



PILOT STUDY SUMMARY:



# REvibe™ in the Real World

Researching the use of wearable technology to improve on-task behavior in the classroom.

## The Story Behind REvibe™

RE-vibe™ was invented by school psychologist Rich Brancaccio as a direct response to address the ever growing needs of his students, many of whom struggled with focus and on-task behavior. During his time working for the public school system, he specialized in autism spectrum disorders, having served on several school district autism evaluation teams. After evaluating over a thousand students with various developmental needs, many of which centered around focus and attention, Rich decided it was time to create something that was purpose-built to support the needs of these unique learners, and RE-vibe was born.

It is often cited that one out of ten children struggle with on-task behavior, though Mr. Brancaccio noted even higher numbers in his home state of North Carolina. When he looked to see what kind of solutions were currently on the market to help with this problem, the reminder devices he found included non-essential functions that would serve as additional distractions. The reminder signals they gave off were loud, and would thus distract other people. They were also difficult to program, and tended to wear-off after only a few days of use, because students would 'habituate', or get used to their repetitive vibrations.

During a time when wearable devices were just beginning to rise in popularity, Rich began to imagine a smarter way to use wearable tech to help students who struggled to stay on task. By incorporating core principles of psychology and conducting research to build an algorithm that allowed RE-vibe to easily meet the needs of various users, he created a prototype of the wristband that would eventually become the RE-vibe.

It featured a simple, distraction-free design that vibrated so quietly only the wearer noticed. It was also simple and intuitive so that parents and teachers could easily operate and customize it, and was also designed with classroom compatibility as a key priority. It could therefore be an effective tool in classrooms, where teachers often have to personally remind students to get back on task. Such interactions can often embarrass students, and do not foster independence and confidence.



RE-vibe pictured here with optional Buckle Band.

## Introduction to Study

A pilot study was conducted during the Fall of 2015 to help refine the software algorithms and to provide data on user feedback and changes in on-task behavior with RE-vibe. The study spanned the course of 3 months. The study was coordinated and paid for through grant funding awarded to FokusLabs, Inc. Data was collected by third party research assistants (Ph.D students from School Psychology programs at the University of North Carolina at Chapel Hill and North Carolina State University, as well as by practicing psychologists) and sent directly to a third party contract research organization (BioTechnology Transfer, LLC) for scoring and analysis. The study was cleared by the Heartland Institutional Review Board, an independent, third party board that operates in accordance with human subject research standards established by the National Institute of Health (NIH).

This is a summary of the pilot study report, which was prepared by Dr. Cynthia Pritchard, CEO of BioTechnology Transfer. Dr. Pritchard has over 30 years in the medical industry, and has helped bring more than 30 products from research into development through clinical trials and manufacturing to market launch. Dr. Pritchard obtained a PhD in virology at Virginia Tech, and postdoctoral training in molecular biology in the Department of Biological Chemistry at Harvard Medical School.

## Objectives:

The study was conducted in order to answer the following questions:

- What are the changes in the on-task behaviors when using the RE-vibe during this study?
- To what extent, if any, will habituation occur? (Habituation is the tendency to get used to a stimulus over time, which diminishes or negates its effect.)
- Will the students experience any adverse effects (such as increased distraction, annoyance to the wearer or their classmates, skin irritation, etc.)?

## What is RE-vibe™?

RE-vibe is a vibration reminder wristband designed by a school psychologist to help students maintain self-awareness so they may redirect themselves when they drift off-task.

The overall goal of the RE-vibe is to empower children with a quiet vibration reminder to get back to work so they do not have to rely on teachers or parents for prompts.



Much of the research on reminder devices demonstrates the use of auditory cues or vibration prompts that can be loud and attract unwanted attention to the student. The RE-vibe™ was designed to be unobtrusive, to decrease any distraction or stigma possibly created by alternate cueing strategies, and to deliver a tactile prompt (i.e. a quiet vibration), rather than a sound. A proprietary algorithm varies certain variables in an attempt to mitigate habituation that can be experienced when wearing something for extended periods of time. Students are initially instructed by a parent or teacher with the following phrase:

**“When you feel this vibrate, ask yourself if you are doing what you should be doing; if you are, nice job, keep up the good work! If not, make sure to return to your work or studies.”**

### **About the Participants:**

There were 21 children (17 boys and 4 girls) who participated, in grades 3-8. About forty percent of the students had previously been diagnosed with a disorder that impacted their on-task behavior, such as ADHD or Autism Spectrum Disorder.

### **The Setting:**

The study was conducted at two sites: charter elementary and charter middle school in North Carolina. Students were observed in a 1:1 fashion in their normal classroom settings.

A real world classroom provided a much more realistic setting, with typical distractions occurring at random, than a traditionally controlled laboratory setting. Students were only monitored while participating in Core Classes (e.g., Math, English, Science, and Social Studies). To reduce variables, each student was observed in only one classroom, at the same time of day, by the same observer.



## How The Data Was Collected

A doctoral psychology student or practicing psychologist quietly observed each child every thirty seconds using specialized behavioral tracking software to note how often each child was 'On-task' (i.e., engaged in expected classroom behaviors, such as listening to a lesson or completing work) and 'Off-task' (i.e., looking about the classroom, staring at the floor, daydreaming, etc.). Observations were recorded every 30 seconds and strict scoring criteria were utilized to define both on and off-task behaviors for raters. Data was collected by the observer for 30 minutes at each session.

The study was designed to include two to four random follow-up observations in the weeks after, to determine how long the effect of wearing a device (increase in 'on-task' behavior, if any) lasts.

## Establishing A Baseline

The students were evaluated at the beginning of the study to establish a baseline for their on-task behavior. Nine of the 21 students displayed on-task behavior the majority (more than 90%) of the time. Students that had on-task behavior of at least 90% were excluded from most of the analyses since their level of on-task behavior was already deemed as proficient and therefore no difference would be observed between baseline and subsequent levels of on-task behavior. While excluded scores were not counted in overall results, it was noted that use of the RE-vibe even for children who did not need it did not produce any significant negative or deleterious effects in on-task behavior (i.e. it did not appear to distract them or reduce their on-task behavior).

After excluding some participants who did not meet the off-task criteria, twelve evaluable test subjects who had demonstrated difficulty staying on task during the initial baseline remained. Half of these twelve had, prior to the study, been diagnosed with ADHD or Autism Spectrum Disorder.

## What The Participants Had to Say About RE-vibe™

Several months after the observations were completed, teachers, parents and students were all asked to give feedback about their experience. All participants were surveyed by an unknown 'neutral' adult (i.e. they did not know if the rater worked for the manufacturer, a school or another source) about their experience using RE-vibe™.

### Children

- 89% of children said they noticed a positive difference in time they spent on-task while wearing RE-vibe™.
- 77% of children said they felt the change had lasted throughout the whole 3-month study.
- 85% of children would recommend RE-vibe™ to other kids.



[Click to hear his story about using RE-vibe.](#)

*"I love RE-vibe because it reminds me to get back to work when I daydream. I've always got C's and D's on my progress reports but now I'm finally getting A's and B's for the first time".*

-5th Grade Study Participant



[Click to hear about her son's experience with RE-vibe.](#)

*"I would definitely recommend RE-vibe to other parents."* - Mother of Participant

## Teachers

All of the teachers in the study felt RE-vibe was a quiet intervention tool which did not distract anyone in the classroom. Over 80% of teachers said they would recommend the RE-vibe™ to other teachers or parents. It was noted that in most cases (with the exception of children who made very substantial gains) it was difficult for teachers to directly notice students' improved on-task behavior, possibly because of the vigilance required to simultaneously oversee 20+ students in a classroom (as opposed to the research assistants observing just one student at a time). However, the students themselves were often found to be quite accurate in their own assessments of gains in on-task behavior with RE-vibe.

"I have been impressed with RE-vibe's ability to silently remind my students who struggle with focus and attention to stay on-task and to redirect those who were off-task. This has not only increased the amount of time these students spend learning and working, it has also increased their confidence in their ability to manage their own behavior and has allowed me to spend more time engaged in instruction, rather than in redirection of individual students".

- 5th Grade Teacher from Research Study

"I have been very impressed with my student's immediate and positive response to RE-vibe. I maintain storage of all the RE-vibe bands for our school, and even after the study ended, have had many students approach me on several occasions to request one to borrow when they have forgotten their own at home; the fact that they seek it out on their own speaks volumes".

-Assistant Principal Involved with Research Study

## Study Results\*

It was found in this particular three month pilot study that ten out of 12 evaluable students (83%) with self-regulation deficits at baseline showed improvement in on-task behavior (average increase of 19% on-task behavior), which reflects a moderately large effect size (Cohen's  $d = .79$ ).

It was also noted that half of those participants achieved improvements ranging from 15% to 110%, with an overall average improvement over baseline of 38%. It was also realized that all improvements in on-task behavior were immediate and sustained (i.e. improvements were immediate and maintained over the whole trial period).

Finally, there were no signs of habituation, nor any adverse effects reported, meaning even after three months of continuous use, none of the users appeared to get used to RE-vibe or become accustomed to its vibrations.



## Key Takeaways

- A total average improvement of 19% among all evaluable study participants was noted over the course of the pilot study, with about half of the group averaging a 38% improvement over baseline.
- Improvements in on-task behavior were sustained over the whole three month trial period.
- No negative or deleterious effects were noted among any participants.
- Over 80% of teachers and students who used RE-vibe would recommend it to others.



## Conclusion

While RE-vibe may not help or be for everyone, it did appear to help many students substantially improve their on-task behavior in this discrete study. RE-vibe is not recommended for students who demonstrate low motivation, or who may just prefer to not wear or listen to a reminder device. However, qualitative feedback suggests that it appears to work well for children who are highly motivated but encounter difficulty with maintaining focus and on-task behavior. No users reported any adverse effects while using the device, and the vast majority of students and teachers shared they would recommend RE-vibe™.

The results of this pilot study encouraged FokusLabs, Inc. to bring the RE-vibe to the consumer market in January 2016. The company has plans to publish more studies in the future, and the data from real-world studies such as this will be used in the development of future versions of RE-vibe.

In terms of up and coming studies, researchers at the University of North Carolina at Charlotte have incorporated RE-vibe in previous studies and are preparing upcoming studies to directly examine its effectiveness. Thus far, they have been pleased with RE-vibe, sharing:

**“RE-vibe is a valuable tool that has great potential to assist students with self-monitoring behaviors independently. The RE-vibe has potential to address ongoing distractibility challenges across a variety of contexts with ease”.**

-Tosha Owens, Educational Researcher, UNC-Charlotte

\*Please note that these results do not imply or suggest any performance claims about RE-vibe; instead, they are merely results found from a preliminary study and it should be noted that results will vary across users, settings, etc.

\*\*Photos used in this document are not actual participants in the study.



RE-vibe™ Anti-Distraction Wristbands are manufactured by FokusLabs Behavioral Solutions, Inc. They are currently available at [shop.fokuslabs.com](http://shop.fokuslabs.com) and [amazon.com](http://amazon.com). FokusLabs offers a 90 Day Money Back Guarantee, for anyone who would like to try RE-vibe™ to determine if it is a good fit for their child. For more information, including special offers for schools, please email [support@fokuslabs.com](mailto:support@fokuslabs.com).