# THE PSYCHOLOGY FOUNDATION OF AUSTRALIA

(Incorporated in New South Wales)
c/o School of Psychology, University of New South Wales, Sydney 2052,NSW, Australia
**Telephone:** (02) 9385 3041 **Fax:** (02) 9385 3641 **E-mail:** b.gillam@unsw.edu.au




**RE: Science and Technology Australia: A vision for an innovative, prosperous nation**

The Psychology Foundation of Australia is committed to promoting and advocating for the provision of a rigorous scientific training in the discipline, high quality research to promote the discipline and a sound evidence base for the training of practitioners in the field of Psychology. We are therefore very pleased to see STA adopt such a strong guiding agenda for the enhanced contribution of STEM disciplines in this country.

The document *Science and Technology Australia: A vision for an innovative, prosperous nation* resonates strongly with many of the Psychology Foundation of Australia's core aims. We offer some comments below where small changes in emphasis seem desirable but also point to areas where Psychology as one of the Hub sciences ( http://www.psychologicalscience.org/observer/getArticle.cfm?id=2203 , Boyack, Klavans & Borner (2005) Mapping the backbone of Science. Scientometrics, 64(3), 351-374) differs from many of the other STEM areas.

Most notably Psychology attracts large numbers of female participants at all levels of the training and the profession. It is still the case that a smaller proportion of women progress to higher levels of appointment but this makes clear that systemic issues associated with the progression of women will not be simply solved by attracting more females into disciplines at the outset.

**Responses to individual sections**

**1.2** We share the sentiment in this section but question the wisdom of promoting an OECD average funding level as our goal. Australia as a wealthy country that hopes to stay in that category can afford and should be aiming to be in the upper band of research funding internationally. Otherwise our current international and regional position and the wealth it creates will inexorably decline. Average seems inadequate to meet our desires.

The second dot point in this section emphasises the need for a strategic plan for STEM in Australia. We support this goal but believe it needs to allow for serendipitous outcomes that result from a vibrant sector that could be very beneficial, even if not planned, and this point could also be noted.

**1.3** This item contains a list of a few research agencies and then refers to 'many others'. This seems a bit arbitrary. On what grounds were the ones listed chosen and why were others omitted. There may be reasons for not promoting all agencies

# THE PSYCHOLOGY FOUNDATION OF AUSTRALIA

(Incorporated in New South Wales)
c/o School of Psychology, University of New South Wales, Sydney 2052,NSW, Australia
**Telephone:** (02) 9385 3041 **Fax:** (02) 9385 3641 **E-mail:** b.gillam@unsw.edu.au


equally but those reasons should be explicit so that government doesn't have the opportunity to ignore some agencies while still claiming to follow STAs intentions. We do wonder whether a third dot-point should be an aim to establish a chief scientist in every government portfolio to facilitate the transfer of information between research agencies and government.

**1.4** This section refers to healthy levels of private sector investment in research. It would be useful to comment on the spread of this investment. Is this a pool that works for all aspects of research? Do some areas need stronger promotion by STA than others?

**1.5** This section discussing the role of universities provides a useful preamble and a good set of goals. The Psychology Foundation of Australia would be pleased to provide examples of training in the science of Psychology having a broad array of additional benefits to activities outside the traditional STEM sectors.

**1.6** Role of funding bodies. This section captures many of our current concerns but would benefit from highlighting the wastefulness of having a strong cohort of researchers, spending an enormous amount of time creating strong applications which remain unfunded and un-researched because of low grant success rates. Cost estimates for producing the applications have been generated in recent years which would point to the magnitude of this problem. This could be quantified by referring to the cost of additional grant success in terms of how many same sex marriage referendums, royal commissions or ARC Impact assessment exercises it would equate to. To be clear we agree research should have impact but do not accept that it is worth spending the equivalent of the entire ARC early career researcher funding programme to measure impact that clearly exists in many forms.

**1.8** We agree with the import of this section and only suggest that a comment is added to the final dot point to indicate that it is imperative that Australian academics remain internationally competitive so they can readily engage in international collaborations. Adopting a broader set of evaluative criteria that simultaneously negatively impact on traditional international methods for benchmarking academic performance needs to be avoided.

**2 & 2.1** We strongly support the intent to provide better infrastructure to support STEM training in schools. Our experience is perhaps informative, in that providing scientific training in research skills in psychology using examples of human behaviour is attractive to a broad array of students and those students are retained in strong numbers into university. Perhaps other disciplines can also benefit from emphasizing

**THE PSYCHOLOGY FOUNDATION OF AUSTRALIA**
(Incorporated in New South Wales)
c/o School of Psychology, University of New South Wales, Sydney 2052,NSW, Australia
**Telephone:** (02) 9385 3041 **Fax:** (02) 9385 3641 **E-mail:** b.gillam@unsw.edu.au

impacts on human performance or behaviour in some training tasks. Mathematical modelling of behaviour is common in Psychology but so is analysis of the impact of chemical agents, biomechanical considerations of performance limitations, the biophysics of sensory processes and the engineering of human machine interfaces. The other STEM disciplines are widely represented as might be expected of a hub science.

**2.3** The aim to promote STEM literacy in the general population is sensible but a critical subsidiary goal would be to re-establish in the mind of the public that expert scientific opinion carries more import with it than a lay opinion. Much of the current national (perhaps international) debate is problematic because all opinions are treated as equal in the public discussion of issues. While we will all agree that this shouldn't be the case re-establishing a credible commitment to that view in the public mind should be a priority.

**2.5** The intent to ensure that teachers are adequately trained in the content area they are teaching is critical and it is perhaps a little surprising that it needs to be stated but we agree it is currently needed. The final dot point, arguing for a national accreditation scheme is unclear. What is being accredited? Content knowledge can readily be ensured by requiring a university major in the discipline area and would need no further accreditation, other than for the possession of teaching skills, which we assume may require a teaching degree. It is not clear additional bureaucracy is needed here.

**2.9** One of the major changes in the Australian training scene over the last 40 years is the withdrawal of employers from the final stages of training. Frequently extensive experience is required even for entry level positions and it will always be the case that employers are best placed to provide those finishing workplace specific skills. Psychology makes extensive use of workplace placements in its professional training programmes and there are examples of work-integrated learning at both third and fourth year levels. From our experience ensuring a broad array of workplaces are willing to provide a valuable training experience may well be a significant challenge but one worth pursuing in areas where the numbers are likely to be manageable. It will be important to ensure there is a mechanism to verify the value of such workplace training, since anecdotal reports suggest that not all internship/cadetship experiences fall into that category.

**2.10** We have one query here. There is an assertion that moving 1% of the workforce into STEM roles would produce a significant financial benefit nationally. Presumably this depends on which area of the economy that workforce moves from. Perhaps

# THE PSYCHOLOGY FOUNDATION OF AUSTRALIA

(Incorporated in New South Wales)
c/o School of Psychology, University of New South Wales, Sydney 2052,NSW, Australia
**Telephone:** (02) 9385 3041 **Fax:** (02) 9385 3641 **E-mail:** b.gillam@unsw.edu.au


some comment should be added to clarify this.

**5.1** We strongly agree that it is necessary to repair funding levels for basic science. Many junior and mid-career scientists are lost to the system with current success rates. This loss of talent is an enormous opportunity cost for Australia as a whole but also ensures that anyone with career breaks, and typically this occurs more often for women, will find it extremely difficult to be competitive in grant rounds simply because their track record will be less impressive in a quantitative and career trajectory sense. Requirements to consider performance relative to opportunity do not adequately overcome these differences and given Australia funds research at levels lower than the OECD average and at a much lower level than our regional competitors it is essential this discrepancy is corrected for the benefit of both the researchers and the country.

We also request that in the fourth paragraph the sentence “A nationally coordinated approach has been called for in areas such as rural research” be completed with “cancer research and the Brain sciences, to name just three.” As this reflects the new national initiative of the Australian Brain Alliance and reflects a different sector of activity in which Australia has considerable strength but a need for improved focus.

**5.2** It has been the Psychology Foundation’s position that while engagement and impact is critical, it is already happening and that the Engagement and Impact Assessment scheme is likely to be a costly exercise with significant logistical problems and potentially little benefit that would be best avoided in an already underfunded sector. It would be pleasing to see the STA take a position that ensures cost effectiveness of such evaluation schemes.

**6.** We would prefer the preamble to distinguish between an increase in the number of research outputs and an improvement in quality. These need not reflect the same thing. Perhaps the analysis would be better based on changes in rankings of 4 & 5 in ERA, as these reflect excellence, rather than changes in the total number of outputs.

**6.3** Perhaps the list of areas where Australia is well placed to lead research could be expanded to include Psychology as currently Psychology school rankings show seven schools in the top 50 of the QS World rankings by Subject 2017.

**7.5** Ethical systems for the oversight of research within university and research agencies are already highly developed, albeit often quite inefficient. The major excesses seem to come from non-researchers running government surveys, creating linkages between data bases and media stunts (e.g. on-air IQ or personality tests). Ethical

# THE PSYCHOLOGY FOUNDATION OF AUSTRALIA

(Incorporated in New South Wales)
c/o School of Psychology, University of New South Wales, Sydney 2052,NSW, Australia
**Telephone:** (02) 9385 3041 **Fax:** (02) 9385 3641 **E-mail:** b.gillam@unsw.edu.au


conduct should be required from everyone.

**8.4** One suggestion for a way to work with government (the last dot point) would be to have a chief scientist for each portfolio in the government. This has been employed in the UK and would seem a desirable goal for Australia.

**9** Our final suggestion is for an additional item in this section emphasising the need to incorporate training in policy development in STEM degrees. The transition from a well-educated student, experienced researcher to an effective developer of policy is not easy and some specific training relating to this transition would help build a STEM cohort better equipped to guide policy development.

We thank STA for this opportunity to contribute.

Submitted by

Winthrop Professor David Badcock