Project title: ***Developing a digital autoganzfeld testing system***

Grant number: ***24/00***

Principal investigators: ***Matthew Smith, Jezz Fox, Carl Williams***

PROJECT SUMMARY

We proposed to develop a digital autoganzfeld testing system in order to replicate and extend parapsychological research employing the 'ganzfeld' procedure. In this procedure, two participants typically take part in any one trial. One participant, the receiver, is isolated in a ganzfeld environment (a mild form of sensory isolation) and is asked to report imagery that comes to mind, whilst the other participant, the sender, is shown a target film clip in a separate room. A judging procedure makes it possible to assess the degree of correspondence between the receiver's imagery and the target film clip.

The project builds upon previous work in which we constructed a prototype system. The new system, *DigiGanz*, has been designed to be flexible and low-cost so as to encourage other researchers to attempt to replicate and extend our work. The funding provided by the Bial Foundation has supported the development and testing of this system. We now plan to continue conducting studies using this system as well as making the software available to other researchers wishing to conduct ganzfeld studies.

FINAL REPORT OCTOBER 2002

In our previous progress report, dated January 2002, we reported that a 32-trial pilot study using the prototype software was nearing completion. This study was completed in February 2002, and was useful in both collecting pilot data as well as identifying weaknesses with the prototype software which informed the development of the new system: *DigiGanz*.

We also noted that, when planning the development of the new *DigiGanz* system, we identified three stages of development: Stage 1 would focus on developing a working version of the software that contained all core features of a digital autoganzfeld system. Stage 2 would focus on testing this system for usability and reliability. At stage 3, improvements would be made to the software in terms of adding new features, making the software stable, and producing user documentation.

In January 2002 we had completed stage 1 and were beginning stage 2. We noted that we were about to begin two small studies using the *DigiGanz* system. Both of these studies were conducted between February and April 2002. In one study, conducted by Jezz Fox, Jezz acted as both participant and experimenter in 12 trials with no sender. The aim of this study was to explore the experiential aspects of the roles of participant and experimenter. A paper reporting this study was presented at the annual conference of the Society for Psychical Research in August 2002 (Fox, 2002). The second study, conducted by Christine Simmonds and Jezz Fox, assessed the utility of a modified version of the ganzfeld procedure in which the receiver was asked to generate imagery from watching computer-generated 'visual noise' instead of being immersed in the full ganzfeld environment. Twenty trials were conducted in which the relationship between psi performance, schizotypy and creativity were also assessed. Papers reporting on this study were presented at the annual conferences of the Parapsychological Association (Simmonds & Fox, 2002) and the Society for Psychical Research (Simmonds, Fox & Holt, 2002) in August 2002.

These studies revealed that the *DigiGanz* software was generally reliable and stable. However, having reached stage 3 of the development of the system, further improvements were made to the software in terms of added features and increased stability of the software. For example, options were introduced into the design that allowed the experimenter to specify whether the sender saw the items in the judging set at the same time as the receiver, and whether the ratings awarded by the receiver were relayed to the sender in real-time. A number of changes were also made to the computer code in order to make the software more stable. In addition, media files were created for use with the system. These can be split into two general categories. Firstly, a brand new

target pool was created consisting of 32 digital video clips each lasting 60 seconds. These targets were produced from footage specially filmed using the digital video camera, and are therefore royalty-free. This means that the *DigiGanz* software may be made available to other researchers without any concerns over the use of copyrighted materials as targets, such as extracts from feature films. (Note that the flexibility of the *DigiGanz* system allows different research teams to replace this target pool with any target materials that can be put into QuickTime format.) Secondly, other media files needed to run the system were produced. These included audio files of white-noise to be played to the receiver during the trial period, and audio files with instructions to the participants. Is envisaged that the files containing instructions to participants will be replaced by users of the system with files that they create. A user manual outlining the installation and operation of the system was also written.

The *DigiGanz* software is now sufficiently developed to be made available to other researchers. We noted in our previous report that the main aim of the current project was to develop the *DigiGanz* software for the Mac OS 9 operating system. However, as this software has been written using RealBasic, it is relatively straightforward to produce versions to work on the new Mac operating system (OS X) and the Windows operating system. It should be noted, however, that further development is needed in order to achieve products that work identically on all platforms. Therefore, Jezz Fox has produced prototype Mac OS X and PC versions of *DigiGanz*. Whilst some of the more advanced features of *DigiGanz* are not available in these versions, they are fully working pieces of software that allow *DigiGanz* to be run on both Apple Macs running the latest Apple OS and PCs.

There are five CDs enclosed with this report. The CD labelled 'DigiGanz V1.0.0', contains both Mac and PC versions of the DigiGanz software. This CD also contains a pdf version of the *DigiGanz* user manual, which describes how the software is installed and used. A printed copy of the user manual is also enclosed. The four remaining CDs contain the royalty-free target pool. Two CDs contain the targets in a format suitable for Macs, and two CDs contain the targets in a format suitable for PCs. Each CD contains half the target pool (i.e., 16 targets) arranged into four sets of four for judging.

In line with our aim of encouraging others to use the *DigiGanz* software to attempt to replicate and extend ganzfeld findings, we have devoted time to presenting and demonstrating the software at academic conferences. For example, we presented a poster describing the system at the 'Behind and Beyond the Brain' symposium hosted by the Bial Foundation in April, 2002 (Fox, Smith & Williams, 2002a). We also presented a research brief describing the system at the Parapsychological Association conference in August, 2002 (Fox, Smith & Williams, 2002b). We also demonstrated the software to interested parties at both these conferences. The software has been received very positively, and we have already received interest from researchers based in the USA, Brazil and France as well as researchers based elsewhere in the UK.

PLANS FOR SPENDING REMAINING FUNDS

Having achieved our main aims of developing and producing a digital autoganzfeld system, collecting some initial data using this system, and making the software available to other researchers, we have some funds remaining. There are two reasons for this. First, some of the equipment is still to be bought. This equipment was not required for the development of the system, but is now needed for the continued use of the system. Second, it was proposed that funding would be required to cover employment costs for conducting studies during the period of testing the system. These studies were performed without the need for this expenditure.

We therefore plan to use our remaining funds to support the continued use, development, and distribution of the *DigiGanz* system in the following ways.

Using *DigiGanz*

We need to upgrade some of the peripheral equipment (such as microphones and headsets) in order to maximise the quality of both the presentation of materials to participants and the recordings of participants' mentations. Additional external data storage is also required to provide secure back-ups of data. We plan to buy at least one external hard-drive to assist with this. There is also a continued need to buy and replace smaller items such as re-writable CDs, light bulbs, micropore tape, etc.

Developing *DigiGanz*

It was noted earlier that, in addition to the most developed version of *DigiGanz* (for Mac OS 9), we have also produced prototype versions for Mac OS X and Windows (PC). We intend to develop these prototype versions to a similar level of functionality as the current Mac OS 9 version. Such development is important for two reasons.

Firstly, during the development of the system Apple released a new version of their operating system (OS X) that is radically different from prior versions (up to OS 9.2). Software for OS 9 and earlier will not run under OS X (whilst there is an emulator for running OS 9 applications this will not allow full running of the *DigiGanz* system). In addition, Apple have recently announced that from 2003 all new Apple computers will not be able to run OS 9. Therefore researchers wishing to set up a system after this date will either have to purchase second-hand computers or use the current prototype OS X version. We therefore propose to develop the OS X version in order that it may serve as a full replacement for the current OS 9 version. This is possible without too much additional work.

Secondly, several researchers who use PCs have expressed an interest in using the system (along with an unwillingness to use Macs due to a lack of technical support in their institution). Therefore it would be of benefit to develop the PC version as far as possible. With the level of progress made on the PC version during the project so far, it seems a realistic aim to achieve this over the next year if work is performed on a casual basis.

The person who was responsible for the development of the *DigiGanz* system software is, of course, Jezz Fox. Jezz is now about to move from Liverpool to Brighton to take up another job. However, he is happy to give some of his time to attempt further development of the Mac OS X and PC versions of *DigiGanz*. As Jezz is willing to provide his time without charge, we are keen to provide him with the support he needs to enable him to do this work. It is envisaged that this will include purchasing additional software (such as Virtual PC, Mac OS X.2, and upgrading RealBasic) as well as providing him with two portable machines. Note that providing Jezz with these machines has several advantages. First, he is able to fully test the system while based in Brighton (testing requires two machines). Second, Jezz is able to set up a new system to collect data in Brighton (and also offers the opportunity to conduct long distance trials between Liverpool and Brighton). Third, the machine Jezz has used to date for developing software will remain at Liverpool Hope. This means we have a back-up machine available in case of problems or to set up at another location for long-distance trials.

Distributing *DigiGanz*

Distributing the software to other researchers involves making copies of the five CDs. Whilst the iMacs we have purchased each have internal CD writers, allowing them to be used to copy the software and target materials on to CDs, the process is slow (taking several hours to produce each set of discs). Additional storage devices plus faster CD writers would make this process much less time-consuming (reducing the time to around 30 minutes). In addition, a DVD writer would allow us to put all the materials from the five CDs on to a single DVD, making production even simpler and quicker. Therefore, in addition to the external hard-drive referred to above, we plan to but at least one additional CD writer and at least one DVD writer.

REFERENCES

Fox, J. (2002). 'The role of introspection in the study of ESP.' Paper presented at the 26th International Conference of the Society for Psychical Research, Manchester, August 2002.

Fox, J., Smith, M. D., & Williams, C. (2002a). 'Developing a digital autoganzfeld system.' Invited poster presentation at the Bial Symposium 'Behind and Beyond the Brain', Porto, Portugal, April 2002.

Fox, J., Smith, M. D., & Williams, C. (2002b). Introducing DigiGanz: Describing a digital autoganzfeld system. In Watt, C. (ed.) *The Parapsychological Association 45th Annual Convention Proceedings of Presented Papers*, 299-401.

Simmonds, C. A. & Fox, J. (2002). A pilot investigation into sensory noise, schizotypy, and extrasensory perception. In Watt, C. (ed) *The Parapsychological Association 45th Annual Convention Proceedings of Presented Papers*, 235-246.

Simmonds, C. A., Fox, J. & Holt, N. (2002). 'Schizotypy, creativity and psi performance in a visual noise paradigm.' Paper presented at the 26th International Conference of the Society for Psychical Research, Manchester, August 2002.