neural basis of dyslexia?

2. What is the **project status** with respect to answering the research questions?

   - Which successes or promising results have been attained so far? What are the most important insights the project has generated to date, and to what extent can results be generalised?

3. Which **challenges** have been met in the course of the project and how has the grantee managed these challenges, to what effects?

   - How has the COVID-19 pandemic influenced the project in its process and outcomes, and how does the grantee manage issues linked to the pandemic?

4. How can the research conducted under the project **contribute to policies and practice** to improve children's health and well-being in low-income settings? What steps in that direction have been undertaken so far, what steps will need to be taken in the future?

During the inception phase, the evaluation team can review and develop additional evaluation questions as necessary, in consultation with Fondation Botnar and the implementing partner.

3. Methodology

Approach

Fondation Botnar is open to a wide range of evaluation approaches and methods. Regardless of the approach chosen by the evaluation team, the evaluators are expected to foster participation at key moments of the evaluation, seeking the grantee's advice and support (i) during the inception phase, when crafting the evaluation instruments, (ii) during the data analysis phase, and (iii) in developing recommendations.

More specifically, the external evaluator or evaluation team is expected to work in partnership with

the grantee and the project lead at Fondation Botnar so as to maximise the transparency and utility of the evaluation process and products. The contracting evaluator is expected to collaborate closely with the grantee to:

- In the inception phase, reach a shared understanding of the evaluation objectives and questions with Fondation Botnar and project leadership, and develop the evaluation methodology accordingly

- unpack or develop the next steps to realising the value of the signal processing algorithms in a technological remediation for children with dyslexia, and the next steps to validating the Dyslexia Screener (that is expected to lead from the project to future 'downstream' impact)

- consult with the project team to boost the relevance of results and recommendations, taking into account the grantee's communication needs

- support the grantee in identifying ways of obtaining further funding to develop the Dyslexia Screener and the Speech Amplification Technology, for example via identifying likely donors

- facilitate a validation workshop or consultation (online) so as to discuss initial findings and recommendations with the project team and Fondation Botnar.

As a rule, methods and perspectives should be triangulated in all evaluations. The evaluator or evaluation team is required to document the evaluation process and – if applicable – provide lessons learnt and recommendations for final evaluations of Fondation Botnar projects.

4. Evaluation logistics

Scope and field visits

The evaluation is expected to take place between October and December 2021. Its overall budget must not exceed CHF 45,000.

Ideally, face-to-face contact with the project team should be part of the evaluation process. However, if restrictions and risks linked to the COVID-19 pandemic preclude travelling, the evaluation team can work via the phone and online platforms, such as videoconference and visual collaboration tools.

Ethical considerations

The evaluator is expected to comply with evaluation standards, including ethics, throughout the evaluation process, as set out in the OECD/DAC Quality Standards for Development Evaluation (http://www.oecd.org/dac/evaluation/qualitystandards.pdf).

Proposed timeline

Evaluation activities will start upon execution of the consultancy contract and conclude no later than 17 January 2022. The full Final Report including the respective slide deck should be submitted no later than 10 Janaury 2022.

Work packages/action	Responsible	Time/deadline
Interview with shortlisted candidate(s)	Fondation Botnar/Grantee	29 June 2021
Selection of evaluator	Fondation Botnar/Grantee	July 2021
Kick-off/inception meeting	Evaluator	October 2021
Submission of inception report	Evaluator	October 2021
Evaluation research and analysis, including validation workshop	Evaluator/Grantee	October – November 2021
Submission of draft evaluation report	Evaluator	November – December 2021
Feedback on draft evaluation report	Fondation Botnar/Grantee	December 2021
Closing workshop	Evaluator	December 2021
Submission of Final Report	Evaluator	10 January 2022

Deliverables

The deliverables expected from the evaluation are as follows:

- Inception meeting or workshop (on-line or hybrid format) with representatives of Fondation Botnar and of the project team

- Brief inception report (5-15 pages) summarising the following aspects: (i) understanding of the evaluation purpose and scope (ii) any proposed adjustments to evaluation objectives and questions, (iii) tentative work-plan and schedule for the overall evaluation process, specifying involved stakeholders' roles and moments for communication between the specific stakeholders, (iv) preliminary proposal for the dissemination of findings

- Draft evaluation report of up to 30 pages including a 3-page executive summary and methods documentation package (data collection and analysis instruments as used in the evaluation, and discussion of the evaluation process)

- Presentation and discussion of findings and recommendations in a debriefing workshop

- Final evaluation report accompanied by a brief slide deck summarising the conclusions and recommendations

5. Evaluator requirements

The evaluation or evaluation team is expected to meet the following requirements:

- At least five years of experience in evaluation

- Demonstrated experience in theory-based evaluation or theory of change development

- Experience in conducting interviews, group discussions and workshops via online platforms

- Excellent written and spoken English

- Experience in translating scientific research into texts that are accessible to persons beyond scientific communities

- Experience in the development and use of assistive listening technology would be an asset.

Applicants are requested to include at least three hyperlinks to examples of evaluations that are broadly representative of the evaluator's or the evaluation team's capability vis-à-vis this call.

6. Expression of interest and deadline

Expression of Interest

The expression of interest should be no longer than **2 pages** consisting of:

- Introduction of the evaluator or evaluation team including relevant experience and skills

- Short proposal of the methodological approach

- Rough day-rate and anticipated overall evaluation budget

An annex can include further documentation such as CVs, reports and publications or other relevant documentation. The 2-pager, however, will be the main basis for decision-making.

Deadline

Interested experts are requested to send their expression of interest by 7 June 2021 at 11 am European Standard Time. Applications in pdf format can be electronically submitted to m.raab@posteo.de cc. dsuhr@fondationbotnar.org and grants@fondationbotnar.org