

# Editorial Response: A Reply to Agenda Driven Research

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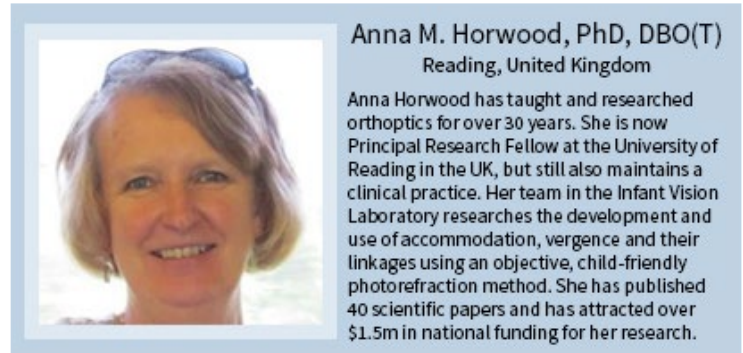
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We welcome the opportunity to reply to the **Editorial** by Professor Maino published in *Vis Dev Rehab* 2015; 1(1):7-11. I am replying both as first author, on behalf of my co-authors, but also, personally, as a clinician with over 40 years' experience of treating convergence insufficiency (CI) with eye exercises. Unsurprisingly we cannot agree with many of the views expressed but there are some points that Professor Maino raises to which we feel compelled to respond.

We are all trying to improve patient care in our own ways. Patients come to professionals seeking relief for a problem which they ascribe to their eyes. As professionals, we use our training and background to explain these symptoms, and to provide therapy based on what we believe to be necessary. But what is the evidence? Our research was an attempt to provide objective evidence to support or refute professional assumptions on both sides of the argument. We were fully prepared to find support for more complex treatment, but, at least for our baseline study on normal responses,<sup>1-3</sup> we failed to find it.

## Agendas

Professor Maino feels that our research was driven by an agenda, and that this agenda was supported (but should not have been), by a peer-reviewed journal. Our paper in *JAAPOS*, and its companion papers reporting different aspects of the same study (in the *British Journal of Ophthalmology* and *Ophthalmic and Physiological Optics*<sup>1,3,4</sup>) were scrutinized and published by international journals with high reputations which their Editors are very careful to guard. All three papers were submitted at the same time and all were accepted only after independent peer review and detailed revisions required by a wide range of international



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referees. We chose to submit to different journals, including a high-impact optometry journal, (and mainly not in the US where agenda issues are arguably greater), so that we were not seen to be playing to only one audience.

Our research was carried out in the UK, where there is significantly less of an agenda between different professions, and little competition for the same patients. Most UK optometrists, ophthalmologists and orthoptists work together, or have agreed a very amicable division of labor. Most eyecare for children is paid for by the UK National Health Service, so there are few personal commercial incentives; but there is a culture of working together to keep costs down while providing a high standard of care. If intensive methods are the most cost-effective then they need be fully justified to be publicly funded. But if simpler methods work for the vast majority of people, then they should be the standard care, with more intensive methods reserved for unresponsive cases only, which is the current situation in the UK. We were funded by a highly competitive, publicly funded, Medical Research Council (MRC) Fellowship, where the study methodology was scrutinized by national research leaders in order to be awarded. Establishing cost-effectiveness of treatment is an important priority for research funded by the MRC.

No research provides “the absolute truth”. All research is open to interpretation, we all have biases and predispositions, and we all make assumptions. The peer review process is currently the best we have. By selectively quoting from our paper, and not acknowledging details published in the online supplement to the very strictly word-limited JAAPOS paper, Professor Maino could be seen to be just as guilty of bias in his piece as he accuses others of being. None of us is perfect. Research topics are chosen by people whose background gives them a particular interest in that subject, a belief that current evidence is insufficient, and who attempt to address it. The research from our lab is making me challenge many assumptions I myself held for many years. We can only report what we find.

## Motivation

None of us doubt that CI responds particularly well to eye exercises and systematic reviews show that CI is one of the few areas where there is reasonable evidence of effect.<sup>5,6</sup> Neither do we question that having a good therapist who gives careful instruction, appropriate exercises and regular feedback is the key to a rapid cure. We accept that these three factors complement each other, but we were interested in their weighting. Is it what we are asking patients to do which matters most? Or how we say it? Or just coming back to do it a second time? Or how much they believe in the treatment? Or how strongly we convey our belief in our methods? Our question was “what is it about doing different types of eye exercises that adds to, or is different from, simple repetition, placebo and encouragement effects”? We cannot study patients until we know how normal people behave in the same situation.

We are vision scientists (as well as AH and ST being qualified orthoptists), and our research interest is how people drive their accommodation and convergence and, in particular, how blur, disparity, proximal

and voluntary influences interact. Only by separating them can we start to assess their relative weighting, hence the necessity to open feedback loops with occlusion, Gabor patches and scaled targets in our laboratory. We have carried out many studies on normal adults and children, and a recurring impression is that “variable is normal”, so we have become interested in why some people get symptoms while others with identical objective and subjective responses get none? Typical people with no background in vision science are often much “worse”, compared to my professional expectations, textbook norms or research controls who are frequently students and staff from vision science departments (and who behave very differently<sup>7</sup>). Our research also showed we should be cautious about how often symptoms which can be associated with CI, actually are 3. I now have a very different view of what is out there in the real world than I did as a clinician only seeing people seeking a professional opinion.

But as well as our theoretical interest in visual cues to vergence and accommodation, the study was also partly motivated to try to explore concerns about the CITT methodology. In particular, concerns about differences in hours of practice, placebo, effort and therapist effects which could have been confounders in the CITT results.<sup>6</sup>

Professor Maino suggests we do not have any knowledge of vision therapy. I was trained to use intensive methods based on exactly the same principles as modern vision therapy, exercising vergence, accommodation and, particularly, relative vergence and accommodation in a graded program of treatment over many weeks’ of office visits, so I personally feel I do have a good idea of the principles behind vision therapy. Methods used to treat CI and heterophoria described in vision therapy textbooks may have different names, but utilize the same principles as the methods I was taught and used. Over the years, orthoptists have largely stopped very

intensive courses of treatment in favor of simpler methods. But this personal theoretical background meant that I did come into the research with a completely open mind, wondering about how strong the evidence was for either an intensive or “light touch” approach. Could orthoptists have “thrown the baby out with the bathwater”? I was fully prepared to find that specific exercises targeted different aspects of the response, and that complex methods would prove to be better.

## Methods

We tried as much as possible to make our testing regime similar to the CITT methodology, in terms of clinical testing and instruction set, but our different treatment groups were designed to tease out what it is about therapy that actually brings about objective change. We tried to devise as “pure” therapeutic modalities as we could so that they could be compared. Fundamentally, all CI exercises target convergence, accommodation, their relative actions, and “other” factors (proximal cues, effort and practice) – hence our study groups. We expected to find that targeting a specific aspect of vision would affect responses differentially i.e. concentrating purely on disparity would help vergence, but not necessarily accommodation, unless clarity was also stressed. We also expected that more “difficult” relative vergence/accommodation methods would act more specifically. Neither turned out to be the case. Simple convergence exercises (independent of blur cues), and effort, given over a very short period, made the greatest difference.

Professor Maino suggests that our study groups were too small, but they were well matched, and statistically significant differences were still found. He also suggests that we did not provide good enough instructions for the tasks we asked the participants to do. The supplemental file states we spent time showing them how to do all the homework exercises, asking them to demonstrate them back to us,

suggesting strategies to help remember to practice and requiring practice diaries, as any clinician would. We also told them that our laboratory sessions would enable us to tell if they had cheated (and they had no reason to doubt us – as we also believed they might). The only part of the testing which was minimally instructed was the objective testing in the photorefractor, where (except for the “extra effort” group) instruction was a standard “watch the target carefully throughout”. Our research is interested in how exercise changes in automatic responses to naturalistic targets.

So we refute the accusation that we were agenda driven, and that only an agenda driven journal would publish our paper, or our science any more seriously flawed than other research. Our research is a step on the way to understanding what it is about the therapist/patient interaction that is most important. When we understand that, we can all devise evidence based, cost effective and efficient care.

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