VRMIND– Virtual Reality Based Evaluation of Mental Disorders
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H2020 – SME Inst – 2016/2017

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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

The different tools of the VRMIND result in different documents in order to explain the reports and the information provided by the tools and also the operation of them. These documents aim to train not only the professionals but also the collaborator and distributors on the interpretation of the results obtained in the tests and on the installation of them. This way, they can understand the reports on a better way and use them properly.

These tools provide lot of information that can be very useful if you know how to interpret it. That is why we have tried to compile all the information which can be helpful in different documents and videos.

2. RELATIONSHIP WITH OTHER WPS AND DELIVERABLES

This deliverable is closely related to the WP2 deliverables since the contents of the training kits are basically focused on how operate with the VRMIND tools and also how to interpret the reports.

3. INTRODUCTION

During this year we have created and / or updated several documents which help us to explain the reports and the operation and installation of the tools. As Nesplora Aquarium and Nesplora Aula School are not yet in the market, we have started completing the set of document we already have for Nesplora Aula. We develop all the documents in Spanish and we translate them into English afterwards.

Currently we have different documents and videos for the different tests. In the next sections we describe each type of document that can be found in the different annexes at the end of this document or as videos annexed to this zip.

4. GO FOR IT!

This video has been created as a dissemination material to attract the attention of the population and encourage people to sign up to pass the test to carry out the normative study. For us and for the development of the tool, it is very important that people participate in these tests and be able to carry out the necessary studies to develop scientifically based tools.

As we have been focused on the development of Nesplora Aquarium test, we have recorded the video "Go for it!" (see video in this link: https://youtu.be/549lpLClsFw) aimed at people participating in the studies of this specific tool. As we develop new tools, we will adapt this video to the corresponding test, changing the cognitive functions evaluated and the images that are appropriate.

In the case of Nesplora Aquarium assessment tool, the video contains a brief summary of the project. It is explained that cognitive problems affect millions of people and that in order to help them we need to develop neuropsychological tools with good psychometric properties. People are encouraged to participate by explaining that the data obtained will help us to make a better assessment of the difficulties and strengths and to guide the necessary interventions to obtain a better performance. At the end of the video a link is shown from which the person can sign up to perform the test.

5. REPORT INTERPRETATION GUIDES

The Report Interpretation Guides are some documents which summarize the information given in the report. A Report Interpretation Guide makes a general review of each of the sections of the report, and it checks all the graphics and data using sample reports to analyse real cases and to have practical examples. Some indices related among them are also explained and justified. This document aims to train the professional on the interpretation of the report in order to get the more information as possible.

Currently we have a Report Interpretation Guide for Nesplora Aula (Annex 1) and Nesplora Aula School in Spanish (Annex 2), we are translating this to English. Now we are working on the development of the Report Interpretation

Guide for Nesplora Aquarium. We will have these documents ready by the time the tools are in the market.

We send this Guide to the customers, collaborators and distributors so that they have a better understanding of the results obtained.

Due to the length of the document we just include the English version for Nesplora Aula, and the Spanish version for Nesplora Aula School, in annexes.

6. REPORT INTERPRETATION VIDEO

The Interpretation Video aims to explain the test and the report it provides. To create this video, a presentation is prepared using Prezi. Once this visual material is ready, we record the voice over and we mix them to create the final video.

First of all, the general aspects of the test such as, how is the test, what does it measure and the tasks are explained. After this, a review of all the sections of the report is made while a comment or an explanation of the sections is given.

After a brief explanation of the general aspects of the test, the interpretation of the report starts. The video comments the first pages of the report with the information of the person evaluated, it explains what performance the T scores that are shown correspond to, and also the main indices of the test and how they must be interpreted in a qualitative way. In other words, it explains that the omission errors are related with inattention, commission errors with impulsivity… and so on.

So far, we have made a Report Interpretation Videos of Nesplora Aula (see video in this link: https://youtu.be/UBHcivVYToI) and Nesplora Aula School (see video in this link: https://youtu.be/8bzNkjimnXg) and Nesplora Aquarium (see video in this link: https://youtu.be/iXNBkzAwfkA).

These videos are being updated to the Nesplora website and we also usually send it to the potential collaborators, customers and distributors in order to train them in these aspects. The videos available in English and Spanish, but for space limitations just the English version is attached.

7. INSTALLATION GUIDE

The Installation Guide explains step by step how to install the program in the computer and in the mobile phone. The process is quite easy but is easier if we have this document. These documents aim to help the users of our tests with the start ups.

We have different guides depending on the test that is going to be installed as the processes are different. Once we commercialized Nesplora Aquarium, the process will be the same as Nesplora Aula but for the moment, as we are developing new versions and improving different aspects, they are not the same.

In this document the process of installation is explained from the beginning to the end, not only for the computer but also for the mobile phone. In the case of Nesplora Aula, you must enter a link that is provided and follow some steps but, in the case of Nesplora Aquarium, you have to download some files received by email and install them. The installation guide of Nesplora Aula School is under development.

We send this document to every person who acquires any of the test, regardless of whether s/he is a client or collaborator. These guides are available in English and Spanish. We include the Installation Guide of Nesplora Aula (Annex 3) and Nesplora Aquarium (Annex 4) in the English versions.

Apart from these guides, as there are people that buy the hardware on their own account and not with us, we have another document to help them with the first configuration of the hardware in order to star the applications. This Pre-installation guide of VRMIND products explains how to configure the Android, the Flic and Oculus, how to link the flic with the mobile, how to get the Device ID and how to change the configuration of the firewall of the computer. Anyway, we send this document to all the user just in case they need to configure something again or in the case there is an update of any of the application and in consequence something is misconfigured. This guide is also in English and Spanish. The English version can be found in the annexes (Annex 5).

8. REPORT EXAMPLE

We use some example reports of the tools to explain the information provided. These example reports are usually reports of specific profiles and with clear results to be easier to explain the content well and correctly interpret all the graphs and tables.

For Nesplora Aula, we have profiles such as ADHD, inattention and slow reaction time, impulsivity and a profile without inattention problems. For Nesplora Aquarium and Nesplora Aula School, we have a profile of ADHD and we will develop different ones. It is important to take into account that in Nesplora Aula School, the orientations given at the end of the report will change depending on the profile obtained so, it could be different from the example report. In all this report there is not personal information about any patient, the personal information given is not real.

These reports are clear and easy to understand. Probably most of the reports obtained in the real practice will not be as clear as these ones but this is the best way to train people in the interpretation of these reports.

The Report Examples are available in the website and can be downloaded by anyone but, apart from this, we send these reports to all the people that use our tools. The reports can be obtained in all the languages into the test is translated. Due to the length of the reports, we just attach the English version of them. In the annexes, an example report of Nesplora Aula (Annex 6), another one of Nesplora Aquarium (Annex 7) and the last one of Nesplora Aula School (Annex 8) can be found.

9. CONCLUSIONS

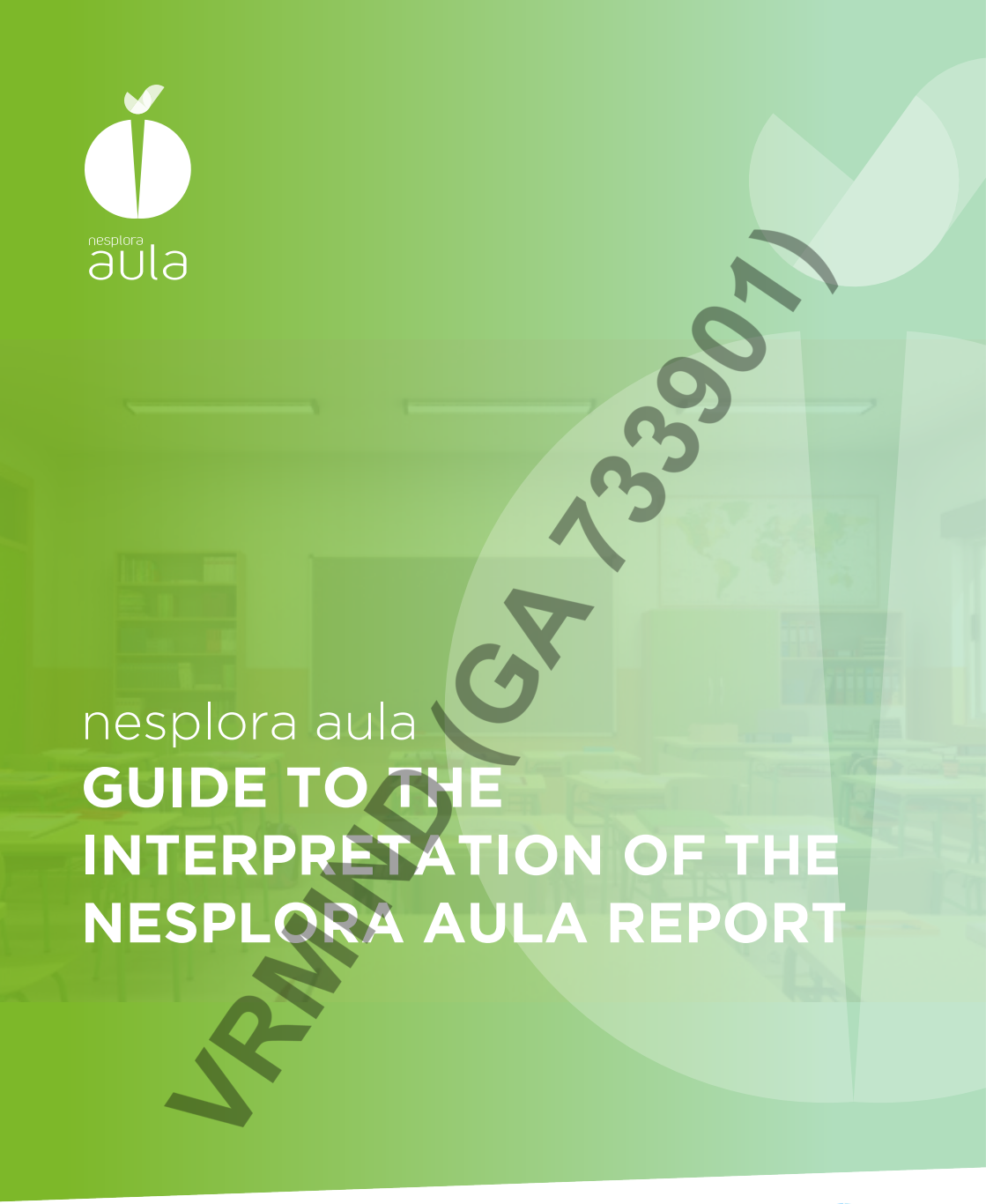
During this year, and after observing the needs of the users, we have created some documents with training purposes which aim to train the customers, collaborators and distributors on our tools and reports.

Currently, we are developing new videos and documents in order to continue with the trainings to make the most of the reports and test.

Even we generate all the documents in English and Spanish by default, we will translate some of these documents into other different languages according to the market needs.

ANNEX I- NESPLORA AULA REPORT INTERPRETATION GUIDE

nesplora aula



nesplora aula

GUIDE TO THE INTERPRETATION OF THE NESPLORA AULA REPORT

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No [733901]

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Technology & Behavior

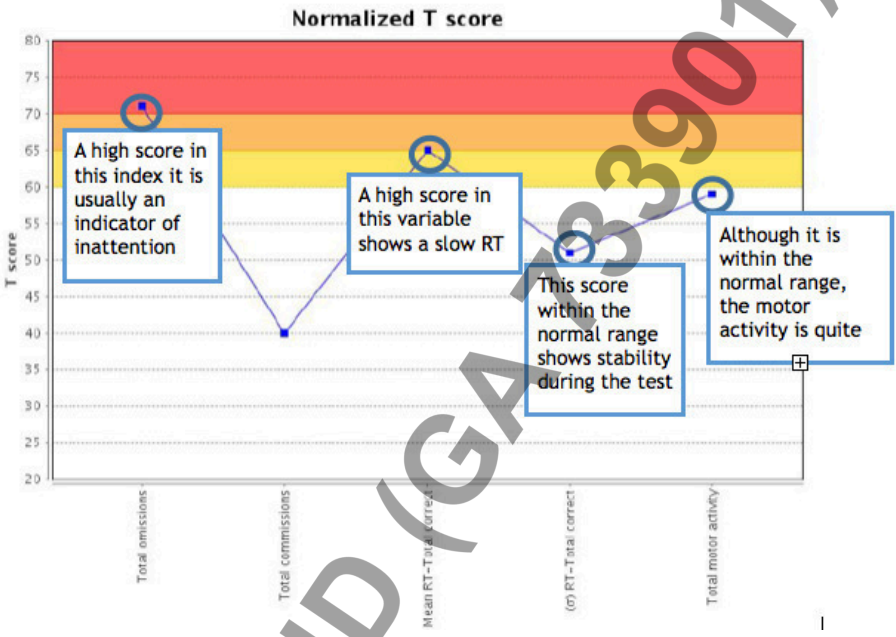
MAIN INDICES

DISTRACTORS

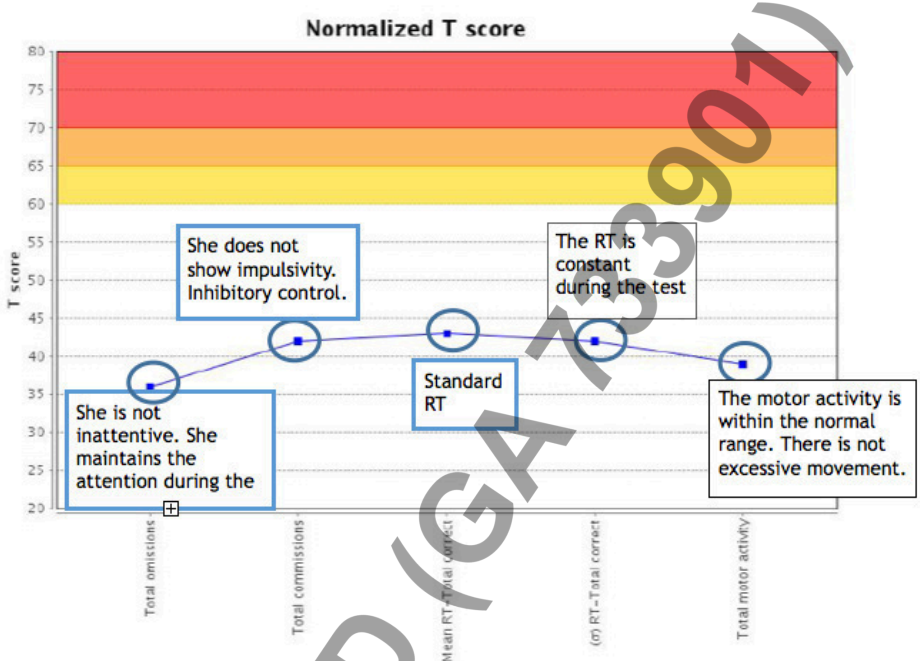
TASKS

AUDITORY AND VISUAL SENSORY CHANNELS

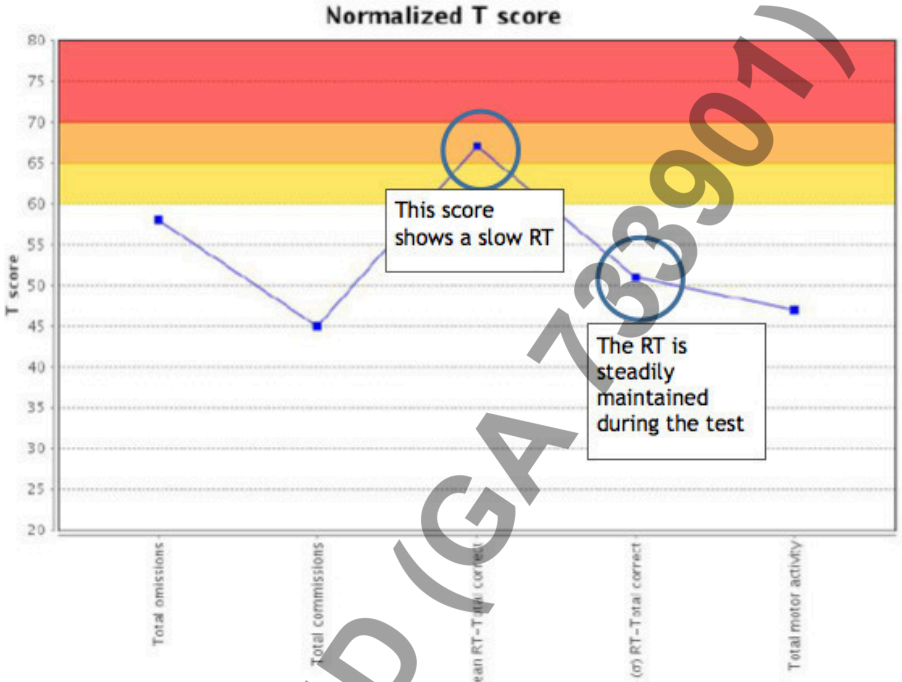
The **MAIN INDICES** of Nesplora Aula provide a global view about the performance of the child. However, it is necessary to go deeper into the other scores in order to know the complete attentional profile.



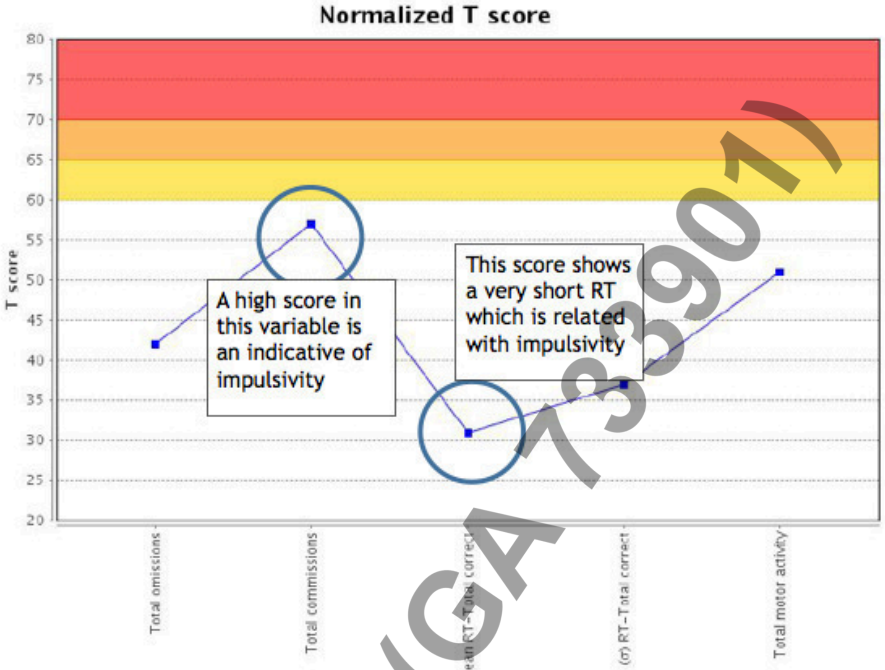
Profile: Inattentive girl with slow reaction time. The score on the omission index is very high so, it would show inattention. On the other hand, we can see that the reaction time (RT) (length of time that has elapsed since the stimulus appears until the child responds) is slow. Moreover, it is constant during the test since the deviation of the RT it is not too high. When the score of the motor activity is not too high, it could be because of the distractor or it could be sterile movement. Furthermore, we should note in this case that the score obtained in the commission's variable may be influenced by the high score of the omissions. If the girl does not pay attention during the task and she does not press the button for her inattention, she has no choice to make commission errors.



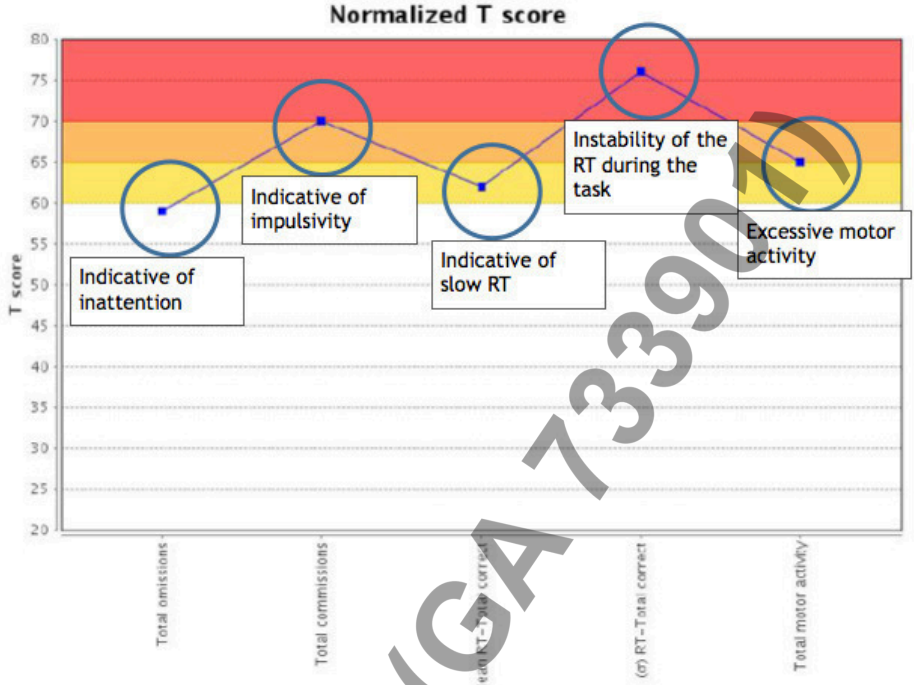
Profile: Girl without attention problems. In this case, the girls does not show inattention (low score in omissions), neither impulsivity (low score in commissions). She has a normal and steady RT and, her motor activity is also right. Considering the other graphics, the complete profile of the girl can be known in order to give some information about her learning mode. In this way, we can adapt the learning strategies to her profile and get a better performance.



Profile: Boy with slow reaction time. In this case, the score on the omissions index, which is related to inattention, is close to the cut-off point, but it is still within the normal range. In this graphic, the focus is on the slow reaction time of the boy in the correct answers. Furthermore, we can see that this index is constant during the test, therefore, we could say that this is a slow RT profile but unaccompanied by inattention, impulsivity and neither, by hyperactivity.

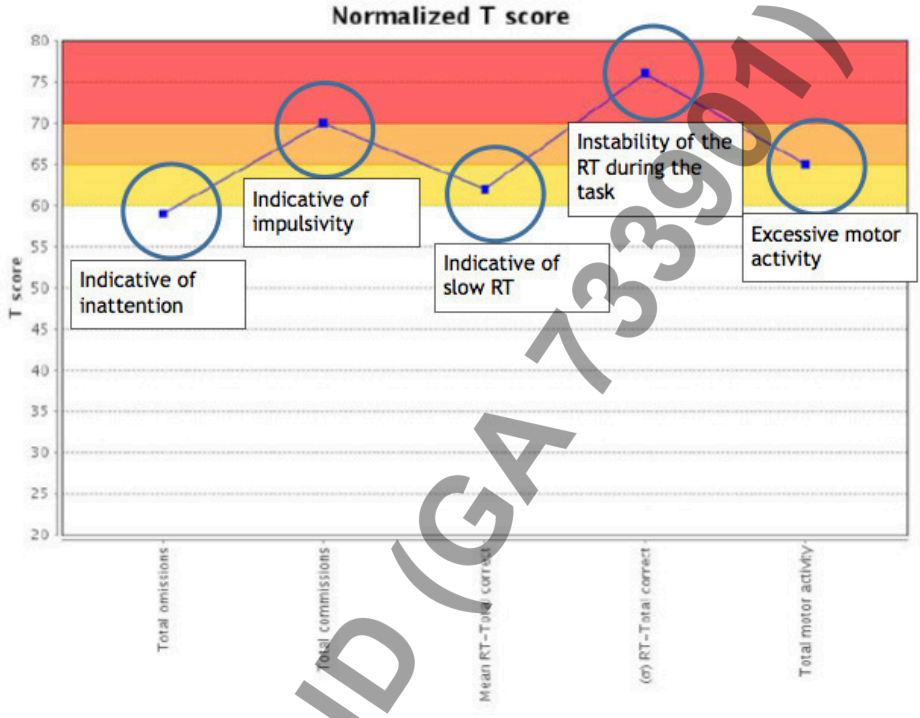


Profile: Boy with tendency towards impulsivity, without attention problems. In the overall profile of this boy, we can see that he gets a higher score on the commission's index than his reference population and, this score indicates tendency towards impulsivity. The RT time in cases of impulsivity is usually shorter, they normally respond rapidly to the stimuli. Moreover, the RT during the test is constant. In terms of omissions, he gets a normal score so, we can say that he has not sustained attention problems. He has not an excessive motor activity either.

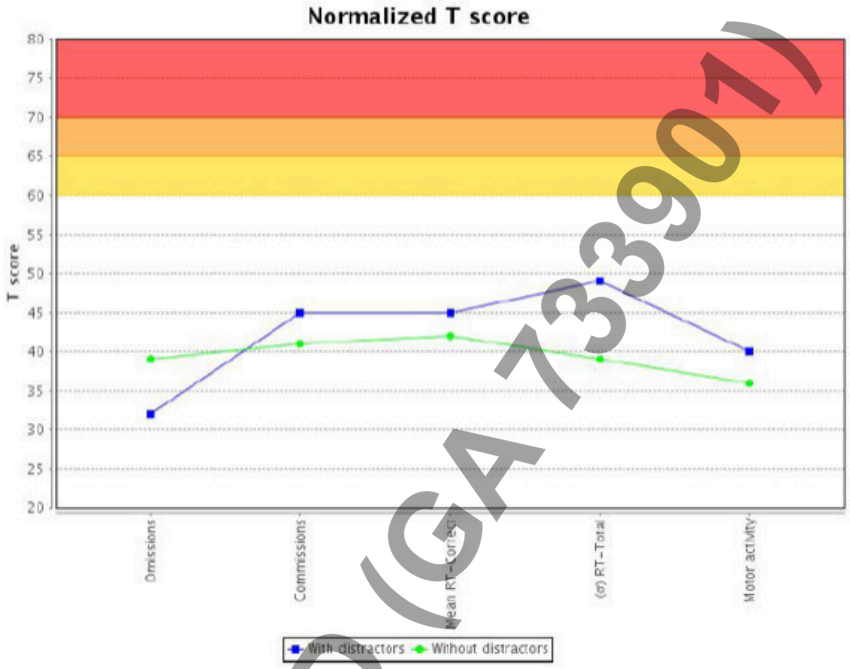


Profile: Boy with ADHD diagnosis, combined type (hyperactive, impulsive, inattentive). The scores displayed in this graphic, show the performance of a boy with ADHD combined type diagnosis in Nesplora Aula test. If we analyse the variables separately, first of all, we can see that the child has obtained a score on the omissions index (associated with inattention) which is in the limit of normality. On the other hand, the score obtained on commissions is high, that is, he has pressed the button many times when he should not and this can be indicator of impulsivity. Apart from that, we can see that the RT of the child is high and it is not constant during the test; this inconstancy is often associated with a cyclic operation of the attention. Lastly, we can see that the motor activity is excessive. Observing the other graphics, we could know in which situations the boy shows more difficulties.

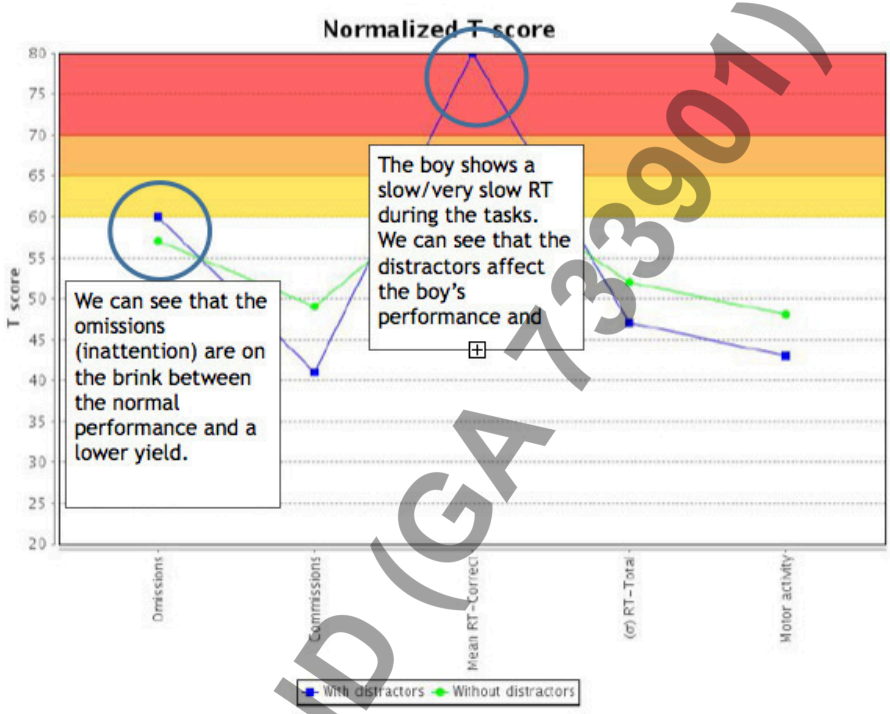
The **DISTRACTORS** of Nesplora Aula



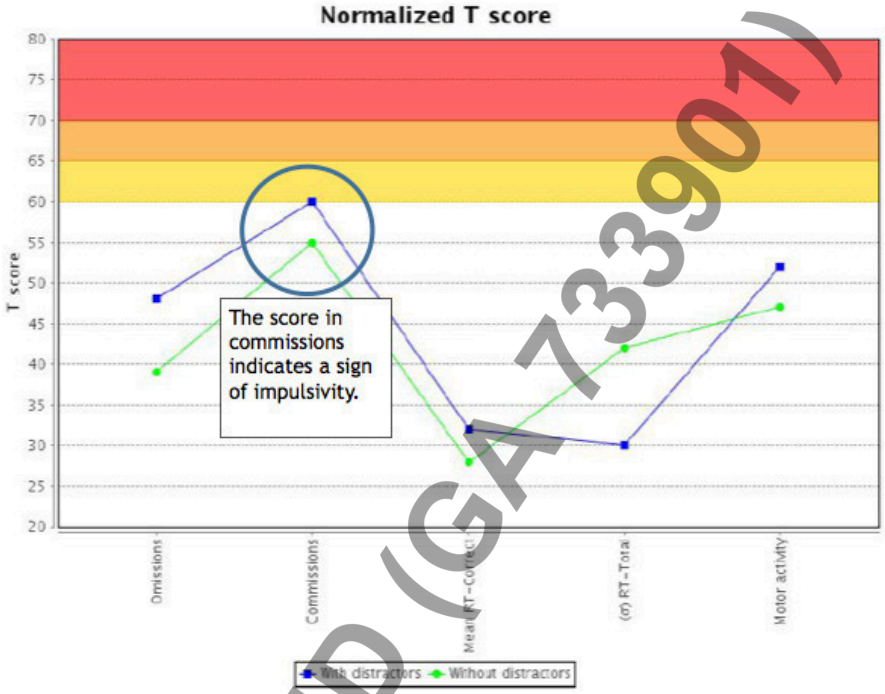
Profile: Inattentive girl with slow reaction time. As in the main indices, this girl shows inattention (omission errors) and a slow RT during the test. We can observe that the deviation of the RT varies more in one condition than in the other; with distractors, the RT is less constant. The typical distractors of the environment may affect the performance of the girl in the tasks. Even then, her performance is within the normal range and there is not a notable difference between these two scores. The motor activity of the girl should be taken into account since it is on the brink.



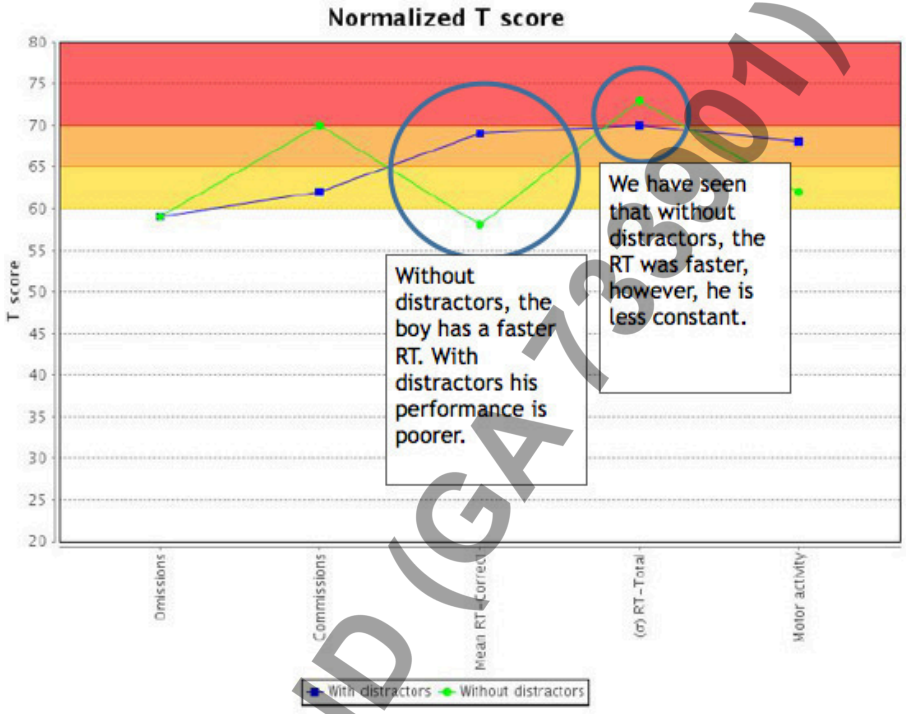
Profile: Girl without attention problems. This girl shows a profile without attention problems, either impulsivity or excessive motor activity. The performance of the girl with distractors as well as without them, is fine during the test.



Profile: Boy with slow reaction time. In this case the most remarkable score, is the RT of the boy during Nesplora Aula test. We can see that with or without distractors, the boy has a poor performance but, in the condition with distractors, his RT increases. This indicates that the distractors affect in the increase of the RT of the boy.



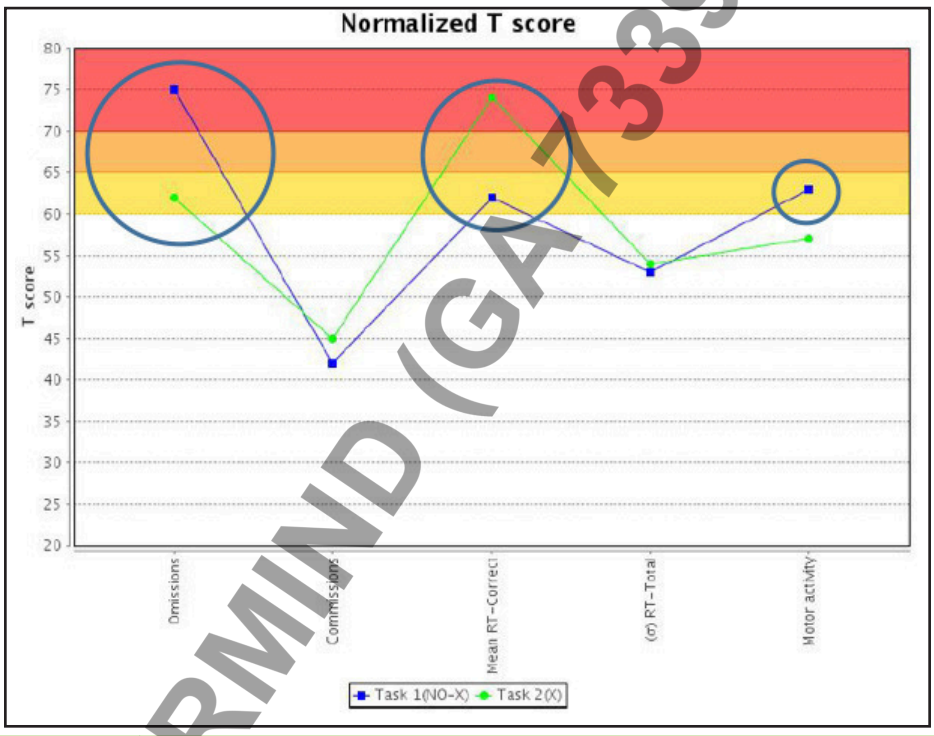
Profile: Boy with tendency towards impulsivity, without attention problems. As previously stated, commissions are related to impulsivity and, in this case, we can see that the boy gets a high score in this index in comparison with the rest of scores, especially in the presence of distractors. Anyway, we can observe that the deviation of the RT is more consistent with distractors.



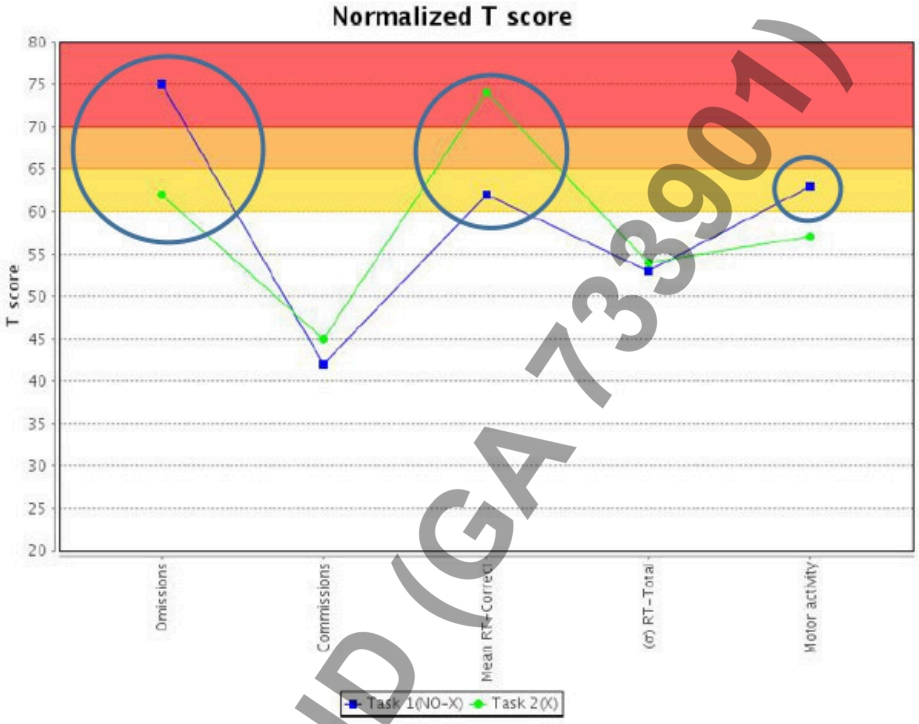
Profile: Boy with ADHD diagnosis, combined type (hyperactive, impulsive, inattentive). Comparing the two conditions of this graphic, that in presence of distractors, he commits less commissions but his RT increases. The scores indicate impulsivity, inattention, slow RT (especially with distractors) and excessive motor activity.

The **TASKS** of Nesplora Aula

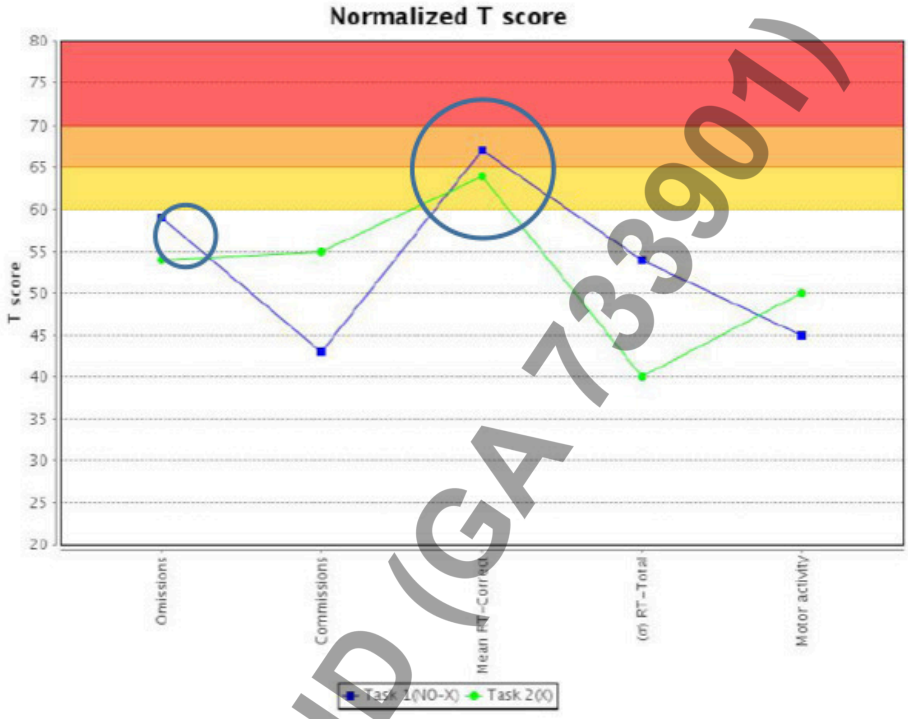
TIPE OF EXERCISE (NO-X/ X). The first task requests many responses, which generates hyperstimulation. In contrast, the second one, which requests less responses, generates a hypostimulating situation where, in general, is more difficult to maintain the sustained attention. This sequence tests the self-regulation capabilities of the child.



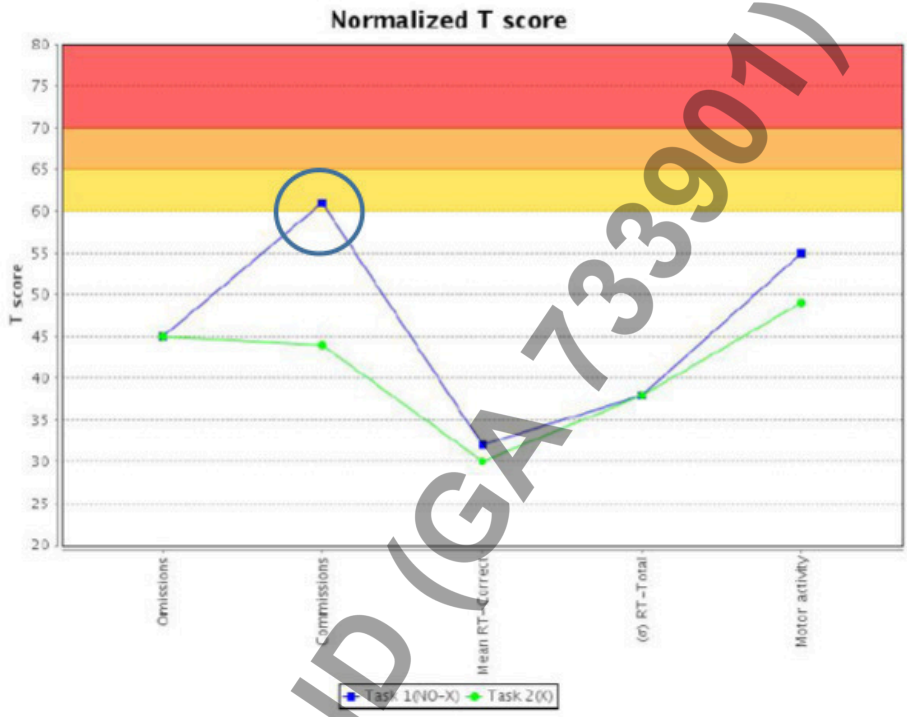
Profile: Inattentive girl with slow reaction time. Her inattentions stands out in this graphics, above all, in the No-X task where, despite the hyperstimulation, she does not respond to many stimuli. Her RT also stands out, especially in the X task where she only has to respond with the target stimuli. The motor activity should be observed in other graphics since it is higher in the No-X task.



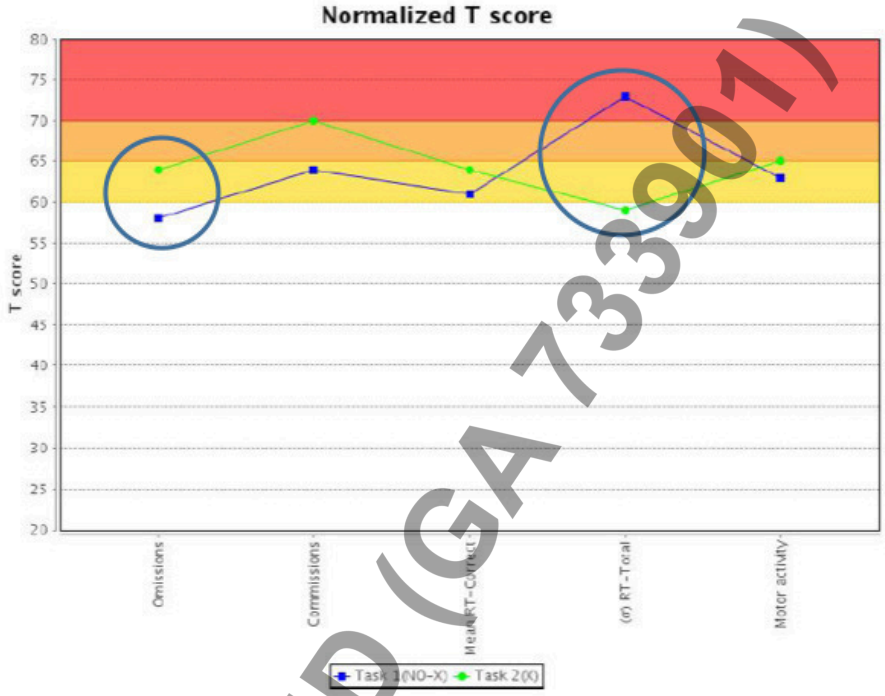
Profile: Girl without attention problems. In this case, the girl achieves good results in all the indices of the test. We can see that the constancy of the reaction time varies slightly in the different tasks. In the first task (No-X), which is more stimulating than the second one, the RT is more inconstant in comparison with the normative group. In any case, the results obtained show good ability to concentrate, good capacity for inhibition, adequate RT and she does not show excessive motor activity.



Profile: Boy with slow reaction time. As can be seen in the results obtained, the most remarkable index is the slow reaction time of the boy assessed. The time between stimuli changes depending on the answers of the child and, this way, we obtain a reliable RT index. The boy does not show impulsivity and either, an excessive motor activity. The index of omissions should be observed in other graphics since it is on the limit, mainly, in the No-X task.



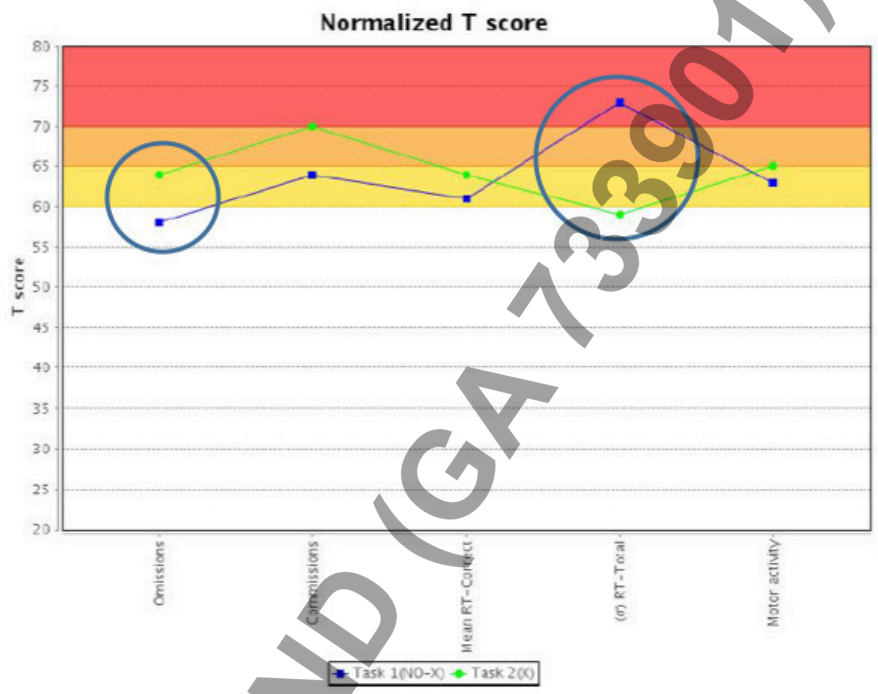
Profile: Boy with tendency towards impulsivity, without attention problems. In this case, we can observe a clear example of different execution in the tasks in a certain variable. The score of the commissions, which is related to impulsivity, varies so much from No-X task to X. In the No-X task is required to press the button more times than in the X task, consequently, it is easier for a person with tendency towards impulsivity to make commission mistakes because of the inertia of the previous task.



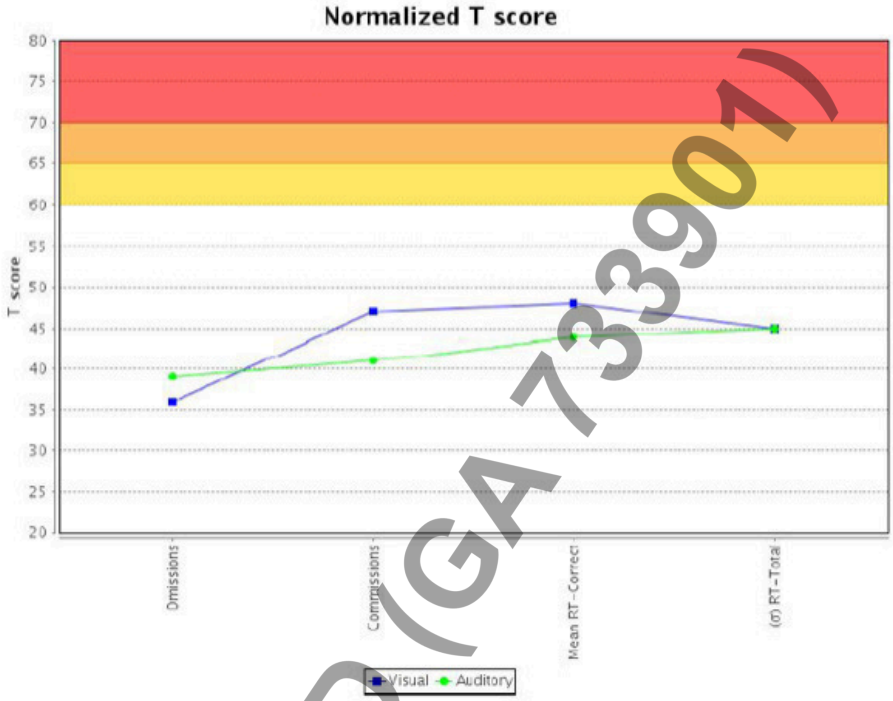
Profile: Boy with ADHD diagnosis, combined type (hyperactive, impulsive, inattentive). He shows a little better performance in the No-X task, although the deviation of the RT is higher in this condition. The inconsistency in the task may be the result of responding constantly for a period of time, consequently the response rate increases and, when he makes a mistake, he stars responding slower again. Anyway, we can observe in the graphic that the scores obtained in the test indicate inattention, impulsivity, slow RT and excessive motor activity.

Sensory Channels

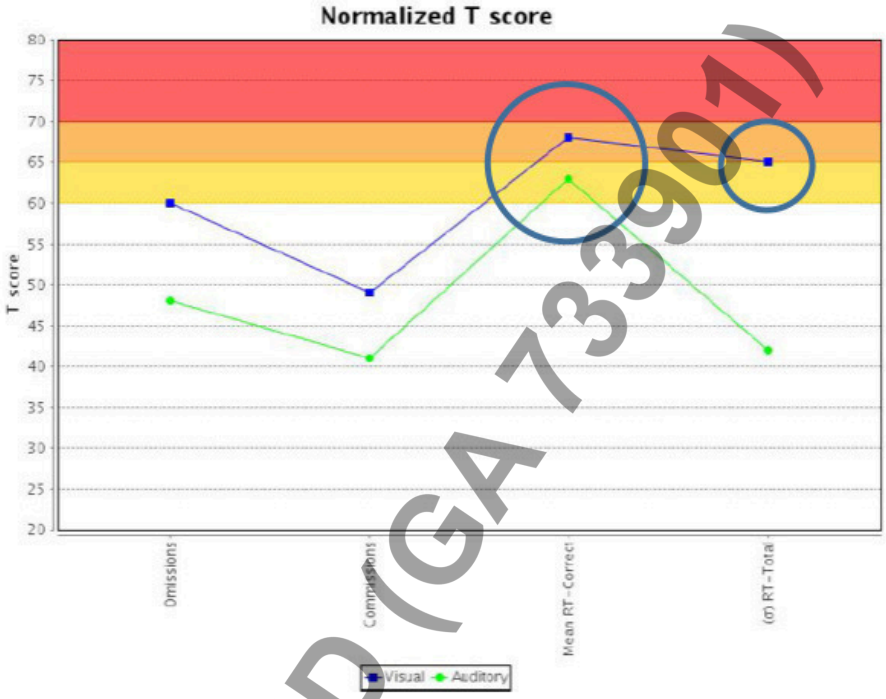
Auditory and visual processing



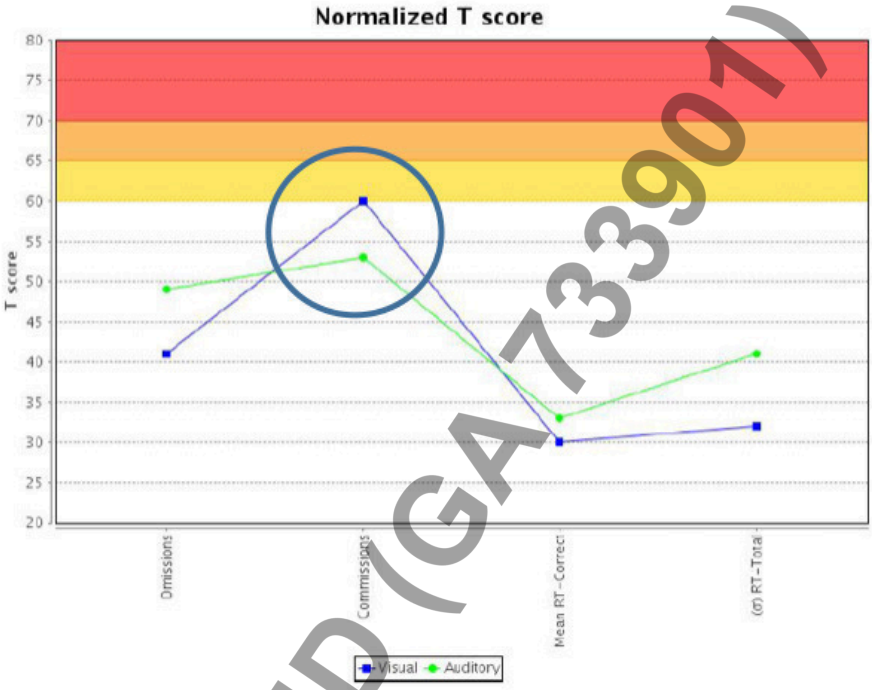
Profile: Inattentive girl with slow reaction time. This girl shows the same profile in both sensory channels. The inattention and the slow RT predominate in both conditions but especially, in the visual processing where, her performance is poorer than the normative population's performance.



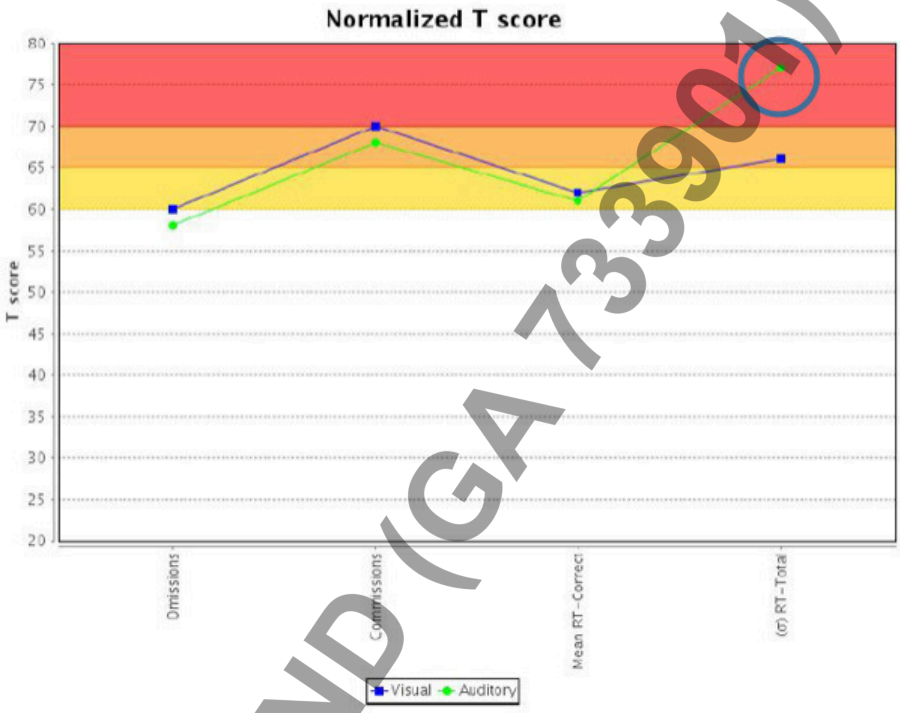
Profile: Girl without attention problems. In this case, the girl does not show any attentional or impulsivity problems, neither slow RT. We can see that she processes the auditory and visual information properly during the test and, she obtains similar scores with both types of stimuli.



Profile: Boy with slow reaction time. In this occasion, we can observe that the boy processes better the auditory information than the visual one, and he obtains higher scores in that condition although, he has a slow RT in comparison with his reference group. Moreover, with the visual stimuli he has a greater variation of the RT. Note that punctuation of such characteristics can be helpful to design a potential intervention with the children. For example, in this case, it would be useful to use auditory strategies at school, for studying, etc.



Profile: Boy with tendency towards impulsivity, without attention problems. Note that he has a similar profile with both sensory channels. Nevertheless, the score on the index of commissions (impulsivity) is higher than the other scores as compared with the normative sample, particularly with the visual stimuli. It seems that with the auditory stimuli he has a greater inhibitory control. It would be necessary to analyse the whole report to get information about the behaviour and the profile of the boy in different conditions.



Profile: Boy with ADHD diagnosis, combined type (hyperactive, impulsive, inattentive). The performance of the boy during the task, with auditory stimuli as well as with visuals, has been very similar. We can note that with the auditory stimuli his RT is less constant. Even so, the punctuations of this graphic do not only indicate that variation but also attentional difficulties, impulsivity and slow RT.

ASSOCIATED INDICES OF NESPLORA AULA

The Nesplora Aula´s report, shows different variables that measure sustained attention, visual and auditory attention, impulsivity, motor activity, distractibility, attention focus quality and the response time. There are some indices that can influence others and many times they are presented together in certain cognitive profiles. Down below the most common and relevant indices are presented.

Commissions and omissions: It must be taken into account that when people make omission mistakes they are losing the opportunity of making commissions mistakes. If they do not press to the stimulus, either in a correct or an incorrect way, there is no option to make commissions. It can also happen the same in an inverse way. If a person makes too much commissions (for instance: he or she presses in an impulsive or random way) he or she does not have the choice of making omissions.

Omissions, distractors and attentional focus quality: A high punctuation in the variable omissions could be indicator of inattention. On the other hand, the quality of the attentional focus give us information about the mistakes the people have made when they have the attentional focus well directed; in other words, the mistakes they have made while they are looking to the blackboard where the stimuli are presented. It is common that these two indices appeared together because of a bad punctuation in the attentional focus quality may be caused by inattention generated by intern stimulus of the person. The person might be seeing the blackboard when the stimulus are presented, but he or she might not be paying attention to them.

We can add to these information the results obtained in the execution with and without distractors. When the distractors of the test do not affect to the execution of a person with an inattentive profile (high punctuation in omissions) but the results of the attentional focus quality are not good, it could be an indicator of inattention not caused by external stimulus but by internal ones.

Impulsivity and high RT: People who answer to the test in an impulsive way usually answer in so quickly. Furthermore, it is habitual to see profiles with a high punctuation in commissions and a rapid response time.

Inattention and variation in RT: Attention works in cycles so in the cases of inattentive profiles is habitual that they pay attention for a while, then they get distracted... so it is logic to obtain a high deviation in the reaction time. Since these people make the test without paying attention in a constant way and without answering in the same way to the stimuli, the RT is inconstant.

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ANNEX II- NESPLORA AULA SCHOOL REPORT INTERPRETATION GUIDE

nesplora aula school

nesplora aula school

GUÍA PARA LA INTERPRETACIÓN DEL INFORME

Este proyecto ha recibido financiación de la Unión Europea a través del programa de investigación e innovación Horizon 2020 bajo el acuerdo No [733901]

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ÍNDICE

Introducción

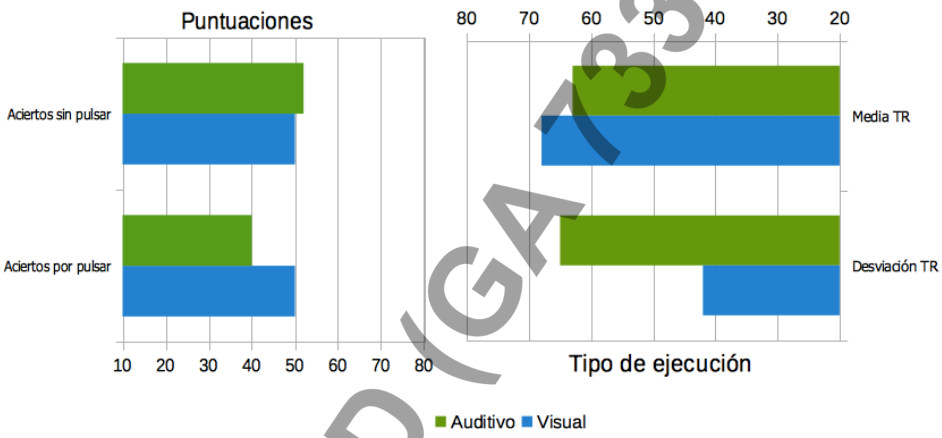
Nesplora Aula School es una herramienta que aporta información objetiva sobre el perfil atencional del alumnado.

En el informe se presentan los resultados obtenidos en la prueba así como una descripción de estos resultados y de lo que indican y unas orientaciones psicopedagógicas acordes a los mismos. Por ello la interpretación del informe es sencilla y no es necesario profundizar en las gráficas para entender los resultados obtenidos.

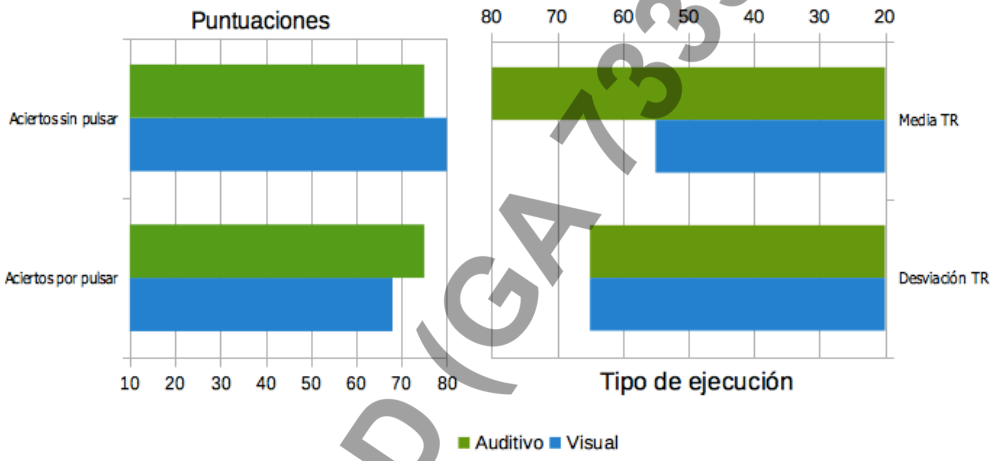
Aquellos profesionales que quieran profundizar en las puntuaciones que se presentan en las gráficas encontrarán en este documento una guía de interpretación de lo que indica cada una de las puntuaciones, así como diferentes ejemplos. Al no tratarse de un informe clínico solo se resaltan aquellas puntuaciones que son relevantes para identificar las fortalezas o áreas de mejora del alumnado.

1 Ejecución auditiva y visual

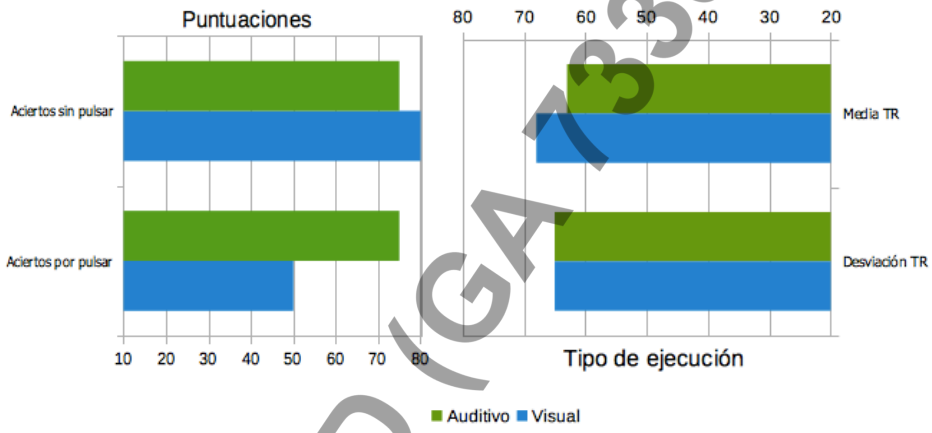
Estos indices nos indican si se procesan de manera diferente los estímulos visuales y los auditivos. De esta manera podremos centrar las estrategias que se lleven a cabo en el canal sensorial con el que el alumno o alumna tenga mayor facilidad para procesar.



En esta gráfica podemos observar que no hay grandes diferencias entre los aciertos a nivel auditivo y a nivel visual. Se observan diferencias en la desviación del tiempo de respuesta, que es mayor en los estímulos auditivos. Lo que indicaría que es menos constante respondiendo a los estímulos auditivos.

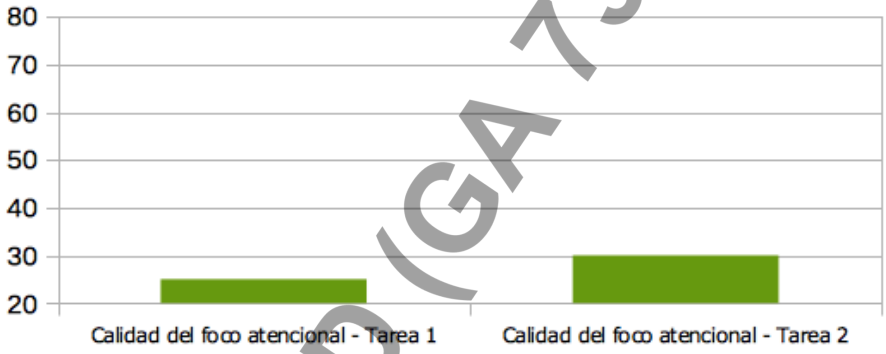


En esta gráfica se observa que hay mayor número de aciertos por pulsar auditivos en relación a los visuales. Esto puede asociarse con mayor facilidad para procesar los estímulos auditivos.

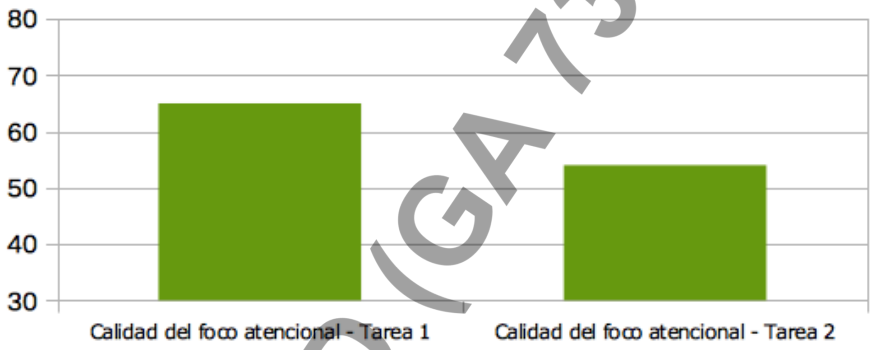


En esta gráfica se observa que no hay diferencias en el número de aciertos según el canal sensorial pero si un tiempo de respuesta más lento en los estímulos auditivos. Lo que se asocia a una velocidad de procesamiento lenta en el procesamiento de estímulos auditivos.

En las siguientes gráficas se reflejan los errores cometidos en los estímulos visuales mirando a la pizarra y nos permiten valorar la calidad de la atención del niño.



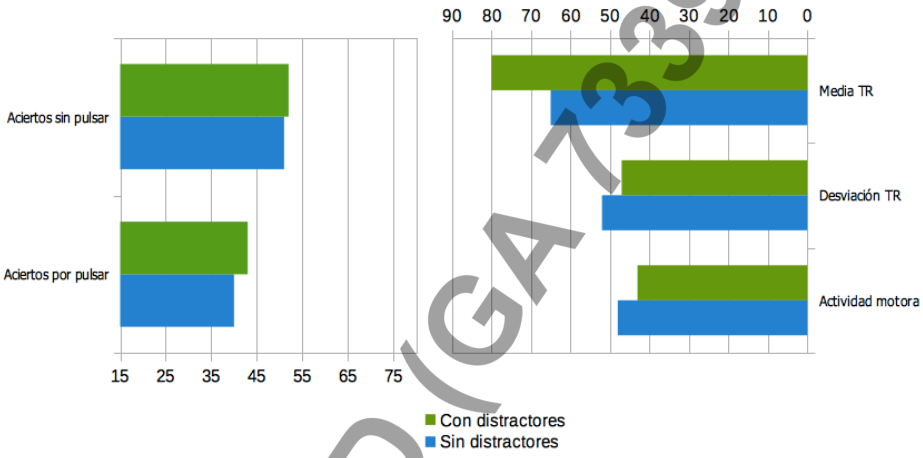
Esta gráfica refleja que casi no se cometen errores mirando a la pizarra, por lo que los errores que se cometen se pueden asociar con movimiento y con no tener el foco bien dirigido.



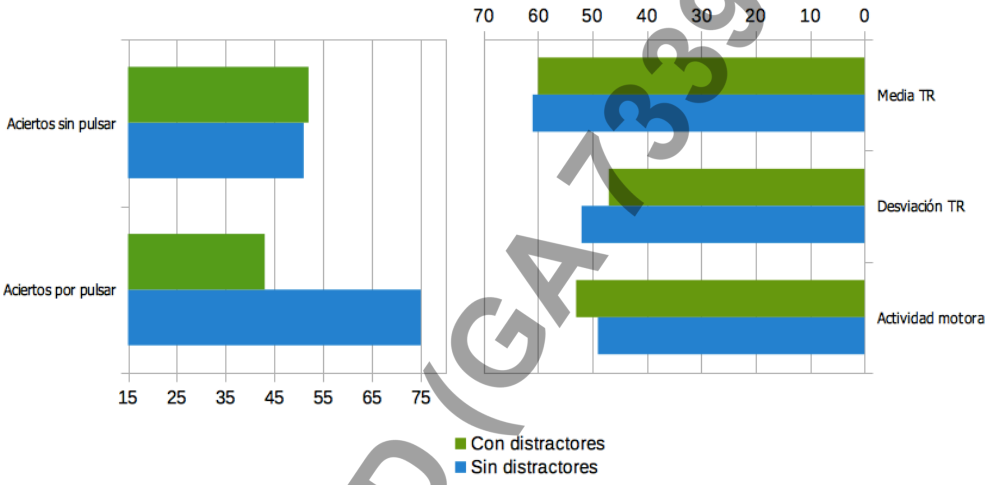
En esta gráfica se observa que hay un elevado número de errores, sobretodo en la primera tarea, mientras se está dirigiendo el foco a la pizarra. Este suele asociarse con distractores internos que impiden que el alumno o alumna se centren en la tarea.

2 Ejecución en ausencia/presencia de distractores

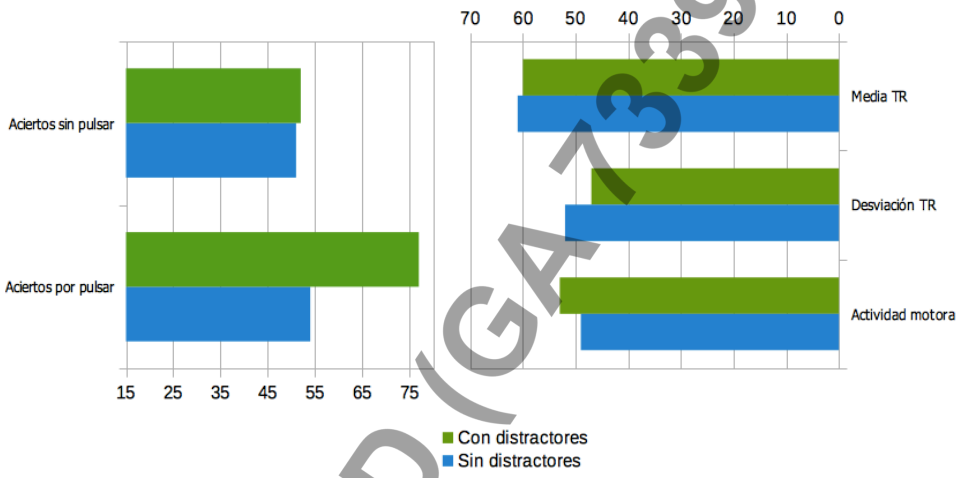
Estos índices nos indican si la ejecución del alumno o alumna varía en función de si están presentes o no distractores clásicos de un aula. Este dato nos indicará si es mejor un entorno estimulante o por el contrario tranquilo y sin distracciones para llevar a cabo tareas.



En esta gráfica se observa que hay una ejecución similar con y sin distractores lo que indica que a la persona evaluada no le afecta la presencia de distractores y es capaz de mantener la atención en la tarea a pesar de los mismo. Esto indicaría que no es necesario que esté totalmente aislado de estimulación externa cuando lleva a cabo sus tareas.



En esta gráfica se observa que hay una mejor ejecución (Aciertos por pulsar) cuando no hay distractores. Esto indicaría que los distractores tienen un efecto en su nivel atencional y es mejor evitarlos en su día a día.

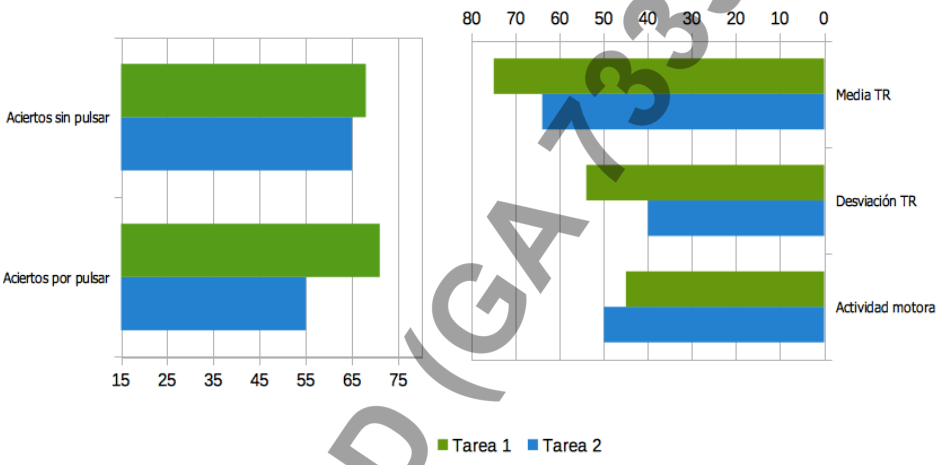


Se observa que hay un mayor número de aciertos por pulsar en presencia de distractores, lo que indicaría que la estimulación externa le permite centrarse en la tarea y evitar distractores internos que le pueden estar afectando.

3 Ejecución en función del tipo de ejercicio

En Nesplora Aula School, se realizan dos tareas: la primera tarea consiste en responder a una gran cantidad de estímulos que nos permiten observar la capacidad de gestionar los impulsos. En la segunda, una tarea más monótona y lenta, permite analizar la capacidad atencional y concentración.

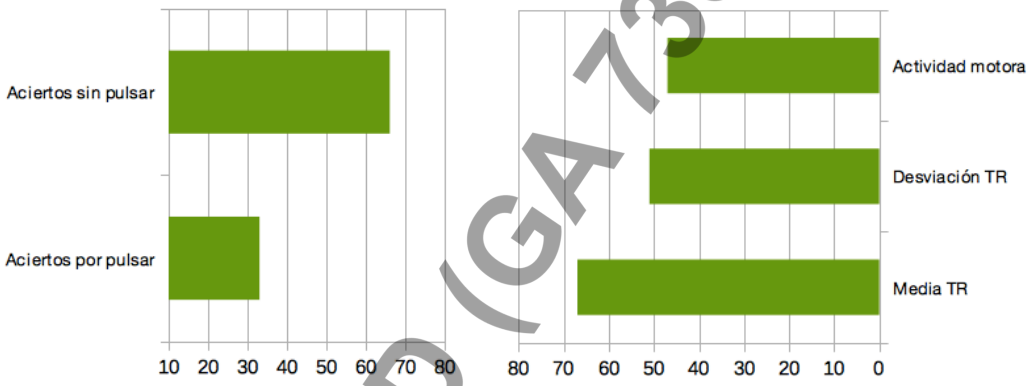
En esta gráfica se observa que hay un menor número de aciertos sin pulsar en la primera tarea. Lo que podría indicar impulsividad y dificultad para inhibir la respuesta cuando el ejercicio requiere una alta tasa de respuestas.



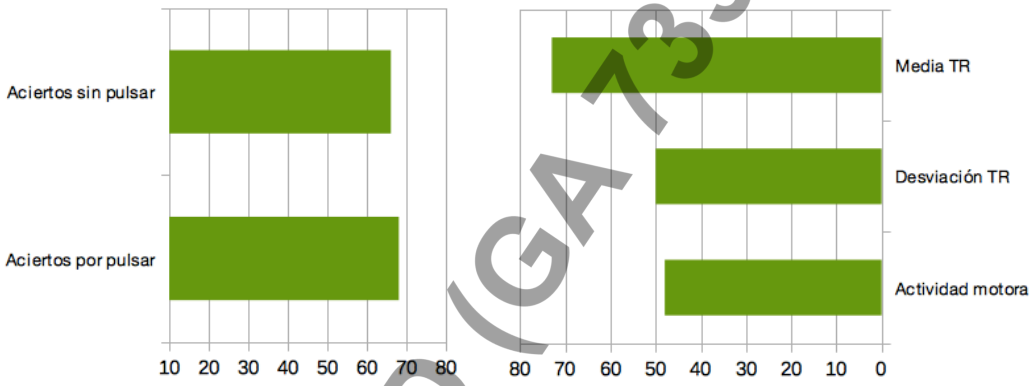
En esta gráfica se observa que hay un menor número de aciertos por pulsar en la segunda tarea. Lo que podría indicar dificultades para mantener la atención sostenida en las tareas monótonas y con baja tasa de respuesta.

4 Índices Generales

Los Índices Generales de Nesplora Aula School aportan una visión global sobre la ejecución del niño/a. Sin embargo, es necesario profundizar en el resto de puntuaciones para conocer el perfil atencional completo.



En esta gráfica se observa un menor número de aciertos por pulsar lo que podría indicar dificultades atencionales.



En esta gráfica se observa un tiempo de respuesta alto aunque pocos errores. Lo que podría indicar que el niño o niña tiene una velocidad de procesamiento lenta, pero con el tiempo suficiente puede hacer las tareas de manera correcta.

VRMIND (GA 733901)

Nesplora - Technology & Behavior
Parque Tecnológico y Científico de Miramón
Paseo Mikeletegi 58 - piso 0 - local 8
20009 Donostia - San Sebastían

(+34) 943 308 431
nesplora.com

ANNEX III- NESPLORA AULA INSTALLATION GUIDE

NESPLORA AULA INSTALLATION GUIDE

Version: 1.0

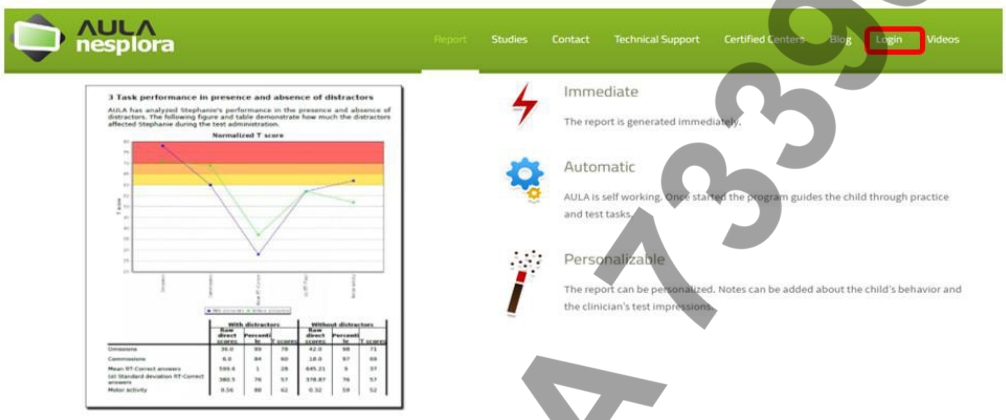
Date: 07/06/2017

This project has received funding from the European Union´s Horizon 2020 research and innovation programme under grant agreement No [733901]

Installation guide of Nesplora Aula

Follow the steps bellow for a correct installation of Nesplora Aula:

1. Enter the web of Nesplora Aula: https://aulanesplora.com/
2. At the top, on the right side, click on *Login*



3. Select the option *Don´t have an account?* And fill the gaps required to create a new user of Nesplora Aula.

The serial number requested is available on the document received (*number of activation)* inside the box of the hardware and, also on the mail received.

4. Once the account is created, a new web to download the software for the computer will be automatically loaded.

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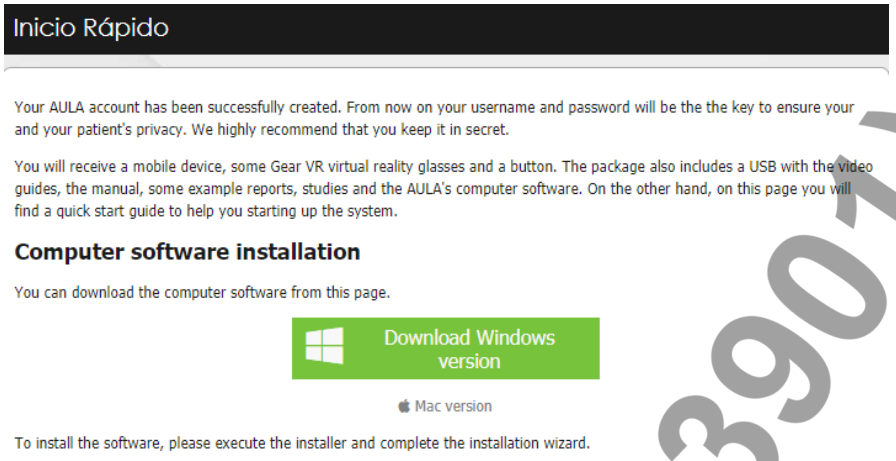

5. When the download is completed, execute and install the application on the computer. In the case you need to install the software on another computer, access this link *https://aulanesplora.com/private/#!quickStartPage* and sign in with the user previously created

6. The application is ready to use.

The mobile application is previously installed, so you do not have to carry out any installation process.

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ANNEX IV- NESPLORA AQUARIUM INSTALLATION GUIDE

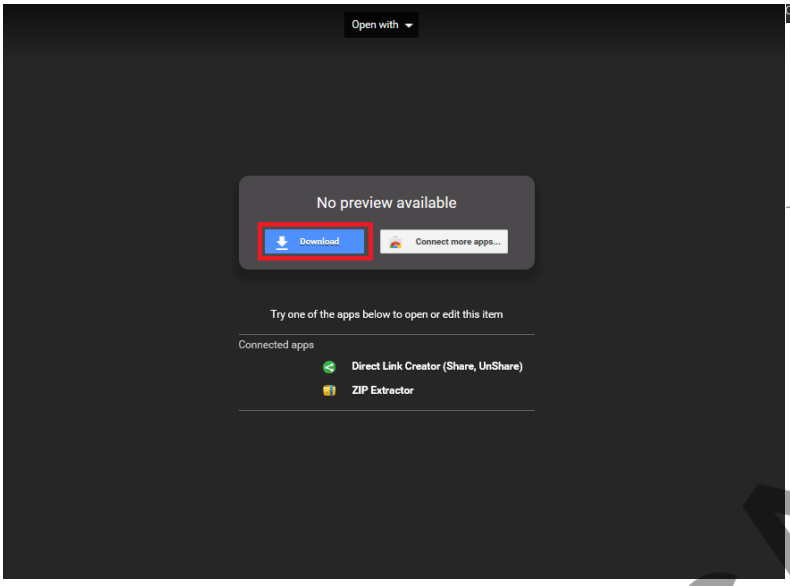
AQUARIUM INSTALLATION GUIDE

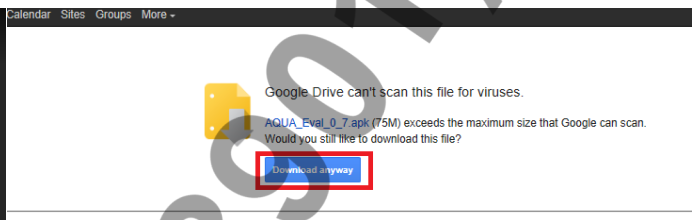
Version: 1.0
Date: 07/03/2017

This project has received funding from the European Union´s Horizon 2020 research and innovation programme under grant agreement No [733901]

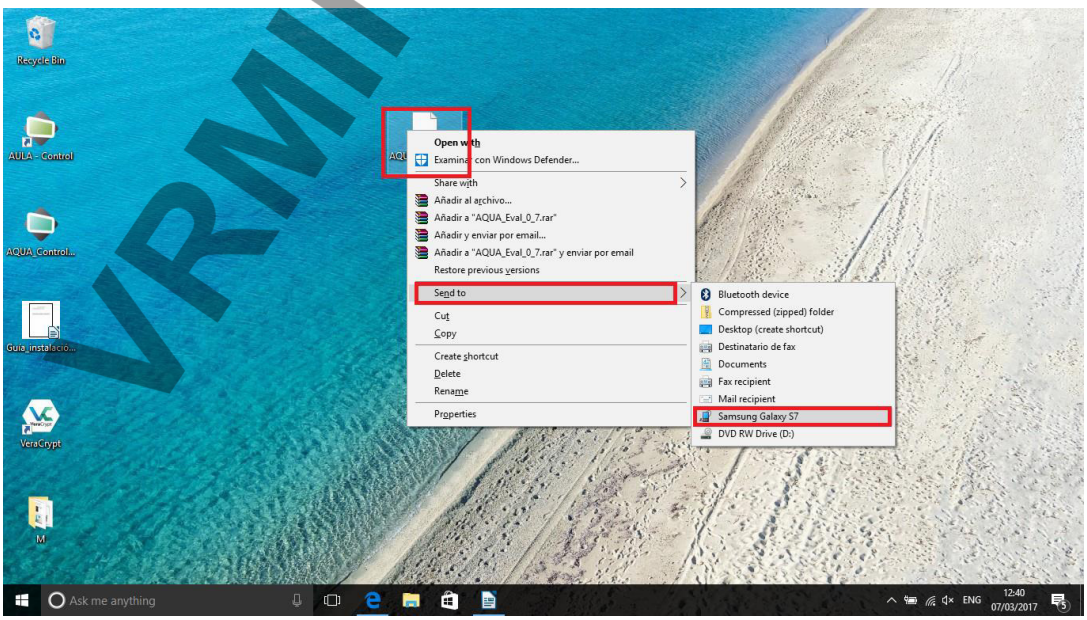
1. Download the apk (mobile app) and install it on the mobile:

From the email received download the apk file on your computer:



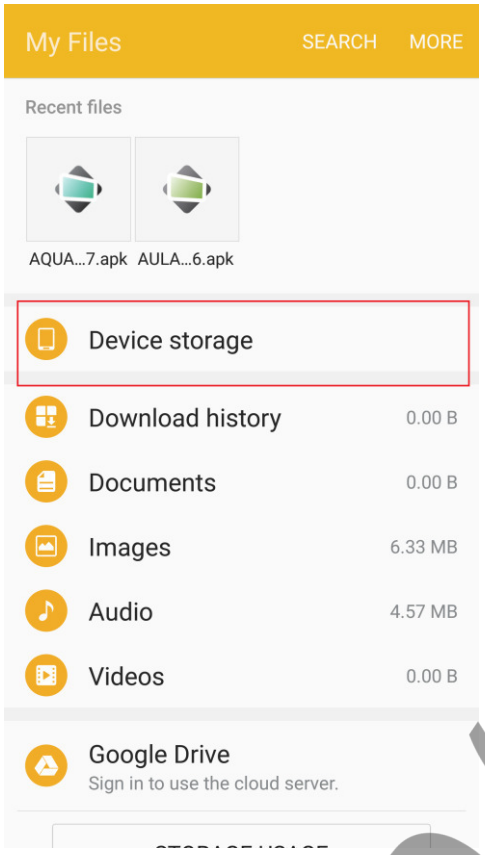


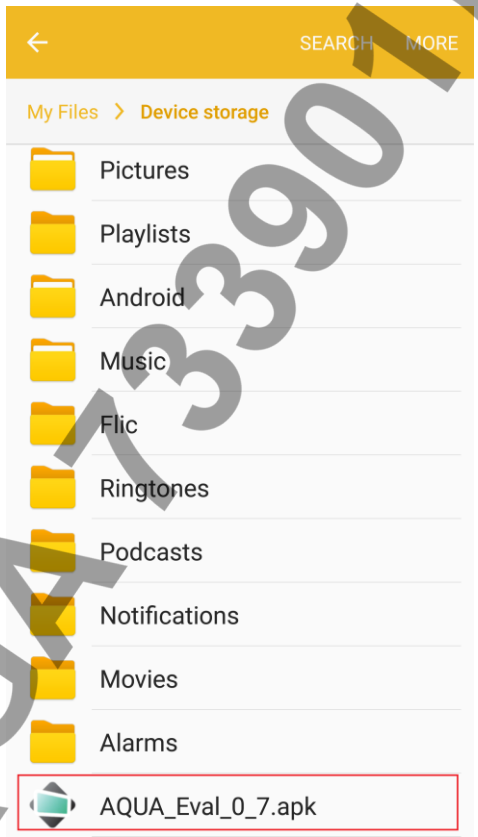
Once you have the file stored in the computer, you have to send to the mobile following these steps: Right click on the apk file and send to Samsung Galaxy S7 (in the case you have a previous version installed, you should delete it before installing the new one. Explanation in the next step)

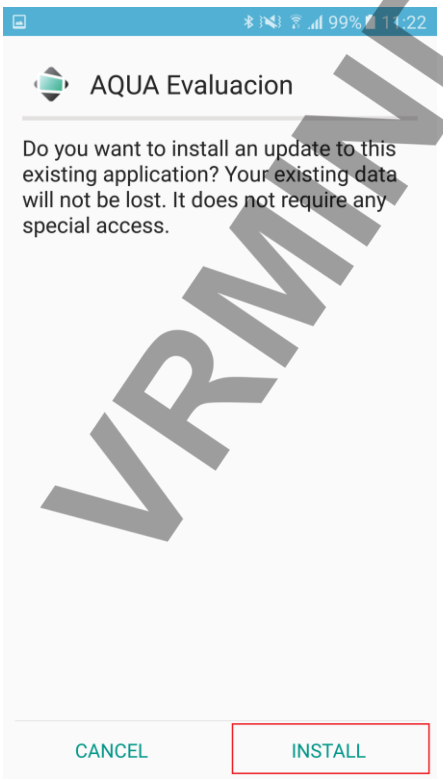


This project has received funding from the European Union´s Horizon 2020 research and innovation programme under grant agreement No [733901]

To install the apk in the mobile: My Files → Device storage → AQUA app → installed





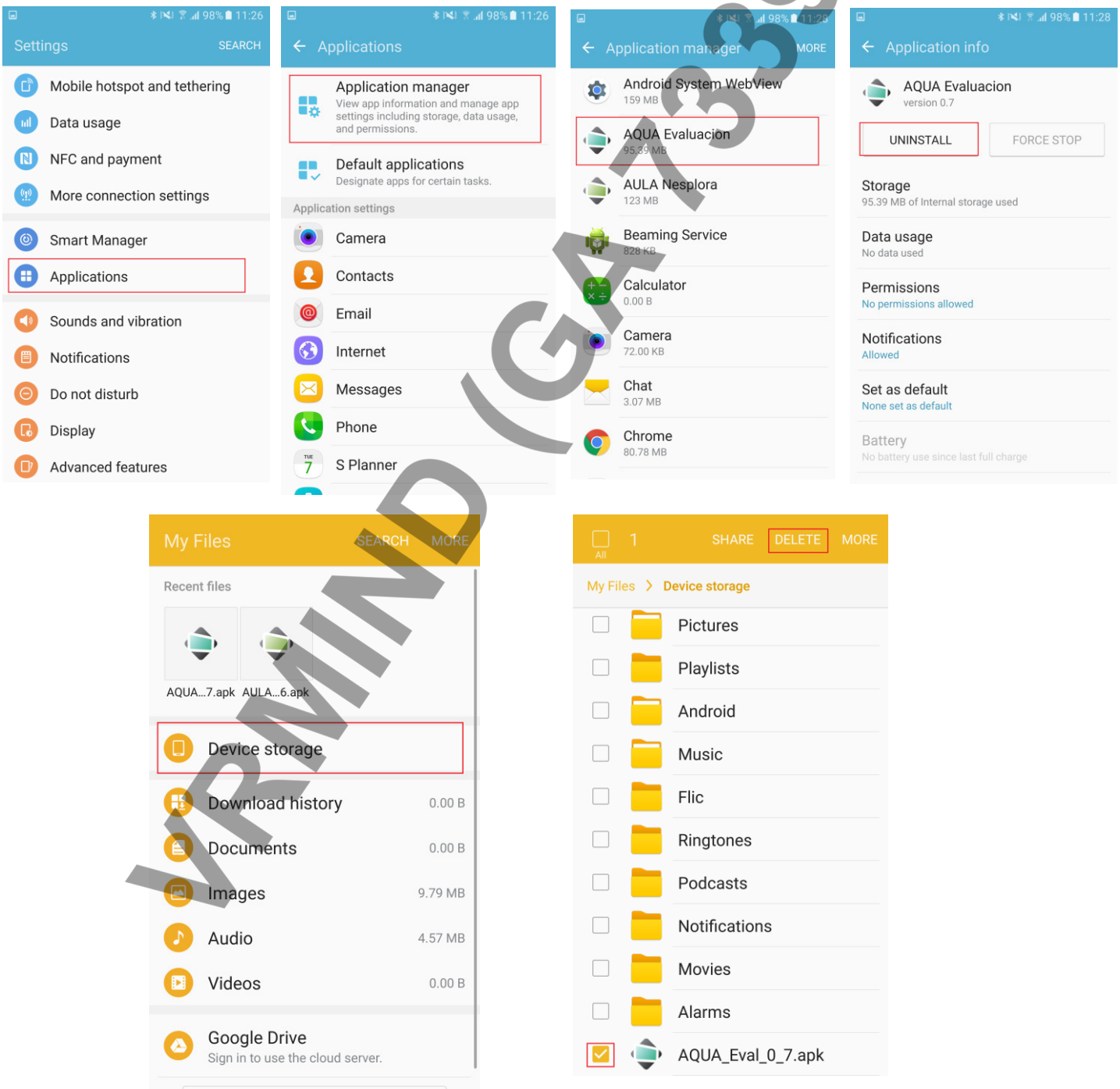


This project has received funding from the European Union´s Horizon 2020 research and innovation programme under grant agreement No [733901]

To remove the previous apk from the mobile (*remove it before installing the new one)*:

1. Settings → Applications → Application manager → Aquarium app → Uninstall

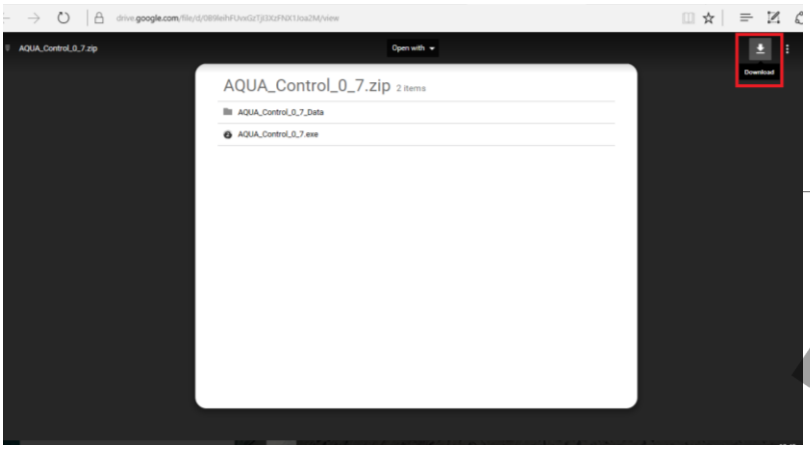
2. My Files → Device storage → select Aquarium → Delete

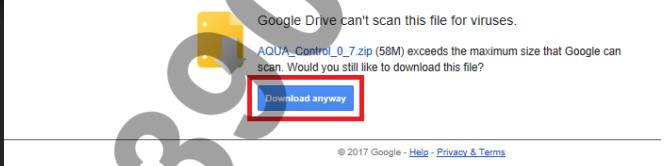


This project has received funding from the European Union´s Horizon 2020 research and innovation programme under grant agreement No [733901]

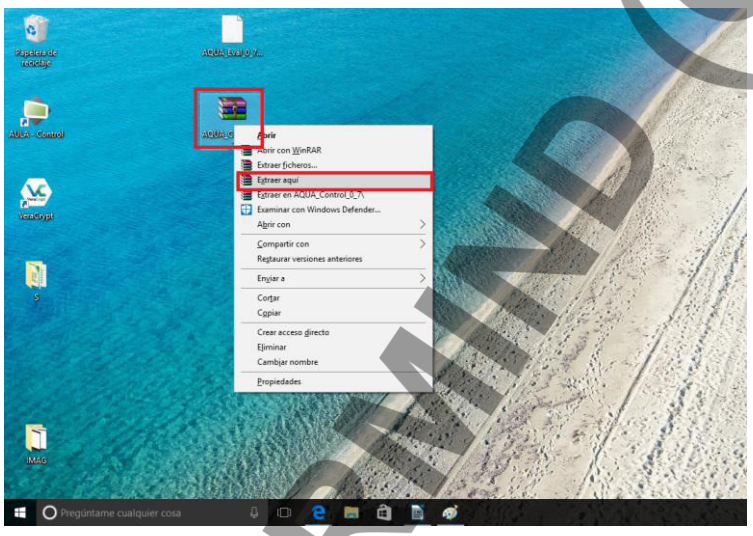
2. Download the Control (computer application) and install it on the computer:

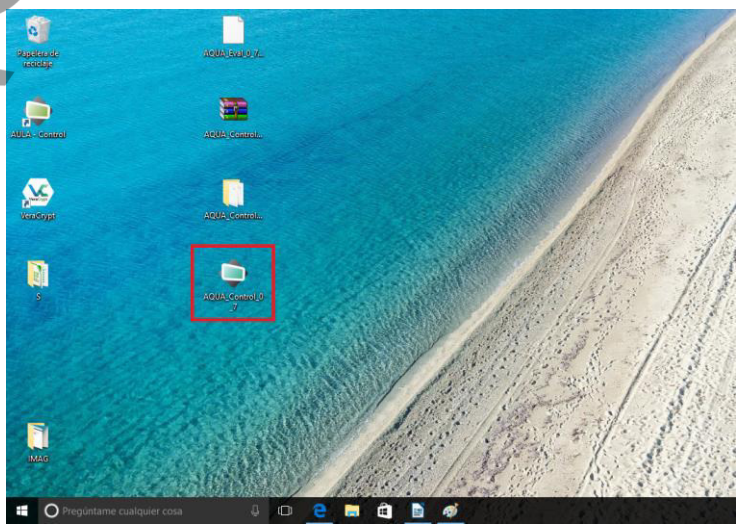
From the email received download the .zip file on your computer:





Once you have stored the file in your computer, you have to extract the files following these steps: Right click on the file and extract to here.





Now everything is installed and ready to use.

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ANNEX V- PRE-INSTALLATION GUIDE OF VRMIND PRODUCTS

FAST GUIDE:

To start the application for the first time follow the steps below, make sure that both the computer and the phone are connected to the same WiFi network:

1. Access the website https://aulanesplora.com, click on login and select *Do not have an account?* to **create your user account** with the serial number you received by e-mail or in your package.
2. Once inside the web download the required **control** version and run the downloaded file to install it. If you want, you can access this page again from the Quick Start option.
3. Open the program on your computer and enter with your username and password.
4. To **create a patient** click on "New Evaluation", go to the icon of the person with the "+" symbol and insert the information in the required fields, once finished click on the "+" symbol.
5. **Start the Nesplora application on the phone and insert into the Gear VR**, keep the sensor on the glasses covered and **click with the physical Flic** to access. If the Flic is not configured go to the section: Flic Configuration and Link Flic with the Nesplora application.
6. In the control click on **start** and you will see a connecting message, once you enter the program you can start the test.

Android configuration:

1. Choose the language.
2. Select the wifi and enter the password to connect.
3. Deactivate diagnostic data.
4. Accept terms and conditions.
5. We add or create the gmail account.
6. In configuration of the payment data, click on later.
7. Set date and time.
8. The protection of the phone is skipped, or configured, according to your preference.
9. We disable google services.
10. Ignore the following options until full configuration appears.

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For more information: http://www.samsung.com/es/support/model/SM-G930FEDAPHE

Flic Configuration:

1. Find the Flic application on Google Play and install it.
2. Enter the application and click on the circle with the "+" symbol
3. Press and hold the physical button until you see that the circle is filled and name it to add it.

For more information: https://start.flic.io/

Oculus configuration:

1. To install Oculus insert the mobile device into the Gear VR, you will hear a voice telling you to disconnect the phone to install the application.
2. Follow the instructions indicated by the application. Log in with the account that has been sent to you along with the mobile device or by creating your personal account.
3. Once the installation of the oculus application is complete, reinsert the phone into the glasses, if all went well, you will enter Oculus Home.
4. Remember to turn off phone notifications. To do this when you are in Oculus Home click on the right touch panel on the Return button until the circle is filled and select the Do not disturb option.

For more information: https://support.oculus.com/guides/gear-vr/latest/concepts/gsg-b-sw-software-setup/#gsg-b-sw-software-setup

Link the Flic with the Nesplora application

1. Go to **settings**, click on **applications** and search **Gear VR Service** - **Storage** - **Admin Store** ...
2. **In VR Service Version** click multiple times in a row so that the developer mode options appear, activate **developer mode**.
3. **Enter the Nesplora application** without putting the phone in the glasses.

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4. Touching the screen will go to Flic, press the icon of the button and the message of grabbing will appear.
5. Disable the developer mode and use the application normally.

Install the Nesplora application on the mobile device

1. Download the application that has been sent to your email from the mobile device and install.
2. To install from the PC connect the phone to the computer via USB and copy the APK to the storage root. Disconnect it, go to the option My files on the phone and install.

Device ID

1. On Google Play search for Device ID, from Evozi and download. https://play.google.com/store/apps/details?id=com.evozi.deviceid&hl=es
2. Open the application and search Serial Hardware, select and click on share, send through Gmail to support@aulanesplora.com

Give permission to Windows Firewall

1. Write in start "Windows Firewall".
2. Click on Allow an application or feature through Windows Firewall.
3. We select the option Change the configuration.
4. We search and select the Nesplora Control application and click on the Remove and Accept option.
5. We start the Nesplora program normally and if you ask for permissions we accept both public and private networks.

The network blocks broadcast calls and the computer cannot resolve the IP of the mobile

1. In the AULA Control Options section, uncheck the "Search IP Automatically" box and enter the IP of the mobile.
2. Enter the IP of the mobile device (can be found in Settings> About the device> Status> IP address.).

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ANNEX VI- NESPLORA AULA EXAMPLE REPORT

NESPLORA CLINIC LAB

Paseo Mikeletegi nº58, Donostia-San Sebastián

FULL NAME: Laura AnonYmous

GENDER: Female

CHRONOLOGICAL AGE: 10 years old

DATE OF TEST ADMINISTRATION: 09/09/09

This report is aimed to be used by the test administrator as a support for interpretation. This report must not be used as the unique resource for the clinical diagnosis or intervention.

Laura Anónymous

09/09/09

LOGO DE LA CLÍNICA

CLÍNICA DRA. EJEMPLO

Paseo Mikeletegi nº58, Donostia-San Sebastián

FULL NAME:	Laura Anonymous
GENDER:	Female
DATE OF BIRTH:	09/09/09
CHRONOLOGICAL AGE:	10 years old
DATE OF TEST:	the 09/09/09 at 16:46
TIME TO COMPLETION:	0:14:40
USED SCALE:	Female 10 years

CLINICIAN'S NOTES CONCERNING HISTORY, OBSERVATION AND OTHER TEST DATA:

The teacher recommended her parents to come to the psychologist, Laura spends a lot of time studying but fails the exams and she never finishes her tasks during class time.

OBSERVATION NOTES FROM THE NESPLORA AULA ADMINISTRATION:

No comments

1. NESPLORA AULA EVALUATION REPORT

GENERAL DESCRIPTION

NESPLORA AULA is a continuous performance test (CPT) performed in a virtual reality classroom. This is accomplished by having the child wear a specially developed set of glasses containing a visual screen, headphones and movement sensors. The AULA CPT is designed to evaluate multiple aspects of attention, impulsivity, distractibility, motor activity and processing speed.

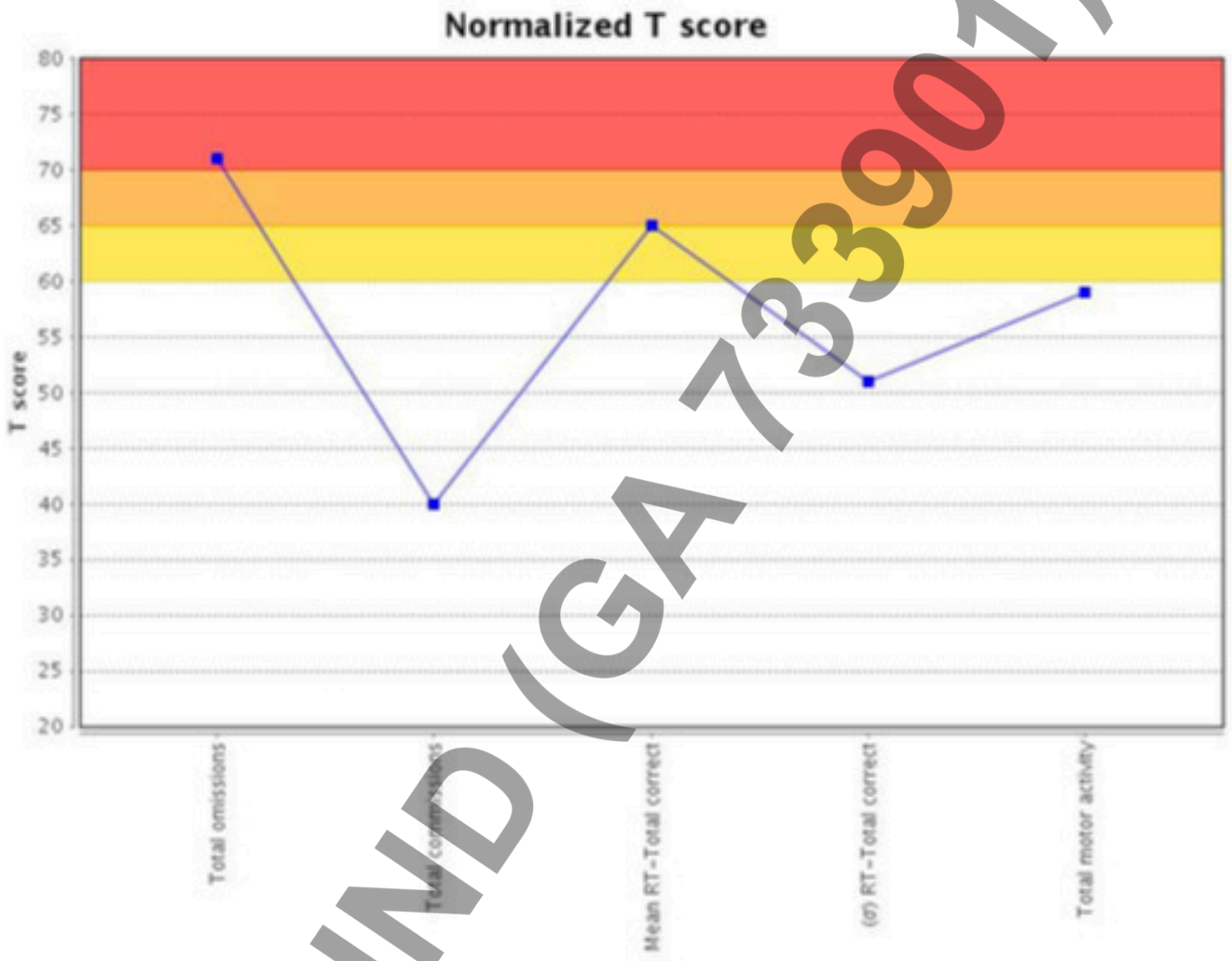
The virtual classroom is presented to the child from the perspective of a pupil's desk. The program continuously shifts the child's view of the classroom based on their head movements, providing them with the impression of actually being inside the classroom.

On the virtual blackboard and through the audio input, a series of stimuli are presented. The child responds according to instructions provided by the virtual teacher. The test consists of two tasks. In the first task, the child presses a switch anytime the stimulus on the blackboard is different from the identified target stimulus. On the second task, the child presses a switch anytime he/she hears or sees the target stimulus.

The report generated by AULA NESPLORA provides extensive graphics, tables and narrative reports. Obtained T-scores and percentiles are presented. The following summarizes the interpretation of T-scores and percentiles:

T-SCORE	PERCENTILE	INTERPRETATION
20 - 30	<2nd	Very good performance
31 - 40	2nd - 15th	Good performance
41 - 60	17th - 83rd	Average
61 - 70	85th - 98th	Below average performance
71 - 80	98th - 99th	Poor performance

2. MAIN INDICES



	Raw	Percentile	T scores
Total omission errors	131.0	97	71
Total commission errors	4.0	16	40
Mean RT-Total correct answers	1051.2	93	65
(σ) Standard deviation RT-Total correct answers	356.78	52	51
Total motor activity	0.57	81	59

INDEX DESCRIPTION

2.1.1 Total omission errors

Omission errors occur when Laura must respond to the target stimulus but omits to do so. Omission errors are considered a measure of selective and unfocused attention. Laura has obtained a score of 131 in Total omission errors. These data correspond to a percentile of 97 and a T-score of 71. This reflects a very poor performance.

2.1.2 Total commission errors

Commission errors occur when the target stimulus does not appear but the child presses the switch impulsively. Commission errors reflect a lack of response inhibition and lack of motor control Laura has obtained a score of 4 in Total commission errors. These data correspond to a percentile of 16 and a T-score of 40 which indicates a high performance.

2.1.3. Mean RT (Response Time) over Total Correct Answers

Mean reaction time is a highly reliable measure of processing speed and answer consistency. It also reflects attention ability. Laura has obtained a score of 1,051.2 in Mean RT-Total correct answers. This data corresponds to a percentile 93 and a T score of 65 with respect to the normative sample, which indicates a poor performance.

2.1.4 (o) Standard deviation from RT (Responde time) over Total Correct Answersal

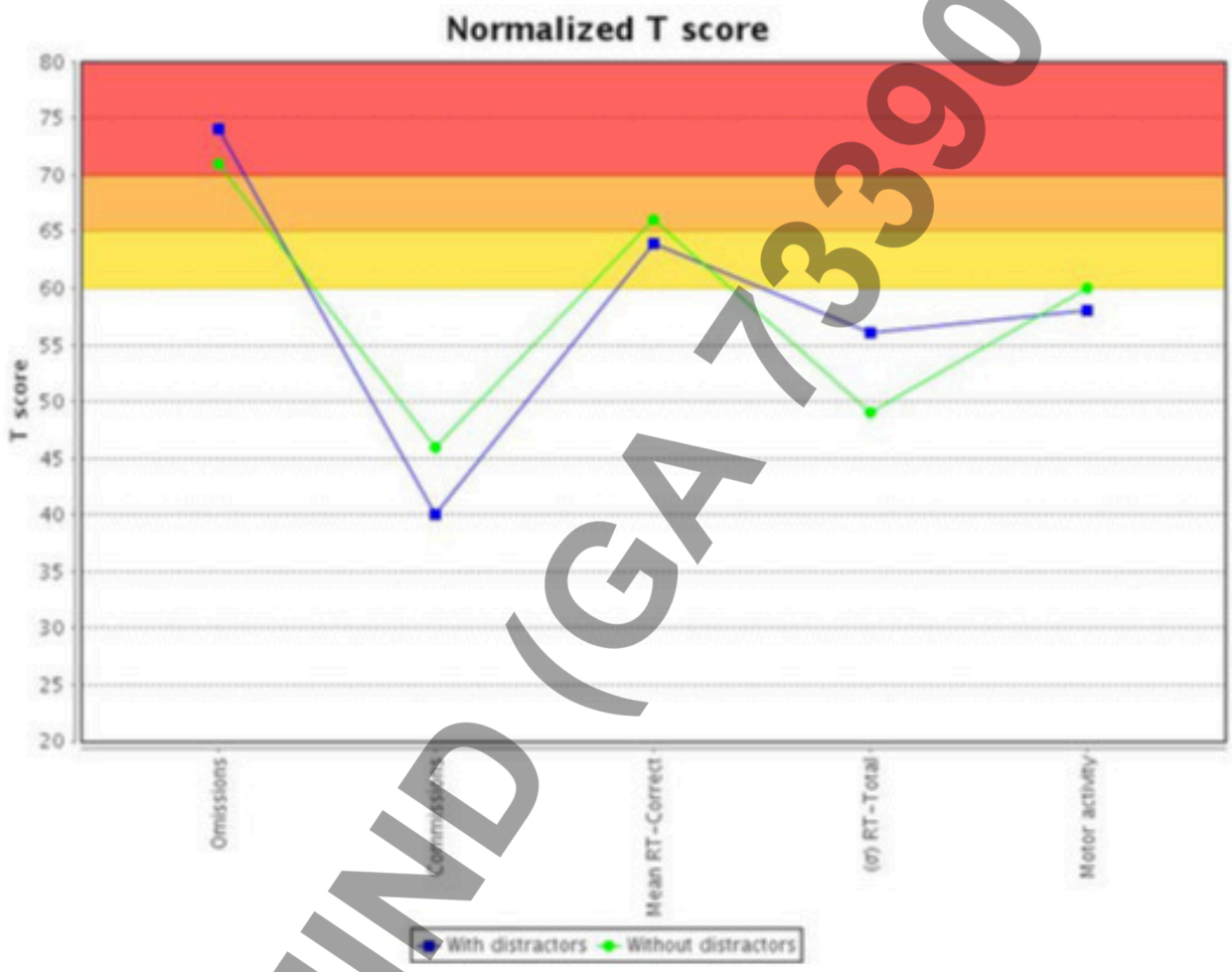
Deviation of reaction time is a measure of variability and answer inconsistency, and it can be a measure of decrease in vigilance. Laura has obtained a score of 356.78 in (o) Standard deviation RT-Total correct answers. These data corresponds to a percentile of 52 and a T score of 51 with respect to a normative sample, which indicates a normal performance.

2.1.5. Total motor activity

Total motor activity is measured by the sensor from the glasses. It evaluates the child's head movements while he/she performs the exercise. That is, whether he/she has moved a lot or a little or in an unnecessary manner. Laura has obtained a score of 0.57 in Total motor activity. This data corresponds to a percentile of 81 and a T score of 59 with respect to the normative sample, which indicates a normal performance.

3. TASK PERFORMANCE IN PRESENCE AND ABSENCE OF DISTRACTORS

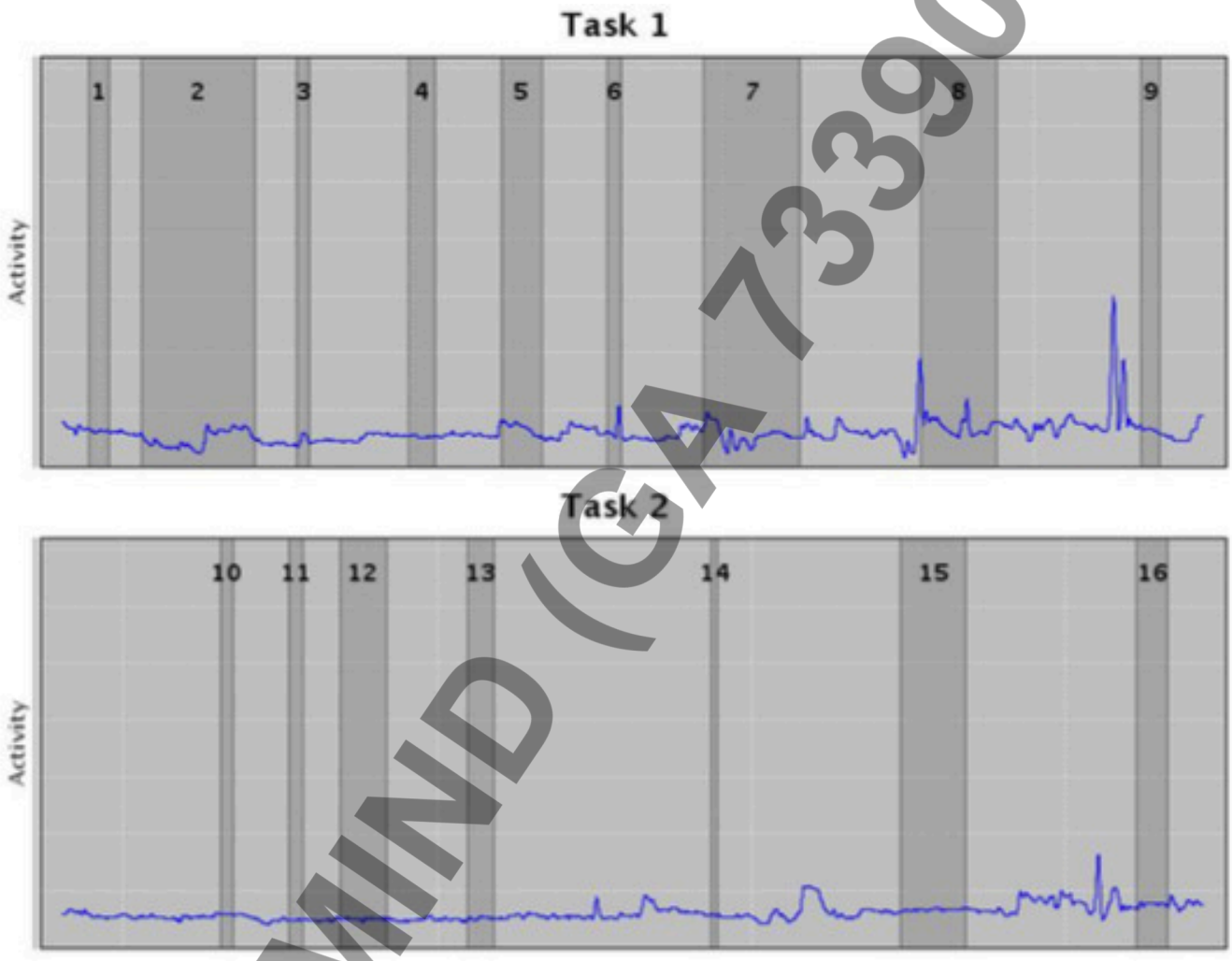
Nesplora Aula has analyzed Laura's performance in the presence and absence of distractors. The following figure and table demonstrate how much the distractors affected Laura during the test administration.



	With distractors			Without distractors		
	Raw direct scores	Percentile	T scores	Raw direct scores	Percentile	T scores
Omissions	47.0	98	74	84.0	97	71
Commissions	1.0	16	40	3.0	33	46
Mean RT-Correct answers	1102.4	93	64	1038.08	95	66
(σ) Standard deviation RT-Correct answers	407.14	73	56	341.45	48	49
Motor activity	0.54	79	58	0.61	85	60

3.1. Motor activity graphics with relation to the distractors

These graphics reflect Laura's activity as compared to distractors. Peak of activity related to the distractor means that Laura followed the distractor with his/her head, shifting attention away from the task.



Task 1 (NO-X)

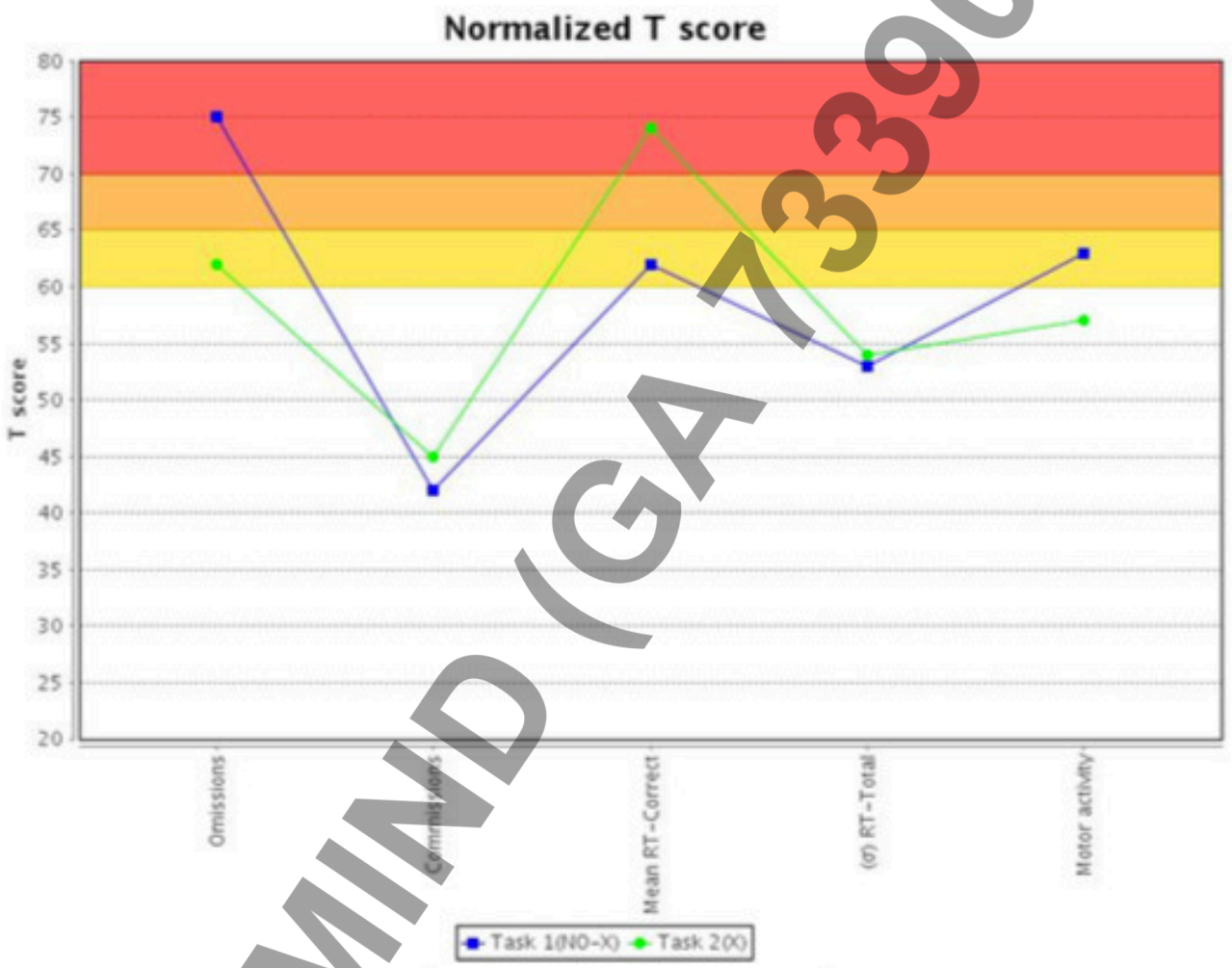
1. Paper ball
2. Teacher's walk
3. Whispering at the right
4. Teacher's ballpen drops
5. A boy passes a note
6. Someone coughs at the left
7. A boy handles a piece of paper to the teacher
8. An ambulance passes
9. The bell rings

Task 2 (X)

10. Whispering at the left
11. Someone coughs at the right
12. Step noise from the corridor
13. A kid at the left raises his hand
14. Someone is laughing
15. Somebody knocks on the door
16. A kid at the right raises his hand

4. TYPE OF EXERCISE

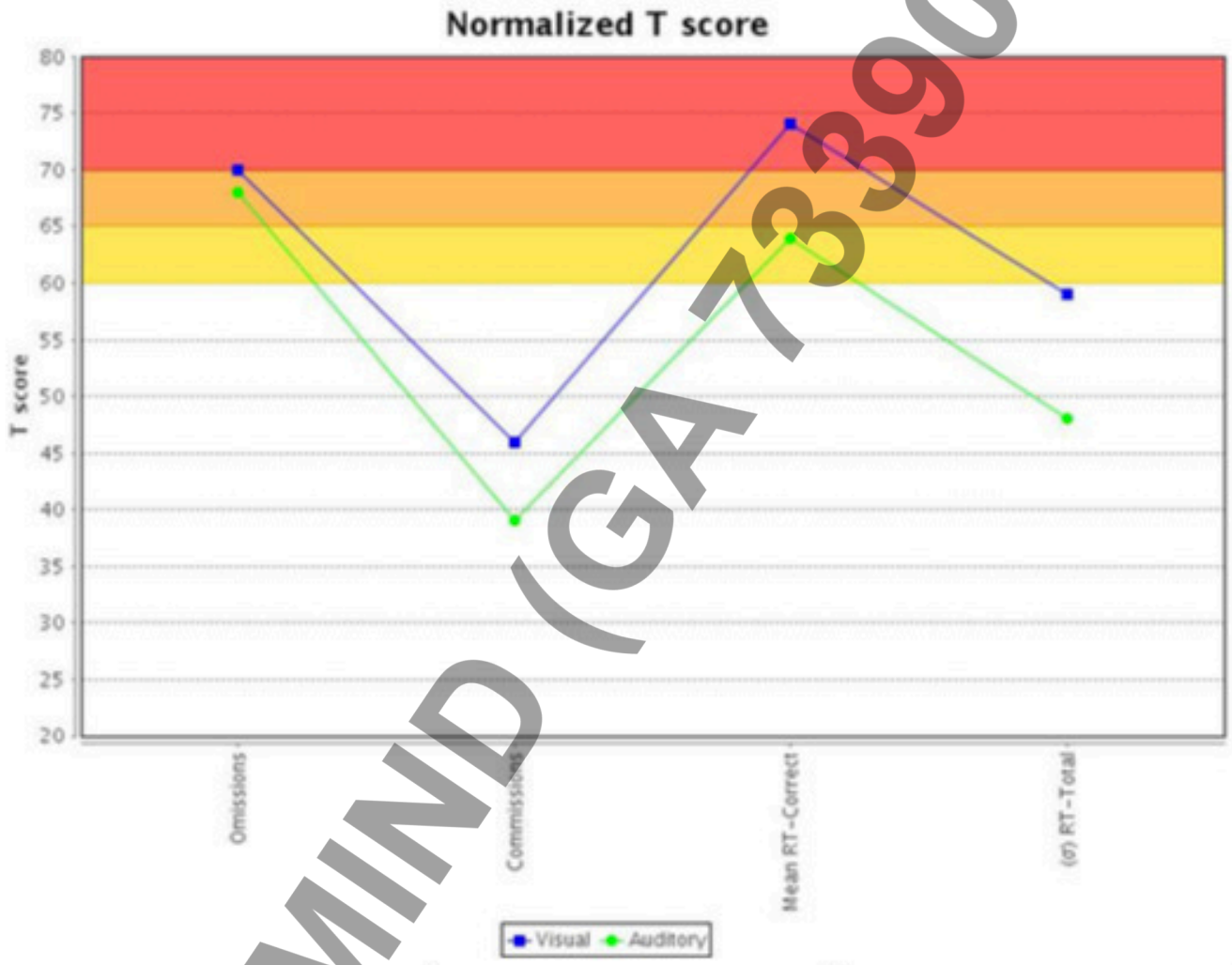
In Nesplora Aula, Laura performed two tasks. In the first task, Laura must control impulses in the face of multiple stimuli. In the second task, a monotonous presentation of stimuli is designed to challenge sustained attention and concentration. The following table and graph demonstrate Laura's performance task by task.



	Task 1 (NO-X)			Task 2 (X)		
	Raw direct scores	Percentile	T scores	Raw direct scores	Percentile	T scores
Omissions	125.0	98	75	6.0	88	62
Commissions	4.0	22	42	0.0	31	45
Mean RT-Correct answers	989.53	89	62	1090.27	98	74
(σ) Standard deviation RT-Correct answers	386.48	61	53	330.73	66	54
Motor activity	0.66	91	63	0.49	75	57

5. AUDITORY AND VISUAL SENSORY CHANNELS

Laura must respond to auditory and visual stimuli during the Nesplora Aula tasks. The differences between auditory and visual processing is compared below in graph and tabular form.

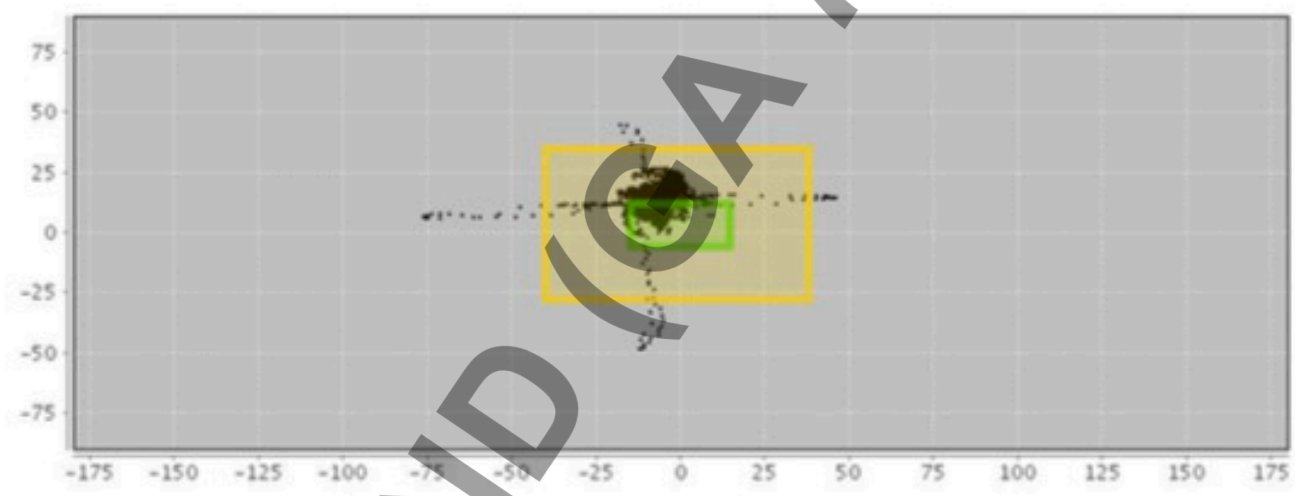


	Visual			Auditory		
	Raw direct scores	Percentile	T scores	Raw direct scores	Percentile	T scores
Omissions	64.0	97	70	67.0	96	68
Commissions	4.0	33	46	0.0	13	39
Mean RT-Correct answers	903.21	98	74	1265.8	93	64
(σ) Standard deviation RT-Correct answers	311.62	81	59	305.39	42	48

6. MOTOR ACTIVITY

The graphics below demonstrate Laura's head movement throughout the test. The yellow framework represents the zone in which the virtual blackboard can be seen. Movement out of that zone makes it impossible for the child to correctly perform the visual task. The dot diagram below provides a visual image of Laura's attention to the blackboard and to the general task. If Laura has looked to the blackboard's zone and has not performed the task correctly, internal distractors should be considered (see Quality of Attention).

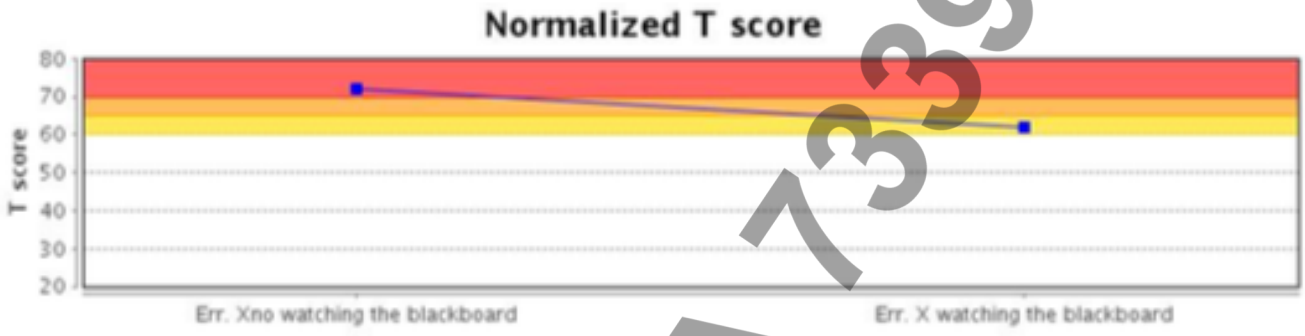
	Raw direct	Percentile	T scores
Total motor activity	0.57	81	59



The index of motor activity can reflect many phenomena, including: a tendency to become distracted by external stimuli (see distractor graphic), motor activity with no relation to distractors or in the case of low a activity but poor task performance or possible internal distractors (see quality of attention graphic).

7. ATTENTION FOCUS QUALITY

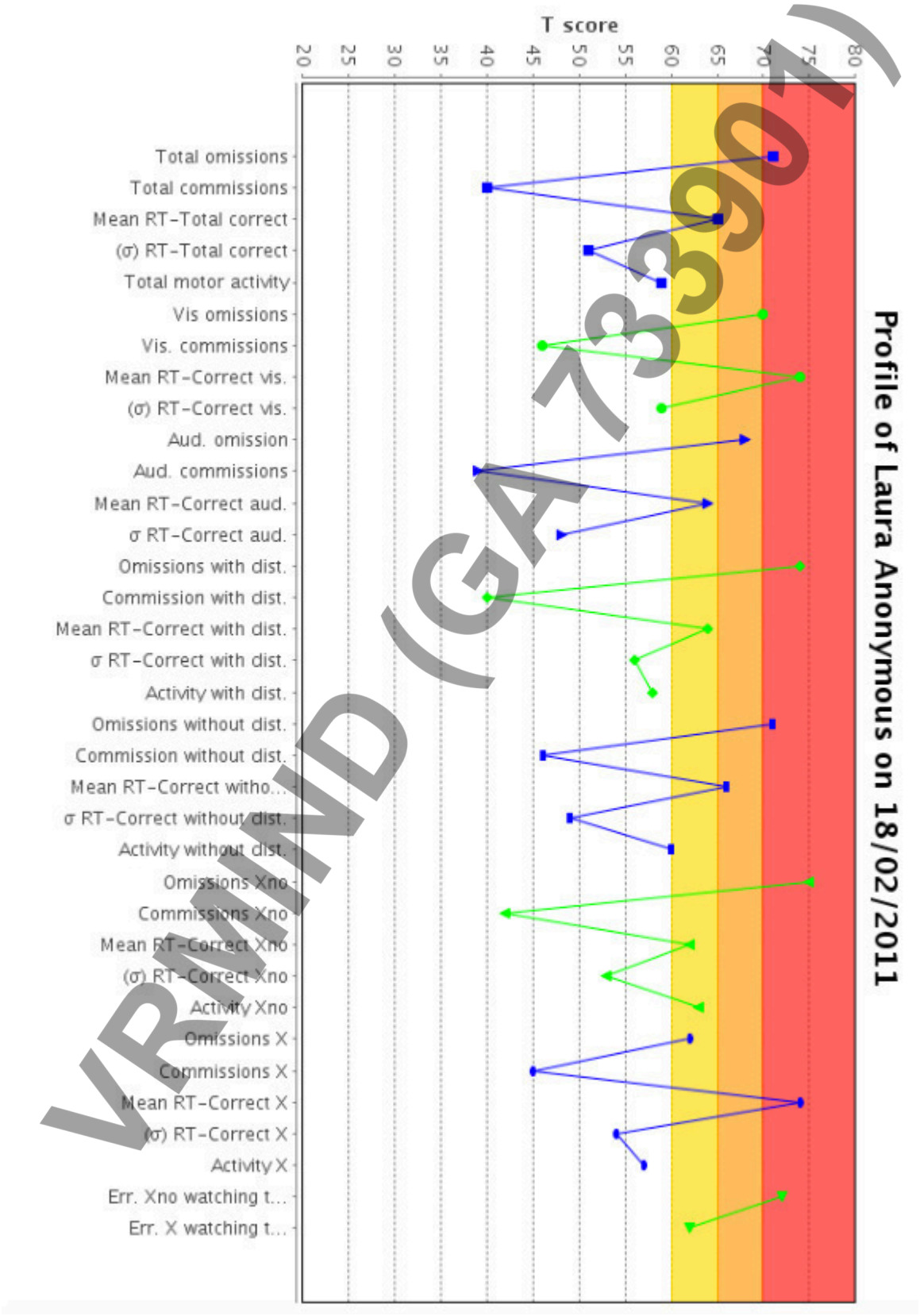
This measure unique to the AULA tasks, provides an observation of the child's attention when they are focused on the blackboard. These data compliment data from motor activity, providing input whether Laura's performance varies depending on either internal or external stimuli.



	Raw	Percentile	T scores
Total errors in TASK 1 (X-NO) watching the blackboard	63.0	98	72
Total errors in TASK 2 (X) watching the blackboard	5.0	88	62

At 03 17 2014

Doctor Example



ANNEX VII- NESPLORA AQUARIUM EXAMPLE REPORT

nesplora aquarium

NAME AND SURNAME: Markel Anónimo

GENDER: Male

AGE: 19 años

CARRYING OUT THE TEST: 02/08/2017

NESPLORA CLINIC LAB

Paseo Mikeletegi nº58, Donostia-San Sebastián

NAME AND SURNAME:	Markel Anónimo
GENDER:	Male
BIRTH DAY:	25/04/2000
AGE:	19 years
CARRYING OUT THE TEST:	02/08/2017
TEST DURATION:	0:17:45
NORM:	Male 16-41 years

PREVIOUS NOTES:

Difficulty falling asleep. Low academic performance. Regular consumption of marijuana since 17 years.

LATER NOTES:

During the task, seems to lose the tread by not pressing and then resume it several times.

Markel Anónimo

02/08/2017

1. NESPLORA AQUARIUM ASSESSMENT REPORT

1.1 MAIN DESCRIPTION

Nesplora Aquarium is a Continuous Performance Test (CPT) performed in a Virtual environment through a system composed by goggles with motor sensors, headphones and a button to answer in the task. This test is designed to assess attentional processes and help in the diagnose of cognitive disorders.

The virtual environment presented in the goggles is similar to the room of an aquarium and the subject is placed at the center of this room. The software updates the perspective depending on the head movements, providing the feeling of being into the virtual environment.

Between the two rocks of the main fish tank and through the headphones different visual and auditory stimuli are presented. The subject should press the button or not depending on the instruction.

The test is composed by 3 assessment exercises:

· **Task 1: AX paradigm.** The button should be pressed with certain visual and auditory stimuli if it is preceded by certain auditory or visual stimuli.

· **Task 2: Xno dual paradigm.** The button should be pressed with all visual and auditory stimuli except for a certain visual stimuli and certain auditory stimuli (different from the visual).

· **Task 3: Xno dual paradigm.** The button should be pressed with all visual and auditory stimuli except for a certain visual stimuli and certain auditory stimuli (different from the visual). The stimulus that shouldn't be pressed are reversed with respect to the previous task.

Data is shown in graphics and boards with text that explains the T scores obtained related to the performance:

Poor performance

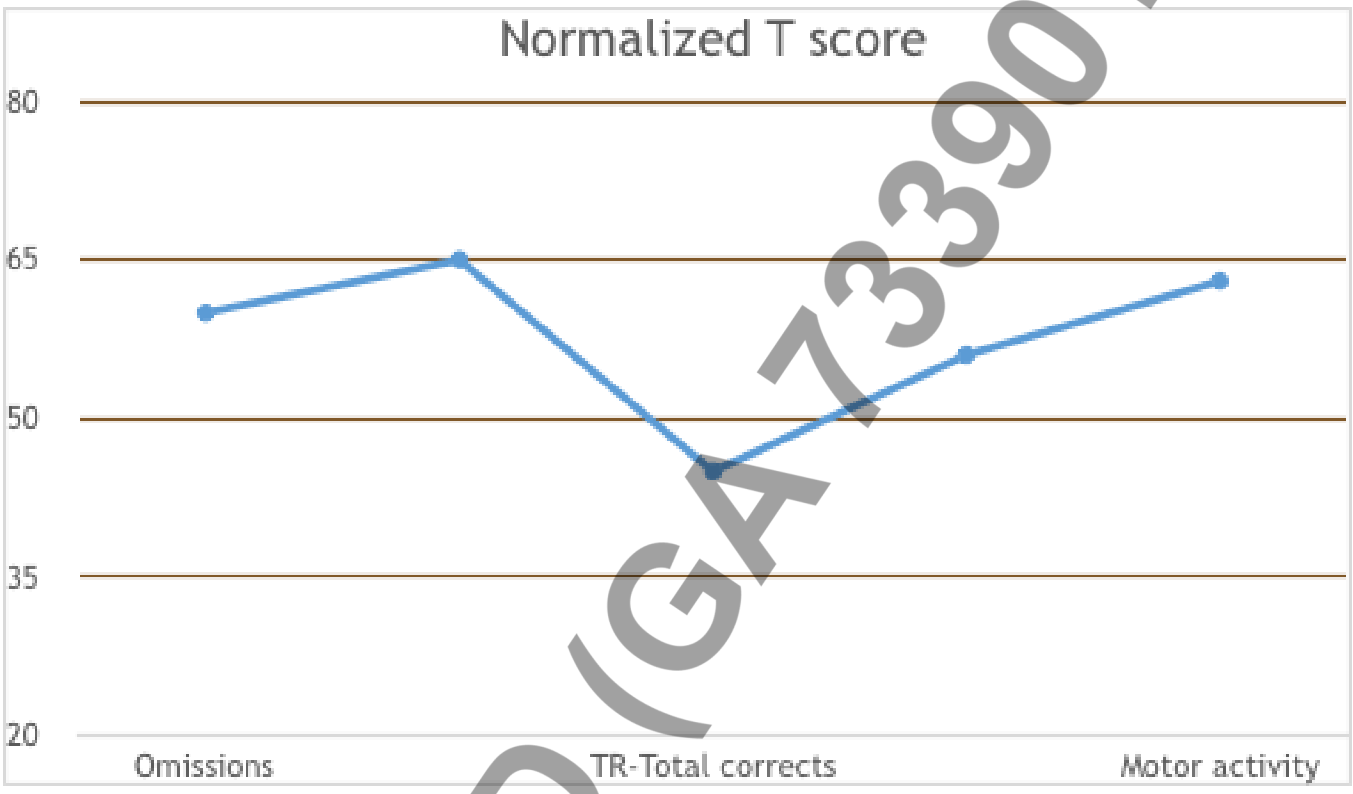
Below average performance

Average performance

Good performance

Very good performace

2. MAIN INDICES



	Raw	Percentile	T score	Performance
Omissions	55	85	60	Poor performance
Commissions	44	93	65	Poor performance
RT-Total correct	846,32	30	45	Average
dRT-Total correct	308,62	73	56	Average
Motor activity	0,61	90	63	Poor performance

2.1 DESCRIPTION OF INDICES

Omission errors: They occur when Markel Anónimo must press the button to the target stimulus but omits to do so. This variable is considered a measure of alert level (arousal) and selective attention to target stimuli. XXXX obtained a poor performance in this index.

Commission errors: They occur when Markel Anónimo does not have to press to the presented stimulus, but presses it. This variable is considered a measure of impulsivity or inhibitory control. XXXX obtained a poor performance in this variable.

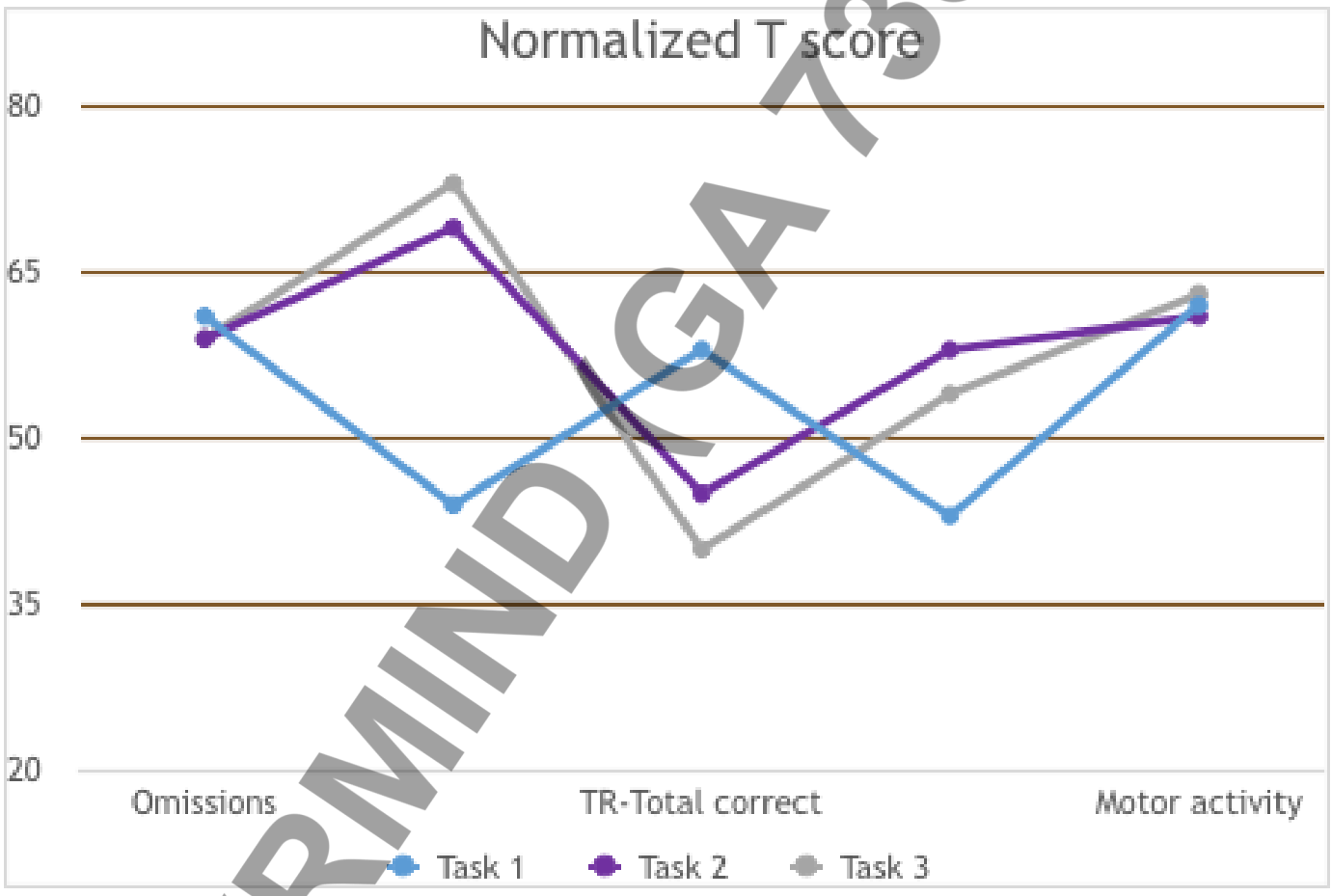
Mean RT (Response time)-total correct answers: It indicates the average time from the moment the stimulus appears until the button is pressed in correct answers. This measure shows the speed in which the stimulus is processed before giving and answer. Markel Anónimo obtained an average performance in this variable.

Standard deviation of RT over Total Correct Answers: It Indicates the variability of RT in the correct answers during the test. It is considered a measure of answer consistency, and it can be a sign of fatigue or a decrease in vigilance during the test.

Motor activity: Through the sensor in the glasses, head movements during the test are analysed to determine if they are excessive in relation to the normative population. Markel Anónimo obtained poor performance in this variable.

3. PERFORMANCE ACCORDING TO THE TASK

Markel Anónimo performed 3 tasks: a first task with a low answer rate for attention assessment, and two with a high answer rate for attention processes, working memory and flexibility. In the following tables the scores of variables related to Markel Anónimo attention processes are shown for each task.

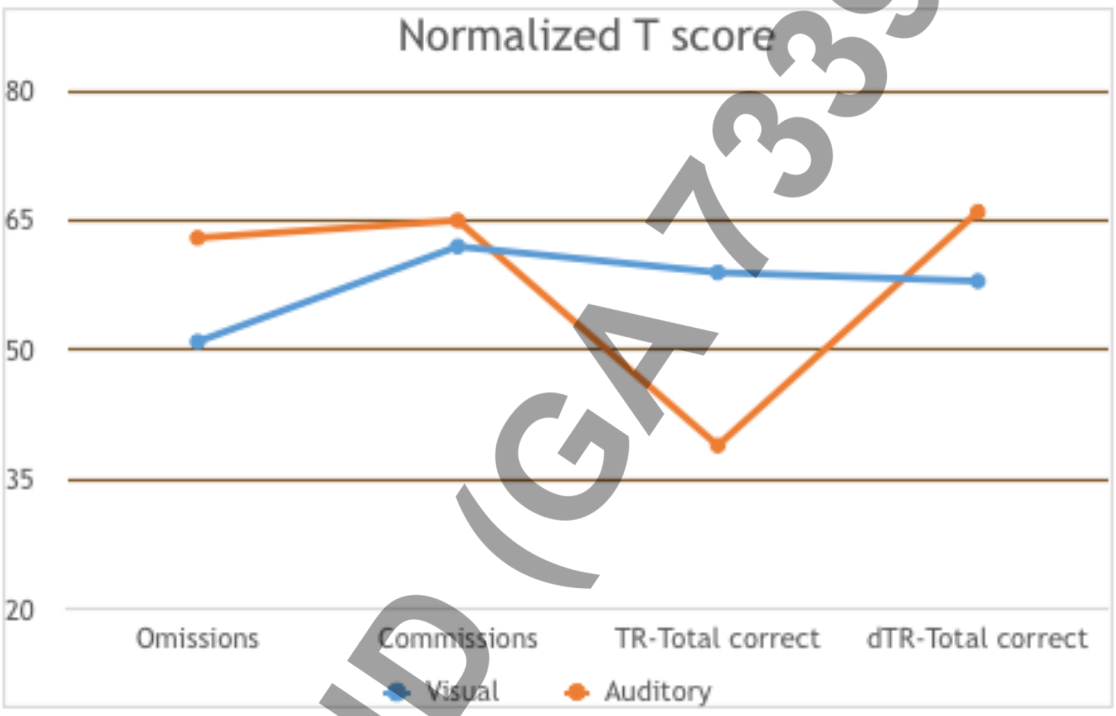


Task 1 – AX	Task 2 – Xno DUAL	Task 3 – Xno DUAL
Continuous performance task in which the button must be pressed with the target stimuli (auditory or visual clownfish) whenever it is preceded by a preparatory stimulus (auditory or visual surgeon fish).	Continuous performance task in which the button must be pressed with all the stimuli presented except 2: visual clownfish and auditory surgeon fish. A parallel retain of these 2 instructions transforms the task in a dual performance.	Continuous performance task just like the Task 2 with the only difference that target stimuli are reversed: visual surgeon fish and auditory clownfish. This change involves a challenge for the cognitive flexibility of the assessed person.

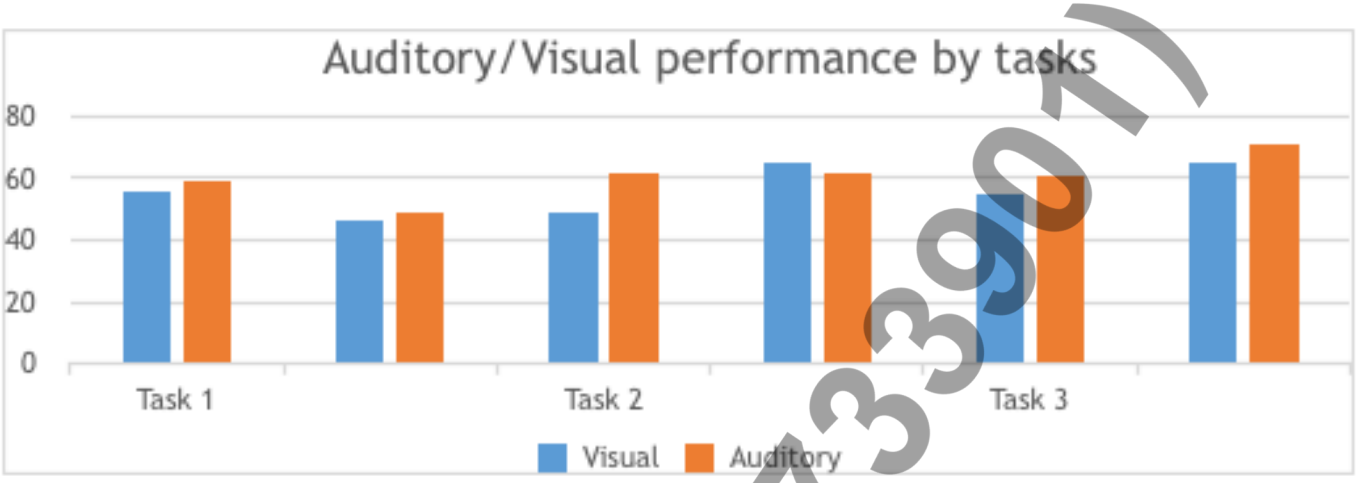
	Task 1				Task 2				Task 3			
Variables	Raw	Percentile	T score	Performance	Raw	Percentile	T score	Performance	Raw	Percentile	T score	Performance
Omissions	23	87	61	Poor performance	16	83	59	Average	16	82	59	Average
Commissions	2	26	44	Average	17	97	69	Poor performance	25	99	73	Below average performance
RT-Total correct	930,78	78	58	Average	849,77	30	45	Average	824,33	16	40	Average
dRT-Total correct	174,85	23	43	Average	314,77	79	58	Average	321,78	66	54	Average
Motor activity	0,62	89	62	Poor performance	0,29	86	61	Poor performance	0,19	91	63	Poor performance

4. PERFORMANCE ACCORDING TO SENSORY

In the tasks performed by Markel Anónimo both visual and auditory stimuli have been worked. In the following tables, the performance in different attention variables between visual and auditory stimuli are compared.



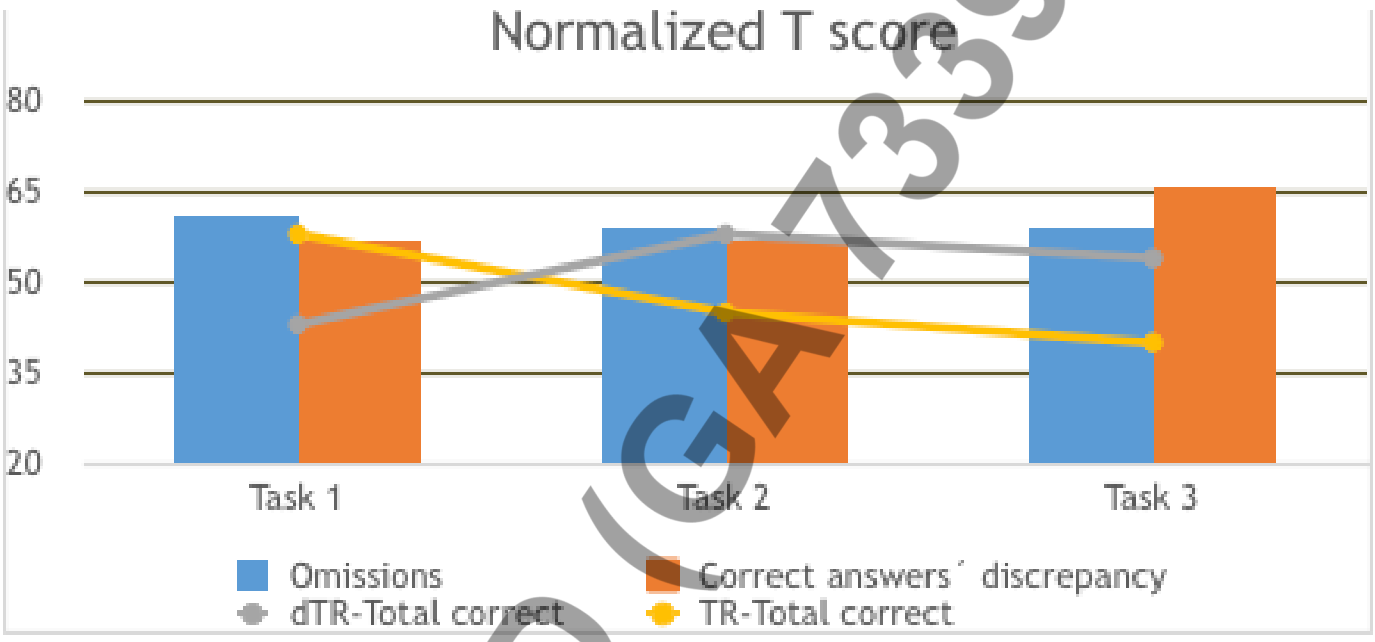
General	Visual				Auditory			
	Raw	Percentile	T score	Performance	Raw	Percentile	T score	Performance
Omissions	4	94	51	Average	51	90	63	Poor performance
Commissions	24	88	62	Poor performance	20	94	65	Poor performance
RT-Total correct	795,79	81	59	Average	929,07	11	38	Average
dRT-Total correct	227,05	79	58	Average	394,68	95	66	Poor performance



	Task 1				Task 2				Task 3			
	Visual		Auditory		Visual		Auditory		Visual		Auditory	
	T	Performance	T	Performance	T	Performance	T	Performance	T	Performance	T	Performance
Omissions	56	Average	59	Average	49	Poor performance	62	Average	55	Average	61	Poor performance
Commissions	46	Poor performance	49	Average	65	Poor performance	62	Poor performance	65	Poor performance	71	Below average performance

5. SUSTAINED ATTENTION, ALERTNESS AND ANSWER CONSISTENCY

In the following tables scores related to sustained attention, alertness and answer consistency in the task are shown.



T score	Task 1	Task 2	Task 3	General
Omissions	61	59	59	Poor performance (60)
Correct answers´ discrepancy	57	57	66	Poor performance (65)
DRT-Total correct	43	58	54	Average (56)
RT-Total correct	58	45	40	Average (45)

5.1 DESCRIPTION OF INDICES

Omission errors: They occur when Markel Anónimo must press the button to the target stimulus but omits to do so. This variable is considered a measure of alert level (arousal) and selective attention to target stimuli. Markel Anónimo obtained a poor performance in this variable.

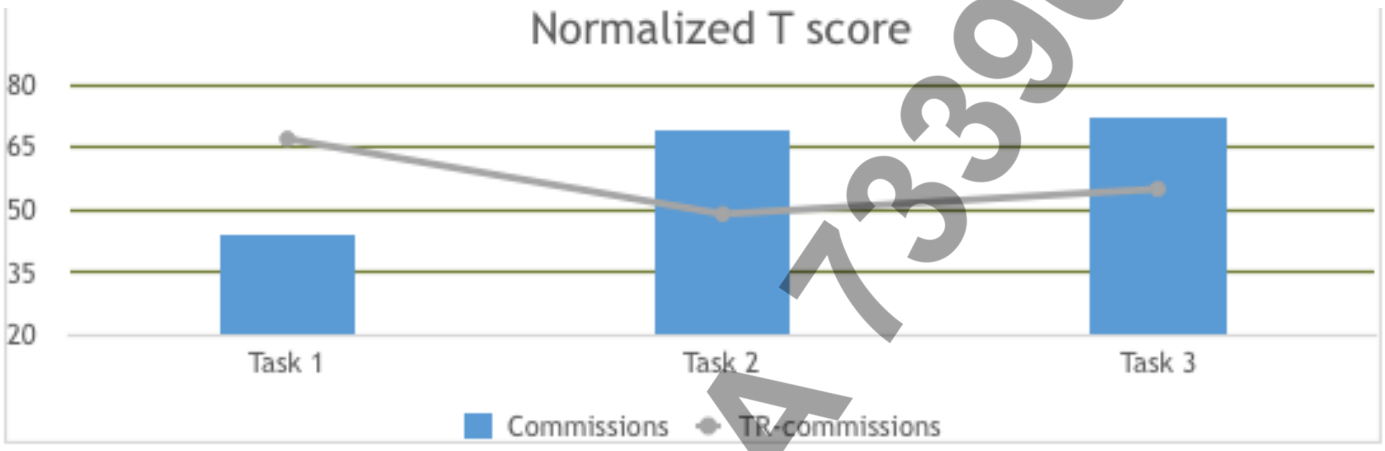
Correct answer discrepancy between blocks: This score is obtained from the comparison between the correct answers in the first half of the task and the ones obtained in the second half of the task. This measure is considered an indicator of alertness sustaining. Markel Anónimo obtained a poor performance in this variable.

Standard deviation for RT in correct answers: It indicates the variability of RT in the correct answers during the test. It is considered a measure of answer consistency, and can be a sign of fatigue o alertness decrease during the tasks. Markel Anónimo obtained an average in this variable.

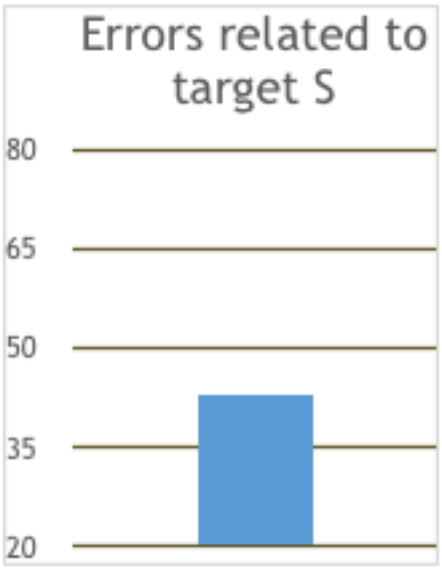
RT Mean (Reaction time)-correct answers: It indicates the average time from the moment the stimulus appears until the button in pressed in the correct clicks. This measure represents the processing speed of the stimulus before giving an answer. Markel Anónimo obtained an average performance in this variable.

6. IMPULSIVITY / INHIBITORY CONTROL

In the following tables, the responses related to the sustained attention and consistency on the answers are presented.



T score	Task 1	Task 2	Task 3	General
Commissions	44	69	72	Poor performance (65)
TR-Commissions	67	49	55	Average (51)
Err rel to target S	43			Average (43)



6.1 DESCRIPTION OF THE INDICES

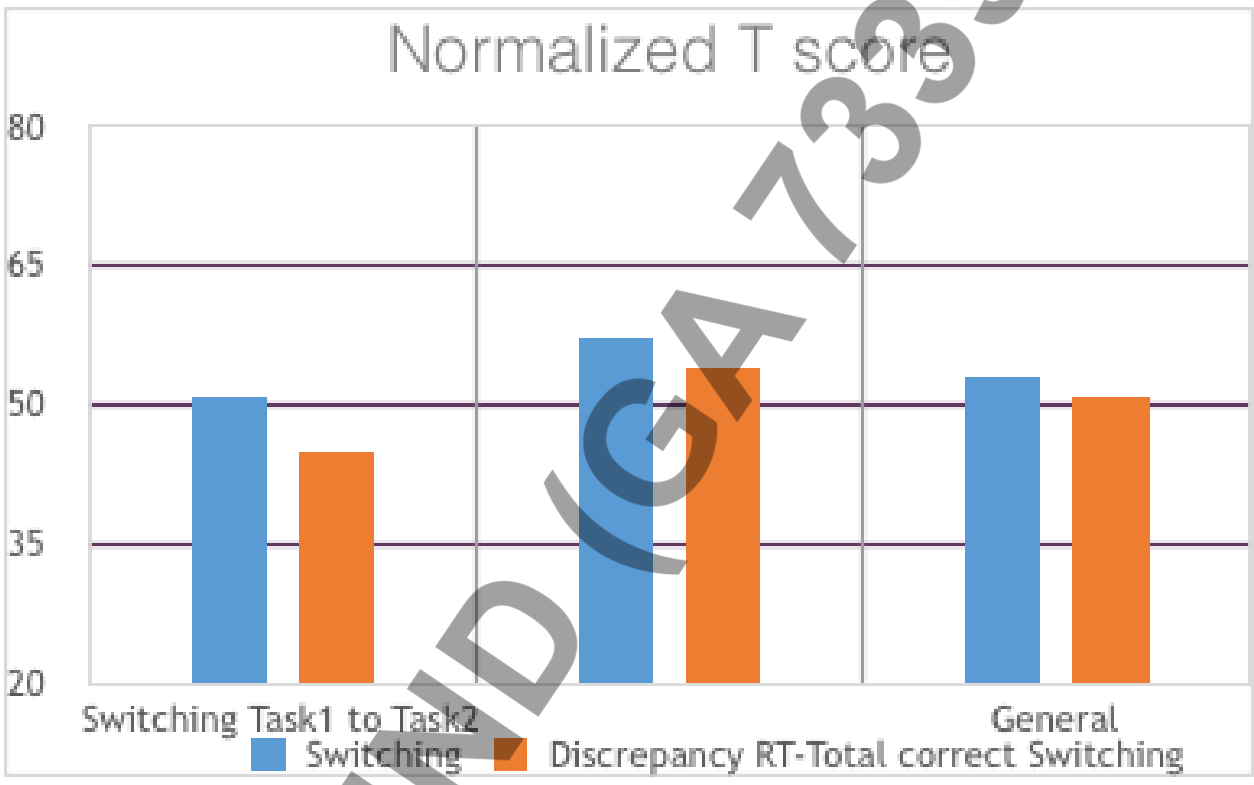
Commission errors: Commission errors occur when the target stimulus does not appear but Markel Anónimo presses the button. This variable is an indicator of impulsivity or inhibitory control. Markel Anónimo has obtained a poor performance in this variable.

Commissions related to the target stimulus: This type of commissions occur when, in the task 1 (AX), Markel Anónimo press the button with a stimulus preceded by a surgeon fish but it is not the clown fish; this is a valid description for both sensory channels. Markel Anónimo has obtained an average in this variable.

Mean RT (reaction time) - commissions: This indicates the mean time since the stimulus appear until the button is pressed in an incorrect way (commissions). A rapid reaction times represent a secondary measure of impulsivity in errors, while slow reaction times, represent a secondary measure of inattention in errors. Markel Anónimo has obtained an average in this variable.

7. SWITCHING COST

In Nesplora Aquarium 3 tasks, consecutively, are carried out. The change between tasks represents a challenge for the "switch" capacity or, change of the attentional resources. In the following graphic the indices corresponding to this capacity are presented.



Variables	Task 1 to Task 2				Task 2 to Task 3				General			
	Raw	Percentile	T score	Performance	Raw	Percentile	T score	Performance	Raw	Percentile	T score	Performance
Switching	1	53	51	Average	3	77	57	Average	2	64	53	Average
Discrepancy RT-Total correct Switching	-9070	32	45	Average	1458	66	54	Average	-3806	53	51	Average

7.1 DESCRIPTION OF THE INDICES

Switching: This index indicates the ability of Markel Anónimo to adapt to change between the tasks of the test. The score shows the difference between the correct answers in the last part of the task and the correct answers at the beginning of the next task.

Correct answers-RT switching discrepancy: This index measures the capacity of Markel Anónimo to keep the reaction time in the response after changing the task.

8. PERSEVERATION

The graphic and the table below present the index of perseverative errors of Markel Anónimo. These are that errors in the task 3 (XnoDUAL) which are related to the target stimuli of the previous task:

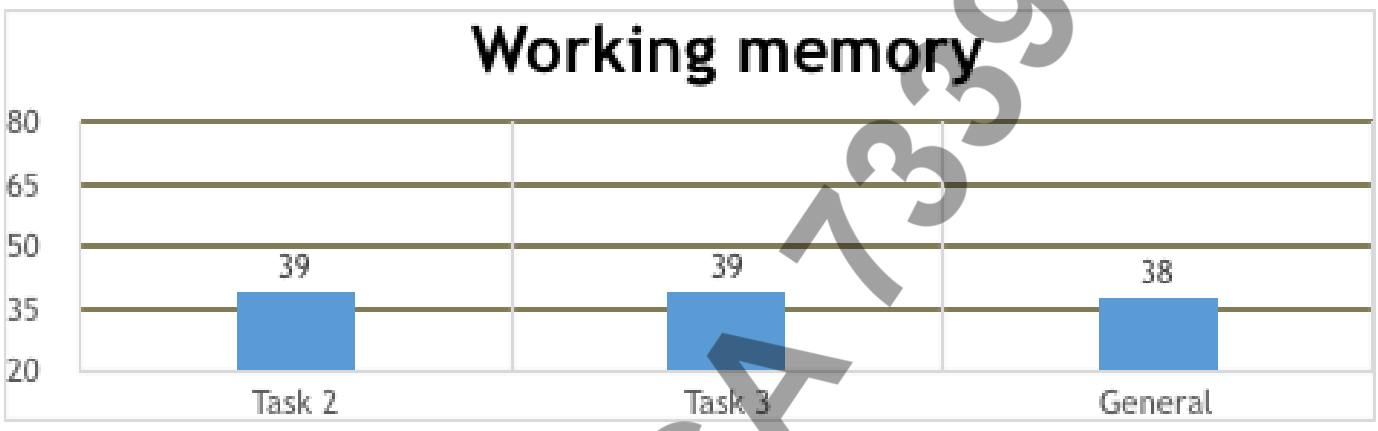
Score	Raw	Percentile	T	Performance
Perseverative errors	32	98	70	Poor performance (65)

8.1 DESCRIPTION OF THE INDICES

Perseverative errors: This type of error occur in the task 3 (XnoDUAL) when Markel Anónimo responds to the task following the instructions of the previous task, this is, when Markel Anónimo omits to press with the visual or auditory target stimuli of the task 2 or, when Markel Anónimo makes commission errors. The score in this index shows Markel Anónimo s´ cognitive flexibility, that has get a poor performance in this variable.

9. WORKING MEMORY

In Nesplora Aquarium, 2 dual tasks that involve continuous load of working memory are performed. The graphic and the table below show the index of correct answers in this task.



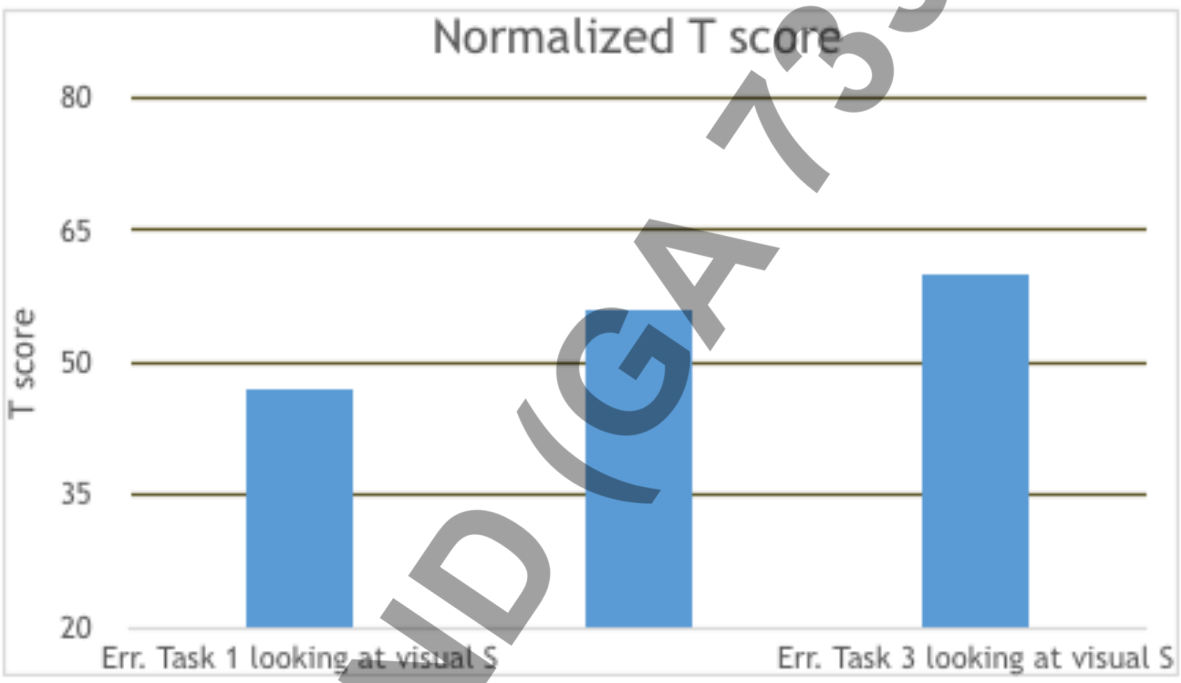
T score	Task 2	Task 3	General
Working Memory index	39	39	Poor performance (38)

9.1 DESCRIPTION OF THE INDICES

Working memory index: This is defined by the performance of Markel Anónimo on the two dual tasks. This index measures the capacity to keep the important information to carry out the task. Markel Anónimo has obtained a poor performance in this variable.

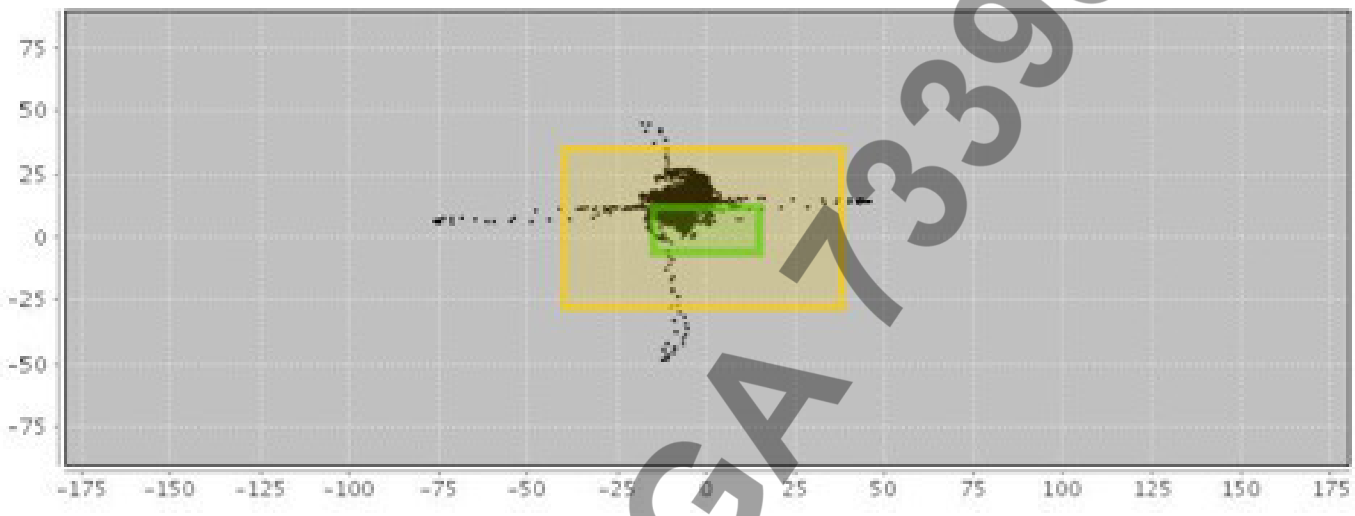
10. ATTENTION FOCUS QUALITY AND MOTOR ACTIVITY

This measure allows us to assess the performance in the task when XXX has focus the attention on the gap where the visual stimuli pass through. This way we can assess the quality of the attention focus when the look is well directed.



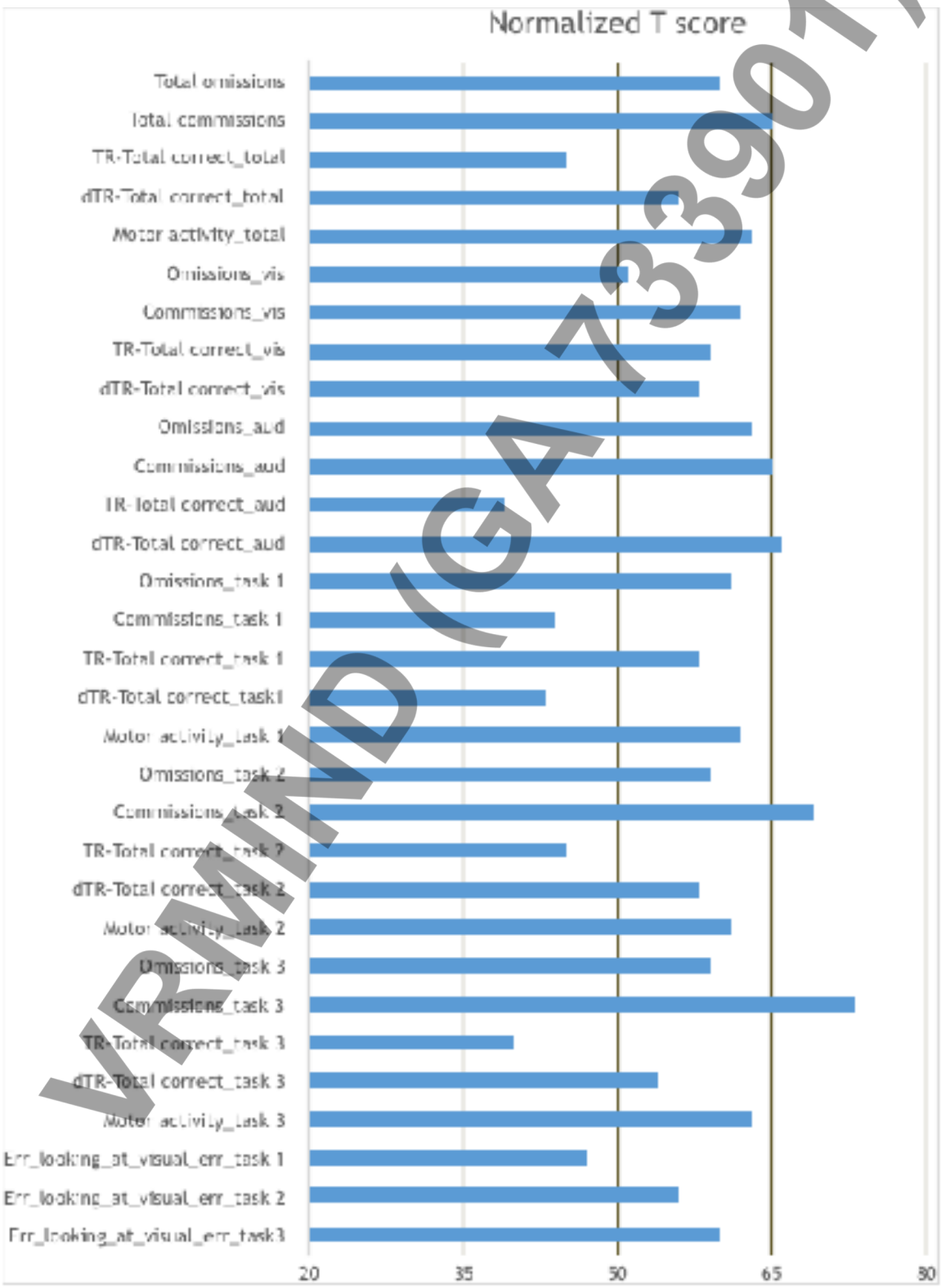
Score	Raw	Percentile	T	Performance
Total errors Task 1 looking at visual S	3	39	47	Average
Total errors Task 2 looking at visual S	9	74	56	Average
Total errors Task 3 looking at visual S	16	85	60	Poor performance

The graphic below demonstrate Markel Anónimo head movement throughout the test. The yellow framework represents the zone in which the area of the visual stimuli can be seen. Movement out of that zone makes it impossible to see the stimuli for a correctly performance in the visual task.



Score	Raw	Percentile	T	Performance
Motor activity	0,61	90	63	Poor performance

11. TABLE ABSTRACT



ANNEX VIII- NESPLORA AULA SCHOOL EXAMPLE REPORT

AXULAR LIZEOA

Arostegi, 10 - 20009 Donostia (Gipuzkoa) Tel.: 943 316 066

ASSESSMENT REPORT FOR THE ATTENTIONAL PROFILE

FULL NAME: Sandra Anonymous

GENDER: Female

CHRONOLOGICAL AGE: 7 years old

SCHOOL YEAR: 2nd

DATE OF TEST ADMINISTRATION: 11/29/2010

This report is a orientational

This project has received funding from the European Union´s Horizon 2020 research and innovation programme under grant agreement No [733901]

AXULAR LIZEOA

Arostegi, 10 - 20009 Donostia (Gipuzkoa) Tel.: 943 316 066

FULL NAME:	Sandra Anonymous
GENDER:	Female
DATE OF BIRTH:	10/06/2003
CHRONOLOGICAL AGE:	7 years-old
SCHOOL YEAR:	2nd

DATE OF TEST:	the 11/29/2010 at 10:56
TIME TO COMPLETION:	0:12:34
USED SCALE:	Female 7 years

Clinician's notes concerning history, observation and other test data:

xxxxxx

Observation notes from the Nesplora Aula administration:

xxxxxx

1. NESPLORA AULA SCHOOL ORIENTATION REPORT

1.1 INTRODUCTION

Each and every one of the students have characteristics that are theirs alone, and among these distinguishing characteristics they have their own way of learning. This is the reason why teaching methods must adapt to the diversity that exists among the students in relation with the learning process. One consequence of this is that there is no single method that is better in absolute terms, but one strategic approach may offer better results inasmuch as it adapts to the way the student learns. Any teaching method embraces many contextual processes and factors that influence the students' learning experience. Among these we must highlight the importance of attentional processes in the learning experience.

1.2 OBJETIVES

The objective of this report is to obtain the attentional profile of the students, their strengths and weak points, and to provide strategies to facilitate learning.

It is also intended to detect attentional problems at an early stage, to enable an intervention to be made which is adjusted to the needs of the students.

1.3 TEST DESCRIPTION

Nesplora Aula School is a continuous performance test (CPT) performed in a virtual reality classroom. This is accomplished by having the child wear a specially developed set of glasses containing a visual screen, headphones and movement sensors. The AULA CPT is designed to evaluate multiple aspects of attention, impulsivity, distractibility, motor activity and processing speed.

The virtual classroom is presented to the child from the perspective of a pupil's desk. The program continuously shifts the child's view of the classroom based on their head movements, providing them with the impression of actually being inside the classroom.

On the virtual blackboard and through the audio input, a series of stimuli are presented. The child responds according to instructions provided by the virtual teacher. The test consists of two tasks. In the first task, the child presses a switch anytime the stimulus on the blackboard is different from the identified target stimulus. On the second task, the child presses a switch anytime he/she hears or sees the target stimulus.

The graphs and tables in the report show the scores obtained in the test (correct answers for pressing and not pressing) and the type of execution (average response time, deviation from response time and motor activity). The child's performance is expressed as T scores, and the following table shows the interpretation of these scores.

Scores (Correct answers by pressing and not pressing)		Type of execution (Average response time, deviation from Response Time and Motor Activity)	
T Score	**Performance**	**T Score**	**Performance**
61-80	High	61-80	Average-Low/ Could be better
41-60	Average	41-60	Average
20-40	Average-Low/ Could be better	20-40	High

There are a series of psycho-educational orientations associated with the child's attentional profile included at the end of the report.

The marks that are assessed in the course are the following:

SCORES

- Correct answers by pressing: Number of times that Sandra must push the button with a stimulus and did so. This type of correct answer are considered a measure of sustained attention.

- Correct answers without pressing: Number of time that the button should not be pressed with a stimulus and was not pressed. This type of correct answer is considered as the ability to control impulses.

TYPE OF EXECUTION

- Mean Response Time over Total Correct Answers: Indicates the mean time between the appearance of the stimulus and Sandra pressing the button. It is considered a measure of processing speed.

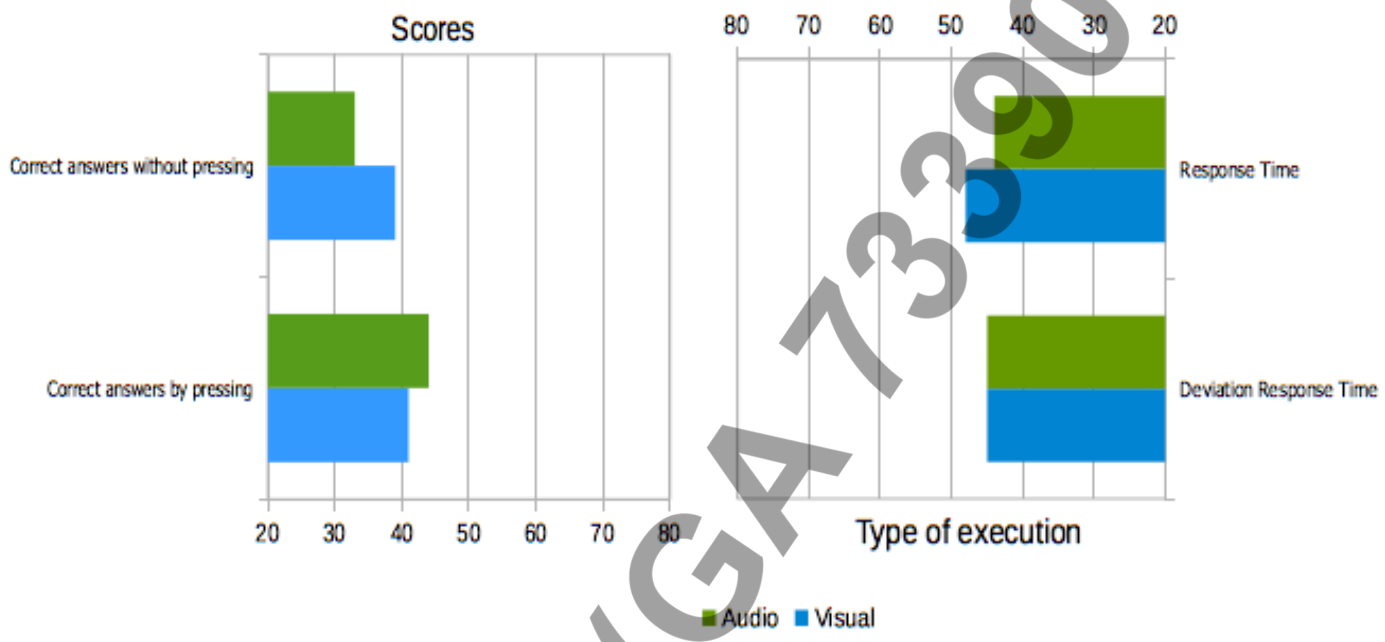
- Standard deviation from RT (Responde time) over Total Correct Answersal: Indicates whether the response time is constant throughout the test. It is considered a measure of fatigue or diminished attention.

- Motor activity: This reflects the child's head movements while completing the test.

This report contains the performance of Sandra in these markers in relation with the following

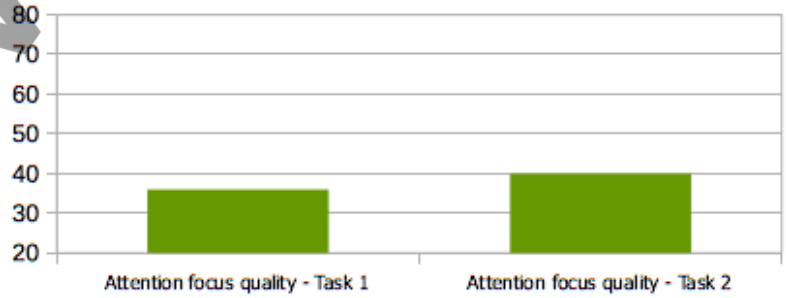
circumstances: audio and visual stimuli, without and with distractions, in tasks 1 and 2 and in general. It also presents the Quality of the Attentional Focus and Motor Activity during the test.

2. VISUAL AND AUDITORY PERFORMANCE



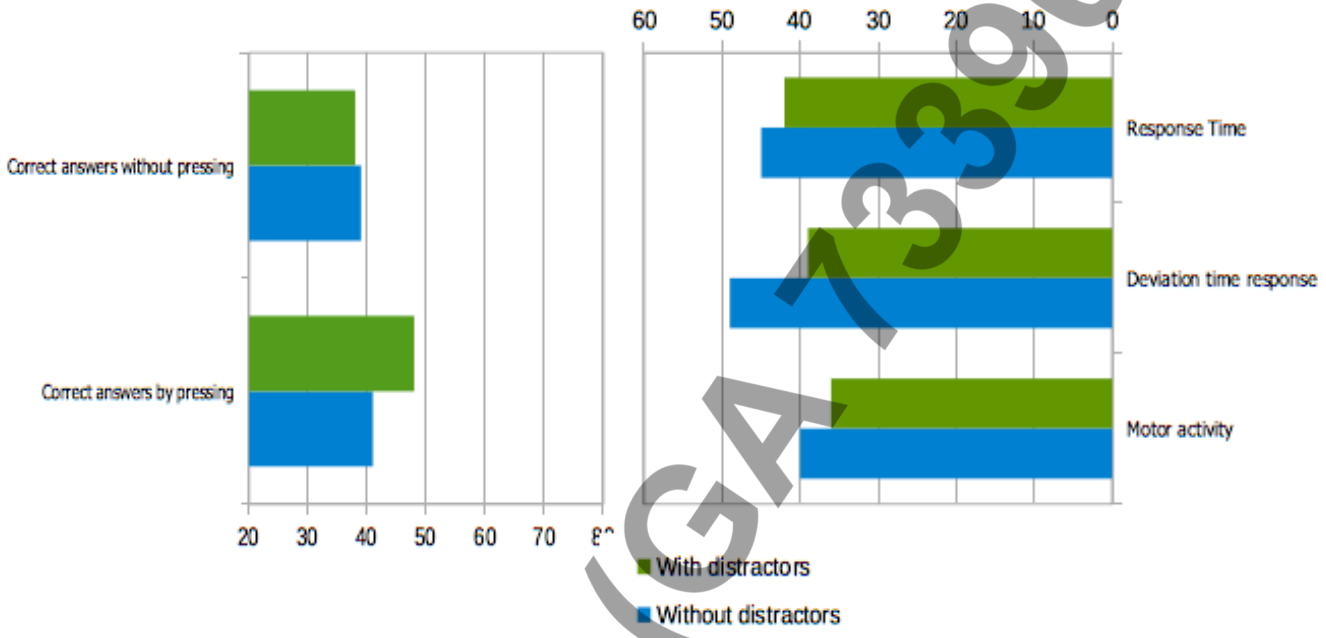
	Audio		Visual	
	Raw direct scores	T scores	Raw direct scores	T scores
Correct answers by pressing	89	41	85	44
Correct answers without pressing	88	39	85	33
Response Time	1042.36	44	780.73	48
Deviation of Time response	342.96	45	284.9	45

The following table shows the errors committed with visual stimuli while looking at the board, and enables us to assess the quality of the child's attention.



3. TASK PERFORMANCE IN PRESENCE AND ABSENCE OF DISTRACTORS

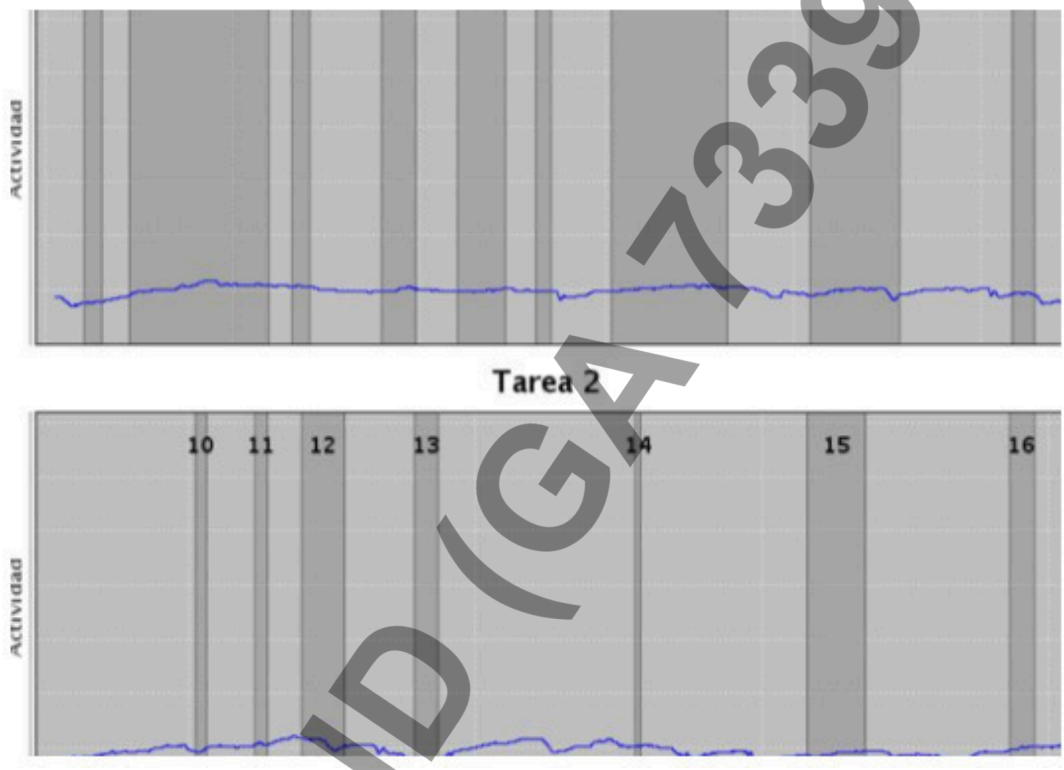
Nesplora Aula School has analyzed Sandra's performance in the presence and absence of distractors.



	Without distrators		With distrators	
	Raw direct scores	T scores	Raw direct scores	T scores
Correct answers by pressing	85	41	89	48
Correct answers without pressing	86	39	87	38
Response Time	898.48	42	924.27	45
Deviation of Time response	303.22	39	381.98	49
Motor activity	0.29	36	0.3	40

3.1 GRAPH SHOWING MOTOR ACTIVITY IN RELATION WITH DISTRACTIONS

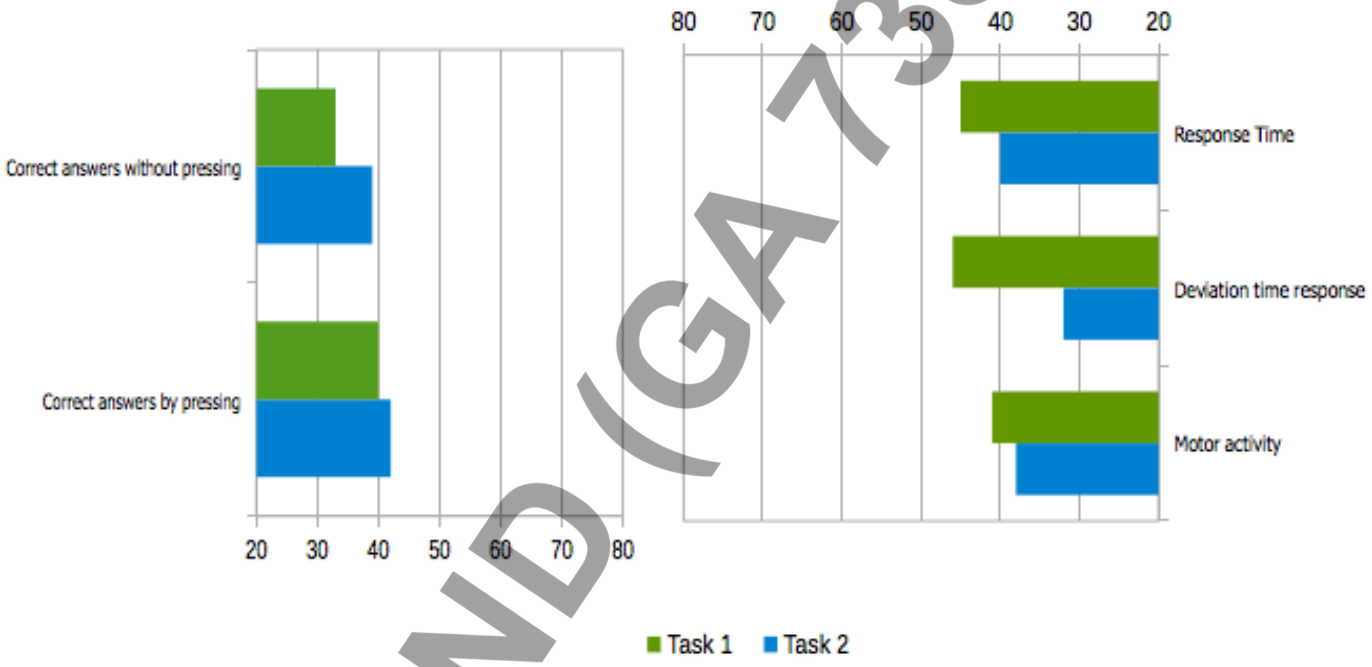
These graphics reflect Sandra's activity as compared to distractors. The activity spikes associated with distractions indicate that Sandra follows them with head movements.



Task 1 (Xno)		Task 2 (X)	
1. Paper ball	Visual	10. Whispering at the left	Audio
2. Teacher's walk	Visual	11. Someone coughs at the right	Audio
3. Whispering at the right	Audio	12. Step noise from the corridor	Audio
4. Teacher's ballpen drops	Visual	13. A kid at the left raises his hand	Visual
5. A boy passes a note	Visual	14. Someone is laughing	Audio
6.Someone coughs at the left	Audio	15. Somebody knocks on the door	Visual
7. A boy handles a piece of paper to the teacher	Visual	16. A kid at the right raises his hand	Visual
8. An ambulance passes	Visual		
9. The bell rings	Audio		

4. PERFORMANCE DEPENDING ON THE TYPE OF EXERCISE

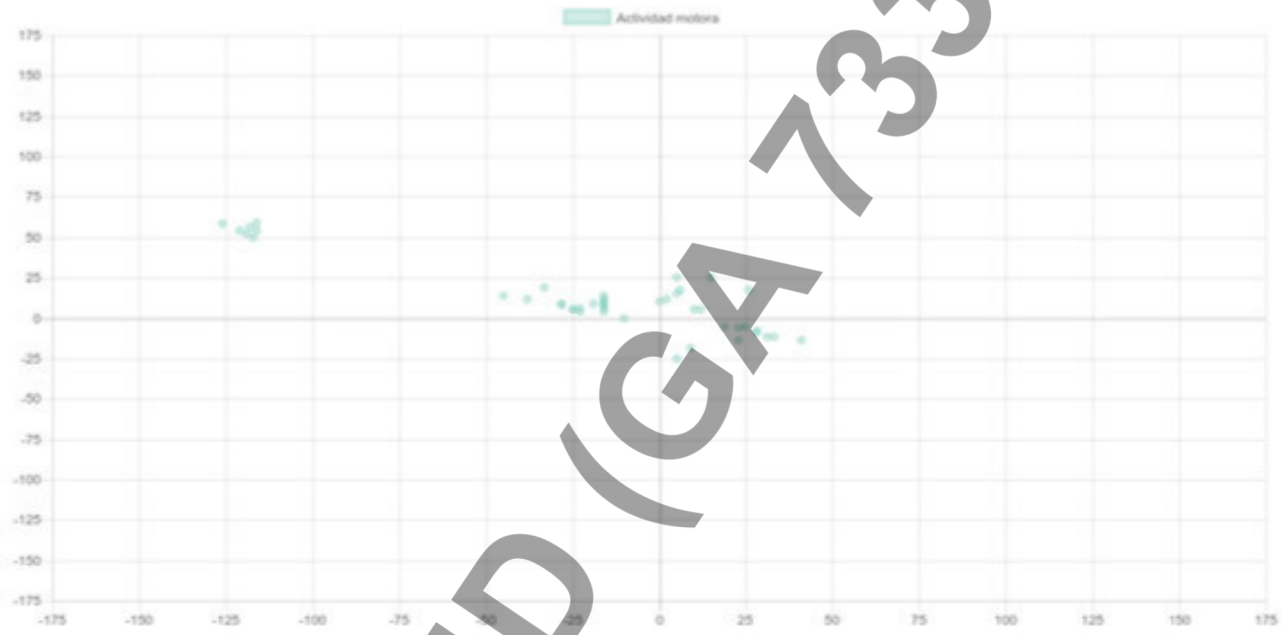
In Nesplora Aula School, Sandra has completed two tasks: the first involves responding to a wide range of stimuli and enables us to observe the capacity for impulse control. The second is a slow, monotonous task that enables us to assess attention and concentration.



	Task 1		Task 2	
	Raw direct scores	T scores	Raw direct scores	T scores
Correct answers by pressing	139	42	35	40
Correct answers without pressing	31	39	142	33
Response Time	902.4	45	940.37	40
Deviation of Time response	364.33	46	223.35	32
Motor activity	0.28	41	0.27	38

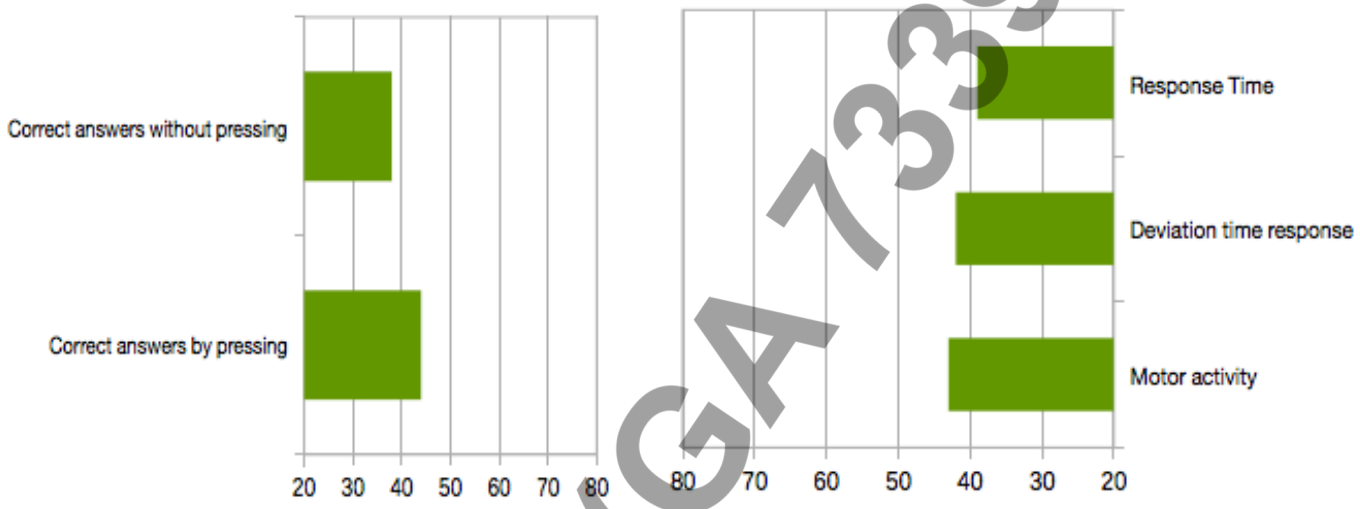
5. MOTOR ACTIVITY

The graphics below demonstrate Sandra's head movement throughout the test. The yellow framework represents the zone in which the virtual blackboard can be seen



6. GENERAL INDICATIONS

This graph shows general scores obtained by Sandra throughout the test. These scores are general and are guidelines, to obtain a more detailed profile of Sandra, an analysis of the previous scores is recommended.



	Raw direct scores	T scores
Correct answers by pressing	174	44
Correct answers without pressing	173	38
Response Time	910.04	43
Deviation of Time response	341.03	42
Motor activity	0.28	39

ATTENTIONAL PROFILE OF Sandra

Below is the attentional pro5le of Sandra in relation with the scores obtained in the Nesplora Aula School test:

The Nesplora Aula School scores indicate that Sandra has average performance in attentional tasks, and correct answers with pressing indicate an average performance in **sustained attention.**

Correct answers without pressing indicate that Sandra has an average/normal capacity for c**ontrolling impulses.**

The r**esponse time** of Sandra during the test is acceptable, and stays constant.

As regards motor activity, excessive movement was not detected during the task.

The results obtained with and without distractions indicate that Sandra obtains similar performance in both conditions, so we can see no influence of external stimulation on the results.

The results obtained in the two Nesplora Aula School tasks indicate in terms of attentional level, Sandra maintains a good level of sustained attention in both tasks, which indicates good capacity to pay attention in both stimulating and monotonous tasks.

In relation with impulse control, the Nesplora Aula School results in both tasks indicate that Sandra has good impulse control in both tasks, which would indicate good capacity to restrain incorrect answers regardless of the demands of the task.

In relation with the sensory channel, the Nesplora Aula School scores show similar performance with both visual and audio stimuli.

In relation with the quality of attentional focus, few of the visual errors committed by Sandra were while looking at the board, which may indicate that errors are committed by insu;cient control of the attentional focus, and focusing on other stimuli, such as the distractions.

ORIENTATIONS

In general, the Nesplora Aula School scores indicate good performance in the attentional tasks, which indicates good capacity of concentration and, this will be the basis for recommending the use oF certain strategies to encourage/maintain this skill:

· Establish tasks that challenge the students
· Introduce metacognition scales to raise awareness of what happens when they learn. Make them aware of their skills so they learn to use them well.[1]
· Evaluatethee ortmadebythestudents.
· Pay attention to other dificulties that can arise in the learning process.
· Reach learning agreements in which the students choose the contents to study in depth, the deadlines, the order…. to encourage their autonomy
· Encourage group work, so that students who do not have di;culties can help their classmates.

On the other hand, the results of Nesplora Aula School show that Sandra does not have excessive motor activity in comparison with his/her peer group, so we can apply strategies to maintain and encourage a suitable level of activity:

· Encourage moderate physical activity for at least 60 minutes per day (Physical activity need not be sport, it could be games or ordinary activities carried out at break time, group games, etc.).
· Avoid sedentary behaviour. Any type of daily activity is better than remaining seated.
· Take advantage of everyday movements to engage in physical activity: walking, cycling, walking up stairs instead of using transport, lifts and escalators.
· Doleisureactivitiesintheopenair.
· Encouragegroupphysicalactivities.

1 Metacognitive infogram on attention (Marina and Pellicer, 2015):
Can you focus on a set point when you want to?
Is it easy for you to concentrate on something when you want to?
Can you distinguish important things from things you don't need to remember? Do you remember what you have to do, even after a long time has passed?
Do you isolate yourself to prevent the things around you from bothering you? If you start to daydream, can you correct yourself and continue working?
Are you alert and able to quickly grasp everything that is going on?

The Nesplora Aula School scores show that Sandra processes audio and visual stimuli similarly, so that both types of learning strategies can be efective:

· Using visual reference material in oral explanations.
· Summarize teaching materials with visual strategies such as: conceptual maps, tables, diagrams etc.
· Supplement learning with audio-visual material: 5lms, digital applications, etc.
· Usegamesthatdevelopvisually:wordsoups,crosswords,etc.
· Give spoken explanations for written and visual material.
· Read written content aloud.
· Recordthecontentandreplaythemforlearning.
· Explain the content to another person.

It is also noted that distractions do not have a clear e ect on the completion of the task by Sandra, so we recommend assessing which surroundings are most favourable for carrying out tasks: quiet areas without stimulation or distractions or places with some kind of stimulation.