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Editorial

Welcome to the 58th edition of the PsyPAG Quarterly. Thank you to all our contributors, who have ensured that this edition is packed with really interesting articles.

Dr Andy Field gives us a preview of the talk he will give on 1st April at the Annual BPS Conference. In it he discusses the limitations of null hypothesis testing and provides a bluffer’s guide to effect sizes. Continuing the statistics theme Gareth Hagger-Johnson highlights several interesting properties the Mahalanobis distance statistic, which might be of interest to readers conducting multivariate research.

Also in this edition, Damien Williams considers the usefulness of psychology within a multi-disciplinary environment as he describes his experience of workshops looking at design issues relating to the development of a computational tool to assist the early, abstract stages of conceptual design. Asiya Siddiquee discusses the usefulness of joining Personal Development (PD) Groups, and David Moore provides a review of Petra Boynton’s book “The Research Companion: A Practical Guide for the Social and Health Sciences.” Conferences reviewed include the 5th Seattle Club Conference (by Deborah Riby) and the XVIIth World Congress on Safety and Health (by Ninna Makrinov).

As you flick through Q58, checkout the centre pages for details of PsyPAG’s Annual Conference in Reading, and the back cover for details of how PsyPAG could help you fund your attendance!

The submission deadline for the next Quarterly is 7th April. Please contact us if you are interested in writing an article or review by emailing
quarterly@psypag.co.uk. There are guidelines for contributors on the inside front cover.

Best wishes,
Cornelia Ho.

On behalf of the Quarterly Editorial Team, 2005-2006

Cornelia Ho, Alexa Ispas, James Jackson, Faith Martin,
David Moore and Glenda Pennington.

The PsyPAG Quarterly team would like to express their gratitude to our sponsors The British Psychological Society.

The British Psychological Society
Chair’s Column:  
Physics Envy

Psychologists may suffer from the Electra’s complex. They envy the power and recognition that their old cousins, the stardust collectors, have been enjoying ever since Galileo. But physicists work with different materials, use different techniques, which may simply not be appropriate for psychological phenomena.

Phallic Desires
We have seen numerous evidence of this tendency in the past century. Psychologists first and foremost envy physicists for the uncontested notoriety that they enjoy. A physicist who is recognised by his peers as a great scientist and an expert in his/her area of research will immediately be able to communicate his/her findings to the greater public. In stark contrast, even if a psychologist has already attained a sufficiently high level of recognition within his own discipline, there is no or little guarantee that his work will directly be accepted by the general public. This is perhaps due to past abuses in our science, which have rendered the public considerably sceptical of psychological discoveries.

The second and most visible aspect of this ‘physics envy’ syndrome can be witnessed in the growing quantification of our discipline. Despite a few qualitative drifts, one can confidently assert that there is an overwhelming, and possibly ineluctable, quantitative progression in psychology. This could be illustrated with the now popular use of structural equation modelling (SEM), particularly in health psychology (e.g. theory of planned behaviour). The introduction of SEM is especially interesting in the sense that such instruments permit to compile information from a wide variety of independent as well as
dependent variables, hence obliging psychologists to think multifactorially and to embrace the staggering complexity of their subject of enquiry. Psychology is therefore irremediably becoming more quantitative, but does this mean that psychology will ever attain the precision of physical predictions?

**Psychology you can’t measure**

A friend of mine, who is a PhD student in theoretical physics, told me once, in the midst of an animated discussion on psychologists’ ability to apprehend psychological matters, that ‘human idiosyncrasies may not be quantifiable’. I found that statement both flabbergasting and eye-opening. Surprising at first, because it is difficult to imagine that some of the most mathematically minded scientists still remain uncertain as to whether we can actually quantify human behaviour.

Yet, I also found this statement eye-opening, as it was highlighting the mammoth task, which is lying ahead for us, humble psychologists. Possibly the unswerving trend in the history of our discipline has been marked by an effort to comprehend and predict psychological processes; *mathematical quantification* often constituting the necessary, and often disliked handmaid to such efforts. Such predictions are particularly necessary to develop better prognoses of mentally ill patients. Yet, the multifactorial nature of psychological phenomena, shaped by a myriad of different influences, ranging from strictly psychological and social factors, all the way to genetic predispositions, make such predictions and measurements highly complex and error-prone.

Hence, my physics friend is perhaps right in one sense: There may be some psychological phenomena that are simply inaccessible with mathematical means. The classical example supporting that argument
is human free will. Can we control for such human idiosyncrasies in our mathematical models? Most psychologists are concerned with big samples, and try to predict the behaviour of entire populations. By contrast, the prediction of one single individual’s behaviour is remarkably difficult and, one could argue, theoretically impossible. One individual, despite being addicted to alcohol, could indeed simply change his/her mind about alcohol on the very day, when we are trying to predict his/her alcohol consumption. This is free will; and this is, arguably, the essential difference between the psychologists’ and the physicists’ object of study.

Naturally, I am not the first one to approach this type of problem, and many earlier psychologists with a penchant for philosophy (Meehl, 1978) or philosophers with an inclination for psychology (Popper, 1935) have tried to theoretically settle this empirically unsolvable issue. In physics, an atom is not considered to be whimsical! Although it may be affected by environmental conditions, such as pressure and temperature, just as human behaviours are affected by the weather, atoms are simply not intrinsically making decisions as to where to go next.

From disputes to debates
Some often argue that biologists are biased towards the importance of biological evidence. Contrary to what most people think, however, I felt that researchers presenting evidence grounded in biology and genetics, at least at the last BPS conference (2005), were much less likely to inflate the significance of their work than those presenting evidence solely based on social or psychological research. This is perhaps the sign of our times, and the result of the extended criticisms to which geneticists submitted when making exaggerated claims about the importance of their findings. Yet as a semi-objective observer, I cannot
help thinking, like other science columnists, that biology envy and physics envy continue to pervade social sciences with greater force than ever (Shermer, 2005).

This craving for absolute certainty provides a fertile ground for tribalism to grow and flourish. There is indeed nothing better than receiving the encouragement and accord of your peers to convince you, or re-convince you if needed, of the verisimilitude of your position. Hence, people with the same opinions congregate to the same conferences to be preached what they are already convinced of. When faced with such unmarred unanimity, one may wonder who is left to challenge the status quo.

If you are even vaguely interested in statistics, you may have heard of the fantastic dispute that opposed Fisher and Pearson in the mid-twentieth century. Fisher was hammering the need for significance testing, whereas Pearson was advocating the abolishment of this arbitrary threshold (Abelson, 1995). History has shown who won that statistical battle. At the time however, these heated disagreements made for exciting conferences, where Fisher would appear with all his acolytes during Pearson’s invited lecture and would start to slander him publicly. I guess that academics have grown increasingly more civilised, which may or may not be for the greater good.

More maths, please!

Physics is, without doubt, the discipline to envy. If there is one scientific field towards which psychology should gravitate, it must certainly be physics. However, there is an important difference between envying an object and mimicking its behaviour. Today, it rather seems that psychology is striving to attain physicists’ recognition without much interest in adopting their rigorous scientific methods.
Paul Meehl, in his last public speech before leaving this world (Meehl, 1998), made clear admonitions against the lack of mathematical training in psychology, and predicted that our discipline would have difficulties to free itself from its current manacles, without greatly increasing the dose of statistical teaching to which young undergraduates are submitted. Universities and the BPS, however, enjoys too much today’s free-ride, where psychology is becoming the most popular A-level and the second most popular undergraduate degree, to seriously look into that matter. It is indeed quasi-certain that augmenting the mathematical syllabus in psychology courses would lead to a lot of students electing media studies rather than psychology as their subject of choice.

But this a political matter, not a scientific one, where the economical interests of universities collude with the lobbying interests of our national association to ensure that psychology remains the most popular undergraduate degree.

References


Null Hypothesis Significance Testing (NHST)

When you read an empirical paper, the first question that you should ask is: "Why should I care about this study?" The dominant method taught and used by psychologists culminates in a p value. Here we examine whether the p value helps us to answer this question. It turns out that it is much less useful than many people think, and therefore we look at an alternative, the reporting of effect sizes.

When you read an empirical paper, the first question you should ask is ‘how important is the effect obtained’. When carrying out research we collect data, carry out some form of statistical analysis on the data (for example, a t-test or ANOVA) which gives us a value known as a test statistic. This test statistic is then compared to a known distribution of values of that statistic that enables us to work out how likely it is to get the value we have if there were no effect in the population (i.e. if the null hypothesis were true). If it is very unlikely that we would get a test statistic of the magnitude we have (typically, if the probability of getting the observed test statistic is less than .05) then we attribute this unlikely event to an effect in our data (see Field, 2005). We say the effect is ‘statistically significant’. This is known as Null Hypothesis Significance Testing (NHST for short).

NHST is used throughout psychology (and most other sciences) and is what many of you have been taught for two years during your psychology degree. It may, therefore, surprise you to know that it is a deeply flawed process for many reasons.
Here are what some much respected statistics experts have to say about NHST:

Schmidt & Hunter (2002):

“Significance testing almost invariably retards the search for knowledge by producing false conclusions about research literature” (p. 65).

“Significance tests are a disastrous method for testing hypotheses” (p. 65)

Meehl (1978):

“The almost universal reliance on merely refuting the null hypothesis is a terrible mistake, is basically unsound, poor scientific strategy, and one of the worst things that ever happened in the history of psychology” (p. 817).

Cohen (1994):

“NHST; I resisted the temptation to call it Statistical Hypothesis Inference Testing”. (p. 997)

**Reason 1: NHST is Misunderstood**

Many social scientists (not just students) misunderstand what the p value in NHST actually represents. If WE were to ask you what p actually means which answer would you pick:

a) p is the probability that the results are due to chance, the probability that the null hypothesis (H0) is true.

b) p is the probability that the results are not due to chance, the probability that the null hypothesis (H0) is false.

c) p is the probability of observing results as extreme (or more) as observed, if the null hypothesis (H0) is true.

d) p is the probability that the results would be replicated if the experiment was conducted a second time.

e) None of these.

Someone did actually ask undergraduates at a UK university (not Sussex, but we won't name and shame) this question on a
questionnaire and 80% chose (a) although the correct answer is (c) – you will have known this if you read the first paragraph of this article. Only 5% correctly chose (c). As such, many people who use NHST are not testing what they think they’re testing and consequently the conclusions they draw are incorrect (because they are based on erroneous beliefs about what p means).

**Reason 2: The Null Hypothesis is Never True**

Now we know the correct interpretation of p we can think about the consequences of it. As we have seen p is the probability of observing results as extreme (or more) as observed, if the null hypothesis (H0) is true. There is one very important problem with p which is that for social science data the null hypothesis is never true (see Cohen, 1990). As such, NHST has the same logic as "if unicorns exist, they would probably win the Grand National"

Remember that the null hypothesis is that there is no effect in the population. Cohen points out that the null hypothesis is never true because we know from sampling distributions (see Field, 2005a, section 1.6) that two random samples will have slightly different means, and even though these differences can be very small (e.g. one mean might be 10 and another might be 10.00001) they are nevertheless different. In fact, even such a small difference would be deemed as statistically significant if a big enough sample were used (see Reason 3). However, the null hypothesis relates to populations not samples, so the problem is only half that the null hypothesis is always false, but also that it is uninteresting: if we followed tested hypotheses of interest in the first place then at least rejecting a hypothesis would be a step forward.

As such, a non-significant result should never be interpreted (despite the fact it often is) as ‘no difference between means’ or ‘no relationship between variables’. So, significance testing can never tell us that the null hypothesis is true, because it never is! As such the idea of ‘accepting the null hypothesis’ is just plain wrong.
Reason 3: NHST depends upon Sample Size

Imagine we were interested in whether listening to Cradle of Filth (CoF) turns people into Granny-murdering devil-worshippers. We could (assuming ethics committees didn’t exist and our moral values were very low indeed) expose unborn children to Cradle of Filth (or not) and see how they turn out years later. So, we have two groups (exposed to CoF in the womb vs. unexposed control group) and some kind of outcome variable (number of pentagrams drawn on the wall in blood). We could subject these to a simple t-test.

### Independent Samples Test

<table>
<thead>
<tr>
<th>Pentagrams Drawn</th>
<th>Levene’s Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variances assumed</td>
<td>1.046 (F) .308</td>
<td>-6.222 df 198 Sig. .000</td>
<td>-2.20699 Std. Error Difference .35472 Lower -2.90650 Upper -1.50748</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>-6.222 df 195.274 Sig. .000</td>
<td>-2.20699 Std. Error Difference .35472 Lower -2.90656 Upper -1.50742</td>
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### Independent Samples Test

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<tbody>
<tr>
<td>Equal variances assumed</td>
<td>2.744 (F) .136</td>
<td>-1.510 df 8 Sig. .169</td>
<td>-2.20736 Std. Error Difference 1.46173 Lower -5.57810 Upper 1.16339</td>
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<tr>
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<td>-2.20736 Std. Error Difference 1.46173 Lower -5.91660 Upper 1.50188</td>
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</table>

**SPSS Output 1**

SPSS Output 1 shows the results of two independent t-tests done on the same scenario. In both cases the difference between means is — 2.21 so these tests are testing the same difference between means.

---

1 Do not attempt to replicate this fictitious study in which no grandmothers were harmed. For Dan Wright’s views on Cradle of Filth please go to http://www.sussex.ac.uk/Users/danw/stars.jpg
Look at the associated t-values and significance though. In one case t is highly significant (p < .001), but in the bottom table it is not (p = .169). How can this be: in both cases the tests are testing the same mean difference of –2.21?

Before we answer that question, let’s look at another scenario (again, with CoF and granny murdering!). SPSS Output 2 shows another t-test, which yields a significant result (p < .05). Nothing strange about that you might think, but have a look at the ‘Mean Difference’. The value is 0. Now, the t-test tests the null hypothesis that the difference between means is 0, therefore, if the difference between means really is zero then the resulting t should not be significant! How is it possible that this test is telling us that there is a significant difference between means when we know the difference is 0?

### Independent Samples Test

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<tr>
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<th>Levene’s Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
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<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
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<td>Equal variances assumed</td>
<td>994</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>994</td>
</tr>
</tbody>
</table>

### SPSS Output 2

The answer to these two anomalies is the same: NHST depends on the sample size of the observed data. In the first case, the reason why it is possible to have the same mean difference but a difference in the significance of the resulting test is because the two tests were based on different samples: the significant test was based on a sample of 200, whereas the non-significant test was based on a sample of only 10! So, significance depends on your sample size.
In the latter case, the reason why a difference of 0 is significant is because this test is based on a sample of 1 million data points. The mean difference is very small (-0.0046 or .00 to 2 decimal places) but given a big enough sample, it is significantly different from zero.

So, a trivial difference can be significant (and interpreted as ‘important’) if the sample is big enough, conversely, a big and important difference can be non-significant (and interpreted as ‘trivial’) in a small sample (see Field & Hole, 2003).

This problem arises because the null hypothesis is a point value (usually 0); if the null hypothesis is not a point value but is an interval then this problem is less problematic. Several statisticians have described p as just a measure of whether the n is big enough to detect the effect.

**Reason 4: NHST tells you nothing about the probability of a Hypothesis**

NHST is based on probabilistic reasoning, which severely limits what we can conclude. Cohen (1994), points out that formal reasoning relies on an initial statement of fact followed by a statement about the current state of affairs, and an inferred conclusion. This syllogism from Field (2005a) illustrates what we mean:

- If a man has no arms then he can’t play guitar.
  - This man plays guitar.
  - Therefore, this man has arms.

The syllogism starts with a statement of fact that allows the end conclusion to be reached because you can deny the man has no arms by denying that he can’t play guitar. However, the null hypothesis is not represented in this way because it is based on probabilities. Instead it should be stated as follows:

- If the null hypothesis is correct, then this test statistic is highly unlikely.
This test statistic has occurred.

Therefore, the null hypothesis is highly unlikely.

If we go back to Field’s (2005a) guitar example a similar statement would be:

- If a man plays guitar then he probably doesn’t play for Fugazi (this is true because there are thousands of people who play guitar but only two who play guitar in the band Fugazi!).

  - Guy Picciotto plays for Fugazi.

  - Therefore, Guy Picciotto probably doesn’t play guitar.

This is illogical: the conclusion is wrong because Guy Picciotto does play guitar. By extension, it should be clear that NHST allows very little to be said about the null hypothesis (see Cohen, 1994 for more detail).

**Reason 5: p < .05 is completely arbitrary!**

Why do we use a p < .05 as a criterion for accepting significance? Well, essentially it’s because Fisher said so. There is no ‘magic’ behind .05, it’s just a reasonable figure and what Fisher decided was appropriate to be sufficiently confident that a genuine effect exists. To some extent it’s arbitrary (for more detail on how Fisher reached this value see Field, 2005a or Field & Hole, 2003): If Fisher had woken up in a 10% kind of mood we would all be working with p < .10 as our criterion. As such, it can be tempting in NHST to attribute ‘importance’ to an effect with p = .04, but assume that an effect with p = .06 is unimportant: in equal sample sizes, these effects are actually likely to be very similar! For this reason people (e.g. Wright, 2003) suggest reporting exact probabilities for effects (i.e. p = .03 rather than p < .05).
What is an effect size?

There is no magical answer to the problems with NHST (although see Cohen, 1994; Schmidt & Hunter, 2002 for some suggestions) although alternatives such as Bayesian statistics and minimum effect testing provide interesting alternatives. However, one thing that can be used in conjunction with NHST (not necessarily as a replacement for) are effect sizes (see Clark-Carter, 2003, for a gentle introduction).

An effect size is simply measure of the magnitude of observed effect (see Field, 2005a; 2005b). The measure can be a standardized measure (but some effect size measures are not), meaning that we can compare effect sizes across different studies that have measured different variables or have used different scales of measurement. So, an effect size based on the Beck depression inventory could be compared to an effect size based on levels of serotonin in blood.

Effect Size Measures

Many measures of effect size have been proposed, the most common of which are Cohen’s, d, and Pearson’s correlation coefficient, r (although there are others such as Hedges’ g, Glass’ \( \Delta \), odds ratios and risk rates: see Rosenthal, 1991).

For the purpose of this article we’re going to stick with one of these: the correlation coefficient. There are three reasons for this: (1) it is probably the most common effect size measure (Field, 2001, in press; Rosenthal & DiMatteo, 2001); (2) you will be familiar with it already; and (3) it is incredibly versatile.

We’ll spare you the details of the correlation coefficient (you can read Field, 2005a, chapter 4 if you’re that interested). Many of you will be familiar with the correlation coefficient as a measure of the strength of

\[ r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}} \]

2 Standardized effect size measures are usually standardized within a sample, so things like having different standard deviations in two groups means the same difference will have different effect sizes.
relationship between two continuous variables; however, it is also a very versatile measure of the strength of an experimental effect. It may be difficult for you to reconcile how the correlation coefficient can also be used in this way; however, this is only because students are often taught about it within the context of non-experimental research. Although we don’t want to get into it now (see Field, 2005a if you’re interested), trust me that r can be used to express differences between means and this is the measure that we prefer because it is constrained to lie between 0 (no effect) and ±1 (a perfect effect) and is familiar to almost all students and researchers.

Figure 1

OK, so you don’t believe me. Well, let’s use our Cradle of Filth example again to look at a classic difference between means scenario. The data are in Figure 1. This shows the number of pentagrams drawn by children exposed in the womb to CoF compared to controls.
First let’s do an independent t-test on these means.

### Group Statistics

<table>
<thead>
<tr>
<th>To</th>
<th>Music Listened</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentagrams</td>
<td>No Music</td>
<td>5</td>
<td>9.4000</td>
<td>3.20936</td>
<td>1.43527</td>
</tr>
<tr>
<td>Drawn</td>
<td>Cradle of Filth</td>
<td>5</td>
<td>4.8000</td>
<td>1.92354</td>
<td>.86023</td>
</tr>
</tbody>
</table>

### Independent Samples Test

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>t-Test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variances</td>
<td>F</td>
<td>Sig.</td>
<td>t</td>
</tr>
<tr>
<td>Pentagrams Drawn</td>
<td></td>
<td>.262</td>
<td>2.749</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>1.454</td>
<td></td>
<td>2.749</td>
</tr>
</tbody>
</table>

### SPSS Output 3

SPSS Output 3 shows the result of this t-test. We could conclude that listening to cradle of filth makes you less likely to draw pentagrams (the mean for the CoF condition is significantly lower than for controls). We could write that children exposed to CoF in the womb drew significantly fewer pentagrams than those exposed to no music, \( t(8) = 2.75, p < .05 \). Ok, let’s now do a simple Pearson correlation on the same data (go on, try it for yourself). We know, it sounds crazy, but let’s just see what happens.

SPSS Output 4 shows the results of this analysis. Note the significance of the correlation coefficient: it’s .025. Now look back at the significance of \( t \) from SPSS Output 3: it’s .025 also. That’s odd isn’t it? Well, no it’s not, what we’ve just done is perfectly legitimate, the correlation expresses the difference between these two groups: in fact, provided you code your two groups with 0s and 1s, you can conduct a Pearson correlation on the data and the end result expresses the ‘relationship’ between the groups and the outcome variable. In fact, this ‘relationship'
is simply the difference between group means! This is known as a point-biserial correlation (see Field, 2005a, chapter 4).

<table>
<thead>
<tr>
<th>Music Listened To</th>
<th>Pentagrams Drawn</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Correlation</strong></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.697*</td>
</tr>
<tr>
<td>.025</td>
<td>.025</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (2-tailed).

**SPSS Output 4**

Hopefully, we’ve demonstrated that $r$ can be used to express the difference between two groups, but why did $r$ and $t$ have the same significance value. The answer is that the two statistics are directly related: $r$ can be easily obtained from several common test statistics. For example, when a t-test has been used $r$ is a function of the observed t-value and the degrees of freedom on which it is based:

$$r = \frac{t}{\sqrt{t^2 + df}}$$

With the data above, we get:

$$r = \sqrt{\frac{2.749^2}{2.749^2 + 8}} = .697$$

which is exactly the same as calculating a Pearson $r$ for the original data (see SPSS Output 4)! The reason why the minus sign has gone is because when we calculate Pearson $r$ for these kind of data, the sign of the correlation entirely depends on which way you code the groups (try running a correlation on the same data but change it so that Cradle of
Filth are represented by a code of 1 and ‘No Music’ by a code of 0: the resulting r will be positive.

In fact, r can also be obtained from a variety of other test statistics. When ANOVA has been used and an F-ratio is the test statistic, then when there is 1 degree of freedom for the effect, the following conversion can be used:

\[
r = \sqrt{\frac{F(1,-)}{F(1,-) + df_R}}
\]

In which \( F(1,-) \) is simply the F-ratio for the effect (which must have 1 degree of freedom) and \( df_R \) is the degrees of freedom for the error term on which the F-ratio is based.

The reason the degrees of freedom for the effect need to be 1 is simply because this means that 2 things are being compared. It’s difficult to interpret effect sizes for complex effects involving lots of groups because you have no idea which groups contribute to the effect. So, it’s best to calculate effect sizes for focussed comparisons such as comparisons of two groups or interactions with only 1 degree of freedom.

“What about categorical data?” we hear you ask. No problem, r can also be used to express relationships in categorical data because it is directly related to the chi-square statistic (again, provided this chi-square statistic has only 1 degree of freedom):

\[
r = \sqrt{\frac{\chi^2(1)}{N}}
\]

Finally, r can be calculated from the probability value of a test-statistic. First, you must convert the probability into a z-score using tabulated values of the normal distribution (see Field, 2005a), and then simply divide the resulting z by the square root of the total sample size on which it is based:

\[
r = \frac{Z}{\sqrt{N}}
\]
**Why are effect sizes useful?**

Effect sizes are useful because they provide a measure of the importance of an effect. It doesn’t matter what effect you’re looking for, what variables have been measured, or how those variables have been measured we know that a correlation coefficient of 0 means there is no effect, and a value of 1 means that there is a perfect effect. Cohen (1992, 1988) has made some widely accepted suggestions about what constitutes a large or small effect:

- **$r = 0.10$ (small effect):** in this case, the effect explains 1% of the total variance.
- **$r = 0.30$ (medium effect):** the effect accounts for 9% of the total variance.
- **$r = 0.50$ (large effect):** the effect accounts for 25% of the variance.

We can use these guidelines to assess the importance of our effects (regardless of the significance of the test statistic). However, $r$ is not measured on a linear scale so an effect with $r = 0.4$ isn’t twice as big as one with $r = 0.2$.

For example, in our earlier Cradle of Filth example, we had three sets of data on which we conducted t-tests. Figure 2, shows these data and the significance of these tests. You’ll remember we had two samples with similar differences between means, but different significances and one data set with a near zero difference between means that was highly significant. If we calculate the effect sizes using the values of $t$ in SPSS outputs 1 and 2 we find that our two samples with similar mean difference yield similar effect sizes (.40 and .47); also our sample with a near zero difference between means produces an effect size of zero. As such the effect sizes better reflect what’s going on than the significance of the test statistic!
Finally, the effect size in the sample is not actually that interesting: it is the size of the effect in the population that is important. However, because we don’t have access to this value, we use the effect size in the sample to estimate the likely size of the effect in the population (see Field, 2001). This can be done by assimilating effect sizes from similar studies using a technique called meta-analysis (see Field, 2001, 2005b, 2003; Rosenthal & DiMatteo, 2001), but that will have to wait for another time!

References


Web

See Dan Wright’s pages on NHST (and a very useful list of links under the ‘extra bits’):

Find out about Cradle of Filth here: http://www.cradleoffilth.com/cof/index.php
Abstract submissions for poster presentations covering the full range of Health Psychology are warmly invited for the Annual Conference in September 2006. The conference is being hosted by Essex University, and the keynote speakers are Professors:

- Charles Abraham, University of Sussex;
- Sheina Orbell, Essex University;
- Prof. Alex Rothman, University of Minnesota;
- Prof. Andrew Steptoe, University College London.

The submission deadline is 8th June 2006 for poster submissions only. Submission information is available from the conference website [http://www.dhp2006.org.uk](http://www.dhp2006.org.uk) and all abstracts should be submitted online.

Registration forms and provisional programmes will be available in April 2006; early-bird registration rates are available between April and July (and students receive a significant reduction in registration fees). Applications for student bursaries will be received by Professor N Rumsey (Chair of the DHP), from April until 8th June 2006. See the advert in this issue or the conference website for details. The conference will be celebrating 20 years of health psychology in the UK and there will be events throughout the conference to commemorate this significant birthday.

If you have any queries about the conference, please contact the National Conference Organiser, Heather Buchanan ([h.buchanan@ibss1.derby.ac.uk](mailto:h.buchanan@ibss1.derby.ac.uk)); Tel. +44 (0)1332 592108).
Conference Bursaries Available From the Division of Health Psychology

It is the 20th birthday of Health Psychology in the UK this year, and to commemorate this occasion the DHP will be sponsoring up to ten conference bursaries (two more than usual). Each bursary will cover registration, accommodation, entrance to the social events, and travel to the DHP Annual Conference.

Applications are welcome from 3rd April 2006 until the closing date of 2nd June 2006. UK-based candidates with a first degree in psychology who are not yet eligible for Chartered Health Psychologist status (e.g., postgraduate students, research assistants) will be considered. Preference will be given to DHP members, applicants who provide evidence of having tried to obtain funding from other sources (i.e., http://www.rdinfo.org.uk/Queries/WhatsNew.asp), and/or applicants who have had a paper or poster accepted at the conference. It is a condition of acceptance of the award that the recipient should submit a report of some aspect of the conference to Health Psychology Update by the deadline immediately following the conference.

Applications should be made in the form of a letter addressed to the Chair of the DHP (see below) and include: (i) a statement of why a bursary is needed (e.g., because a postgraduate student is not funded by a research council or their institution); and (ii) a supporting statement from a supervisor or referee. The Conference Scientific Committee reserves the right not to make awards should no suitable candidates be found.

Six copies of the application should be sent (by 2nd June 2006) to: Professor Nichola Rumsey, School of Psychology, University of the West of England, Frenchay Campus, Bristol, BS16 1QY.
Seven useful features of the Mahalanobis distance statistic for psychologists

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Introduction

Prof. P.C. Mahalanobis invented a statistic in 1925 which was given the title Mahalanobis distance, or $D^2$, by the eminent statistician R.A. Fisher (Hagger-Johnson, 2005). Readers may have encountered Mahalanobis values in the output from statistical software programs, including discriminant function analysis, multiple regression, ANCOVA and survival analysis. The aim of this article is to highlight several interesting properties of $D^2$ from which postgraduate psychology students might benefit while conducting multivariate research. The statistic is conceptually simple; it can be used alongside existing measurement instruments or classification schemes; to combine measures taken on different scales of measurement; in cluster analysis; in the identification of outliers; and can be used to identify individuals with unusual or interesting combinations of characteristics. Finally, its advantages over other measures of distance (e.g. Euclidean distance) make it an important, although often neglected, statistical tool for psychologists.

**Feature 1: $D^2$ is conceptually simple**

Just as we use z-scores to measure the standardized location of a case (or ‘value’) in a distribution with a given mean and standard deviation, we can use $D^2$ as a measure of the location of a case relative to the centroid and covariance matrix for the cases in the distribution for a group of cases. The centroid and covariance matrix are simply the multivariate equivalents of a mean and standard deviation. The centroid
is the point whose coordinates are the means of tested variables (Mahalanobis, 1925). $D^2$ is therefore the distance of a case from the centroid. Imagine a three dimensional graph with a ‘swarm’ (like a swarm of bees around a hive) of cases around the centre. Cases with high $D^2$ values would appear as separate and distinct from the swarm. $D^2$ should be evaluated against the chi-square distribution with degrees of freedom equal to the number of tested variables at $p < 0.001$. $D^2$ takes the average values of characters concerned but ignores the number of individuals on which this is based.

**Feature 2: $D^2$ can be used alongside existing measurement instruments or classification schemes**

Mahalanobis was a statistician interested in anthropological data (Hagger-Johnson, 2005). In his classic paper, he analysed data collected to help understand the diasporas of the Anglo-Indians in Calcutta (Mahalanobis, 1925). He was interested in whether Anglo-Indians had become more ‘aligned’ with other cultural groups, such as Hindus, Mahomedans, or with higher or lower castes. In contemporary terms, this might be described as a study of ethnic minority ‘integration’ into a mainstream culture. Mahalanobis (1925) took an existing classification system (the caste system) and asked if it might be possible to say anything useful about ‘new’ developments in dispersal and culture of the Anglo-Indians in relation to it. His philosophy was one of moving from a known system, the caste system, to the unknown characteristics of a new dataset.

**Feature 3: $D^2$ can combine different types of measures with different scales of measurement**

Mahalanobis (1925) measured the degree of resemblance (assumed to represent the degree of intermixture or convergence of the new Anglo-
Indians) between each group and every other group. He took the mean of each variable (e.g. income) for one caste and another. Subtracting them gave the difference between the two castes for the variable - mean income in this case. Mahalanobis had a multivariate dataset, taking several measures at once. Since each was measured on a different scale, he needed a common unit to express them. Our old friend, the standard deviation, was perfect, not least because standardized values can be compared inter se or added together. The coefficient D was used to represent ‘caste distance’ in this context. He could ignore the sign of the differences by squaring the differences between groups. His paper demonstrated a close affinity between physical measures of caste members and cultural affinity, but also that movements in the caste system were taking place, with social barriers and caste restrictions unable to prevent it. Another useful property of the D² statistic here was that widely different types of measures could all be combined – physical, cultural or geographical, regardless of their scale of measurement. Psychologists frequently work with a mixture of measures (e.g. psychological, physical, social or demographic) which benefit from standardization prior to statistical analysis.

**Feature 4: D² values can be subjected to cluster analysis**

D² is used in cluster analysis, the portioning of a dataset into smaller groups or clusters based on some trait or characteristic. A distance measure, such as D², is needed to measure the differences between groups on that trait. If a D² value is significant, that value can be used to measure the distance between two groups. A set of units of classification may form a group ‘constellation’ or cluster. For example, cultural variables may increase the distances among social groups more than geographic or physical variables. Clustering by cultural variables might therefore take place when a set of D² values is subjected to cluster analysis. If the distance between two categories is
not statistically significant, the categories might be pooled together because they are part of the same group (or the sample size is too small to detect meaningful distances). The recently developed software NewMDSX allows the clustering of $D^2$ values (www.newmdsx.com; Coxon, 1982).

**Feature 5: $D^2$ can be used to detect multivariate outliers in datasets**

Multivariate outliers are cases with an odd combination of values on two or more variables. For example, a young person earning £1 million per year is likely to be a multivariate outlier in a dataset. They would not be considered an outlier on the variables ‘age’ or ‘income’, but they would when these variables are considered together. Tabachnick & Fidell (2000, p. 67-71) describe how to generate Mahalanobis values to test for multivariate outliers. The values are computed by running a dummy SPSS REGRESSION, and then examined through SPSS SUMMARIZE. They provide syntax which will detect multivariate outliers in your dataset. Modify the syntax so that variables match those in your dataset. Check the critical of chi-square with the appropriate degrees of freedom with $p < .001$. Any cases with $D^2$ greater than the critical value are multivariate outliers. If you want to find out which variable is making each person a multivariate outlier (i.e. what makes them distinct from the ‘swarm’ of other people’s data points), you can run a multiple regression analysis. If you eliminate these cases, it is wise to report details about them in your write up e.g. one male aged 23 was a multivariate outlier because his income was £1 million (Tabachnick & Fidell, 2000, p. 67-71).

**Feature 6: Mahalanobis distance can be used by psychologists to identify individuals with unusual or interesting combinations of characteristics**

As described above, psychologists might use the $D^2$ statistic to remove multivariate outliers from datasets. However, it can also be used to
identify such outliers as unusual or interesting in some way. Unusual combinations of variables (e.g. an individual with a high depression score and a high optimism score) are qualitatively interesting and can be reported as such. The identification of people who buck trends, stand out, or have unusual combinations of psychological characteristics is of high theoretical interest.

**Feature 7: D² has a number of advantages over other distance measures**

D² has a number of advantages over other distance measured such as Euclidean distance because it takes into account correlations between variables in the data set (by the inverse of the variance-covariance matrix, the dispersion matrix). Euclidean distance assumes that variables are independent, each contributing a unit amount, and can therefore grossly exaggerate dissimilarities between measures. Unfortunately, SPSS PROXSCAL uses Euclidean by default and does not offer D²! The software NewMDSX (www.newmdsx.com, Coxon, 1982) is therefore recommended, which generates a D² matrix through its data preparation program, WOMBATS. WOMBATS will generate for the user a large variety of matrices (e.g. D², correlation, covariance) from a raw dataset, which can be taken onward for other analyses (e.g. multidimensional scaling, clustering, principal components analysis). NewMDSX is available relatively cheaply and includes many other programs which psychologists frequently use, such as principal components analysis. In WOMBATS, researchers can generate a matrix of D² values for the variables or for the individual cases. Simply change ANALYSIS(0) to ANALYSIS(1) in the syntax to get the individual values. At the time of writing, SPSS can be used to create a single column of D² values for individual cases, but not for variables. This should not prevent postgraduate psychology students from
exploring the several practical uses of the measure outlined above, nor
from exploring potential innovative uses of $D^2$ in their future research.

References


Recommended Web sites

New MDSX
http://www.newmdsx.com
Over the course of 2005 I have been involved with a cluster (Discovery in Design: User-centric computational issues; see www.ip-cc.org.uk/did/index.html) associated with the joint EPSRC and AHRC “Designing for the 21st century initiative” (see www.design21.dundee.ac.uk/home.html). The cluster adopted a multi-disciplinary approach looking at design issues relating to the development of a computational tool to assist the early, abstract stages of conceptual design. Delegates were drawn from academia and industry representing a wide range of design disciplines, including: software engineering, civil engineering, social science, psychology, biotechnology and chemical engineering. In my capacity as note-taker, I was required to document the details of the proceedings; however, I soon became involved in some of the tasks in my capacity as a (human factors) psychologist.

The cluster’s activities include a series of four workshops with presentations by delegates and invited speakers along with round-table and break-out group discussions. My intention for this article is to identify the pertinent issues that arose and the output of the more structured tasks. As a result, I hope to highlight the design/decision-making process utilised by the cluster in developing multi-disciplinary research agendas, and also how the role of the psychologist is recognised as being vital to effective design.
Workshop 1: 9th-10th February, 2005, Engineer’s House, Bristol

Given the disparate backgrounds of the delegates, the main objective of the workshop was to lay the foundations of a common language and develop a shared understanding of the key concepts and issues relating to design and user-centric computation.

The activities for the morning session of day one focused on a series of short presentations by each delegate. This identified a number of problems relating to differing terminologies and (perceived) differences within the design process across the range of disciplines. While the degree of confusion diminished as the morning progressed, it was felt that the scheduled activity for the afternoon (more focused discussion in break-out groups) had to be largely spent on fostering cross-disciplinary understanding.

The final task required each delegate to identify those generic issues that had emerged during the day’s activities considered to be fundamental requirements of an envisaged user-centric computational design environment. From these, four superordinate issues were identified:

1. **Two-way knowledge capture**, which included issues such as the on-line integration of user knowledge and experience and the utilisation of knowledge extracted from the system to facilitate user innovation and creativity.

2. **Overall type of user interaction**, which covered issues associated with single- or multi-user environments and the possibility of implementing a machine-based facilitator/mentor.

3. **Usability**, which included aesthetics to ensure the system is engaging and exciting, and issues associated with the seamless support of individual and team-working and the necessity to support subjective user-based and quantitative machine-based evaluation.

4. **Exploration**, which covered issues on the search process for new knowledge such as the necessity to support exploration of sparse, poorly defined representations in previously neglected search space.
On day two the four issues were addressed further. Break-out groups were formed to discuss the issues and present their findings while the remainder of the day was taken up with discussion relating to the groups’ output.

**Workshop 2: 20th-21st April, 2005, Engineer’s House, Bristol**

The intention of the second workshop was to narrow the focus of discussion and consider the softer, human-centred aspects along with the problems associated with engineering, product, software, drug, and sensor design. The activities of this workshop included a number of presentations followed by questions and further discussion.

On day one, the proceedings began with a presentation by the invited speaker Dr Pat Jordan (The Contemporary Trends Institute) who identified the eight key lifestyle supertrends (Feminisation, Girl power, Staying alive, Growing up fast, Every second counts, Ethics, Technofear, and Individuality) and how they are used by designers to forecast future demand and facilitate innovative product design. Ian Jones (University of Cardiff) followed by considering the concepts creativity and innovation, and highlighted the need for nonsense thinking in order to achieve these goals. Next, Chris Simons (UWE) presented findings of research into conceptual software design as a computational search process. Finally, Professor John Miles (University of Cardiff) discussed the successes and failures of computationally intelligent systems in construction industry design. In particular, Professor Miles highlighted some of the problems associated with accessing tacit knowledge, and recognising the limitations of the quality of this knowledge.

The closing activity required each delegate to identify three main issues arising from the day’s activities, which provided the basis for a further roundtable discussion.

Day two commenced with a presentation by Chris Jofeh (Ove Arup & Partners) who addressed some of the design issues in the civil engineering
industry stressing the necessity to design with future key issues in mind, such as the aging population, depleting energy sources, and the effects of climate change. Next, Professor Ian Parmee (UWE) discussed how Evolutionary Computing and associated data-mining and visualisation techniques could be used to gather design information and capture tacit knowledge. Professor Lisa Hall (University of Cambridge) followed with a discussion of the issues associated with the design of biosensors and analytical systems. Finally, Dr Jan Noyes (University of Bristol) provided an introduction to the field of human factors psychology. In stressing the importance of adopting a user-centred approach, Dr Noyes considered the issues of human error and allocation of function to highlight why and how some of the strengths and limitations of human performance should be considered in the design process.

The final activity of the workshop required each delegate to identify three issues arising from the day’s talks which were then the focus of a round-table discussion.


The third workshop built upon the previous two workshops and was primarily concerned with identifying areas of the design process that have proven difficult to support computationally, and to understand better how attempts to formalise design and introduce specific computational tools have affected the design process. In order to achieve these goals, a number of presentations were given by experienced designers who differed in terms of the degree of computational support utilized during the design process.

Across the two days, presentations were made by Dr David Smith (University of Wales, Newport) who considered some of the available products (e.g. Bluetooth technology, virtual products) alongside products that will be released in the future (e.g. wearable technology) to identify the various issues associated with designing human-centred information systems; Dr Simeon Barber (Open University Planetary and Space Sciences Research Institute) discussed the design and engineering process in the Beagle 2 project; and Dr
Paul Mortenson (EVOTEC OAI) who gave an insight into the issues associated with \textit{in silico} drug discovery and \textit{de novo} molecule design, indicating that the final decision is made by the chemist. The fourth presentation by Dr Tom Karen was considered by many of the delegates to be the most enlightening. Dr Karen took the delegates through his experiences of designing a number of innovative products all of which were achieved without computational support, including: the Bush TR130 (1960), the Reliant Scimitar GTE (1968), the 3-wheeled Bond Bug (1970) and the Raleigh chopper (1970). In so doing he identified the importance of a “butterfly mind” whereby he could flit between different ideas and consider how they could be applied to aid the design/improved re-design of each other. He also alluded to his personal 13 item checklist for successful product design, and identified three key “musts” in design:

1. Aesthetics: it must look good;
2. Functionality: it must be easy to use – put yourself “in the skin of the user”;
3. Manufacture: it must be easy to make.

Following the four presentations delegates were required to identify five key generic issues from across the series of workshops. These included:

1. **Knowledge Extraction / Knowledge Capture.** This covers issues relating to the sharing of knowledge between human(s) and machine.
2. **Search and Exploration.** This covers issues associated with how the search space is explored in order to facilitate innovative design.
3. **Enabling Environment.** This refers to ways in which the design of the system interface can itself facilitate innovative design, simply by presenting information to the user(s) in a stimulating manner.
4. **Representation.** This either refers to the input to the machine from which system-based search and exploration may begin (engineers perspective), or the output from the machine to the user(s) (social scientists/psychologists perspective).
5. **Understanding humans.** This covers the issues relating to all aspects of psychology that might be pertinent in the use of a computational tool in the design process.

The final activity required each delegate to categorise the statements proposed on day one according to the five key issues. During the activity, there was considerable debate and, as expected, much disagreement; nonetheless, an overall consensus was reached which provided the foundations for the activities in the final workshop.

**Workshop 4: 19th-20th October 2005, Queen’s College, University of Cambridge**

Day one of the final workshop opened with an overview of the activities of the previous three workshops. This was followed by a break-out group activity in which each group was required to categorise the 270 comments generated over the workshops according to their relevance (scored on a scale of 0-5) to each pair of axis relating to the five key issues identified in Workshop 3. Following this activity, a discussion was held to identify how the data should be handled. It was unanimously concluded that the most important issue was “Understanding the human” (which was pleasing to hear for those psychologists/social scientists present). In addition, the “Search and exploration” and “Enabling environment” (which requires an understanding of the human in order to design an environment to assist human performance) issues were also identified as important. Using a form of factor analysis, the data was analysed further to identify the specific comments that scored highly on each of the three key issues. These included: Capturing knowledge, Visualisation, Creativity, Learning, Modelling, Representation, (Multi-) user support.

Day two began with a discussion regarding an apparent inconsistency identified in the scoring method used by one group in the previous day’s break-out group activity. It was decided that rather than altering the data *ad hoc* to fit the other results, the differences should be openly acknowledged.
and the data remain in its present form. The remaining two activities of the
day were aimed at further elucidating the seven specific areas of interest
thereby identifying possible research agendas. The first activity required the
scoring of the issues on charts in terms of their relevance to the human and
the system. The second activity required a discussion about why and how we
would investigate the issues. Each of these activities was followed by
presentations of the results.

The workshop ended with a short presentation about the Institute of People-
Centred Computation which encourages cross-disciplinary research aimed at
developing and integrating generic human-centric computational support for
complex design and decision-making processes, emerging from the work
carried out in this cluster (see, www.ip-cc.org.uk/index.html).

On a final note, I am extremely grateful to Professor Ian Parmee and Dr Jan
Noyes for giving me the opportunity to be involved in the cluster. The
invaluable experience gained through the cluster has led me to two
conclusions. First, by utilising expert knowledge first hand, an interdisciplinary
approach makes innovative design possible; however, any such approach
should be grounded on a firm cross-discipline understanding and common
language (although this is not always entirely attainable). Secondly, the
consideration of the strengths and weaknesses, needs and requirements of
the human/user along with the role of the (human factors) psychologist was
increasingly acknowledged over the series of workshops as being
fundamental to the development of an envisaged computational tool to assist
conceptual design: in Workshop 1, none of the four superordinate factors
explicitly involved this issue, however, by Workshop 3 and particularly
Workshop 4, “Understanding the human” was identified as the central issue of
importance. This acknowledgement will serve to enhance the reputation of
psychology in general.
Being a postgraduate student often means the work is tough and isolating; there’s an emphasis on self-directed learning; and there are numerous bureaucratic hoops to jump through. Amidst all this tension, sharing your resources, problems, experiences, and solutions with other students in the same position can be a very cathartic process. This is where personal development (PD) groups come into the equation, with some university departments specifying compulsory participation in PD groups as part of their research-training program.

Regardless of whether or not students are ‘gently pushed’ by their departments, the first task of the group is usually deciding how often they will meet. This can vary from weekly, fortnightly, to monthly meetings; though may fluctuate as meetings progress, depending on their usefulness.

The second step is to outline an agenda for the group, a learning contract or a group manifesto, which as meetings progress can be amended or referred to. Different aims can include having a group which:

- Shares barriers and solutions.
- Discusses vital contacts within the department including staff, technicians and librarians.
- Shares research tools and resources such as articles, electronic resources, software programs and research Websites.
- Forms a social support network.
However, it should be noted that whilst fulfilling the aims in the group manifesto are positive aspects of a PD group experience, there are a number of problems that may be encountered:

- **Absenteeism**: This may seem trivial, but the practicalities of having a member who missed a meeting attend the next meeting and raise a particular problem that was discussed in great length at the meeting they missed can cause tensions within the group.

- **Productivity**: Groups may often digress into opportunities for socialising, with little productivity or sharing of resources (i.e. just going down the pub for a drink). At the other extreme, they can become rigid formal affairs that become more of a hindrance than a help. The key is to get the right balance between the two.

- **Group Dynamics**: Having one member of the group dominate at the expense of other members is a sure sign that the group is not functioning well. An egalitarian approach is favoured, but this can also create problems in terms of blurred boundaries for who does what type of work, and consequently tasks may not get completed (e.g. in terms of who is in charge of e-mailing information to members or chasing up queries raised in the group).

The success of a group will depend on a plethora of variables that come into play. These can include which people decide to join, the ‘characters’ in the group who keep it going, and other more simpler things such as how much workload members have, how many students are part-time or full-time, how far students live from the university, as well as the condition of public transport! Another strange phenomenon to be weary of is the different perceptions of the group between
members: i.e. one member may find the PD group to be an ocean of information, whilst another who attended the same meetings may think it a pointless exercise. This would suggest that the outcome of joining a group will be a highly personal one.

Individual experiences aside, if a group does fail and dissolution is imminent it can be quite a hard task for all members involved. If there is a common consensus the group is failing to meet its aim or has saturated its purpose, factions may form (depending on the size) and the group might live on in smaller and more informal ways.

If you are a postgraduate student contemplating joining or even starting a personal development group, the various issues outlined above will help you along your way. Being part of a group will take up some of your time, and if the group does not function well it may prove to be detrimental to yourself and to your study. However, without it you may lose out on a rich source of resources and a valuable source of social support that is much needed when studying at postgraduate level.

As a concluding note, it might be worthwhile to consider becoming a ‘virtual’ PD group. With the emergence of online discussion forums and e-groups, the boundaries of time and space no longer exist for the PD group (although your computer screen may not appeal as a replacement for face-to-face communication). The answer may lie in a combination of the two; and with the next generation of PD groups forming, students may decide to take this onboard as they grapple with the question ‘PD groups: to join, or not to join?’
### Dates for the Diary

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<th>To</th>
<th>Title</th>
<th>Organiser</th>
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<tbody>
<tr>
<td><strong>30th Mar '06</strong></td>
<td><strong>1st April '06</strong></td>
<td>The New BPS Annual Conference &quot;A showcase of some of the world's best psychology&quot;                                                                                                             For more details contact BPS Conference Office (0116 252 9555) or <a href="mailto:AC2006@bps.org.uk">AC2006@bps.org.uk</a></td>
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<tr>
<td><strong>31st Mar '06</strong></td>
<td><strong>31st Mar '06</strong></td>
<td>Student Members Group Annual Conference 2006                                                                                                                                                    Samantha Smith (0116 2529555) or <a href="mailto:samsmi@bps.org.uk">samsmi@bps.org.uk</a></td>
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<td><strong>13th April '06</strong></td>
<td><strong>13th April '06</strong></td>
<td>Maximizing Interpersonal Relationships: FIRO Element B Accreditation Workshop                                                                                                                     DOP Learning a Living website <a href="http://www.bps.org.uk/dopws06/dopws06_home.cfm">http://www.bps.org.uk/dopws06/dopws06_home.cfm</a></td>
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<td><strong>25th April</strong></td>
<td><strong>25th April</strong></td>
<td>Career Counselling: A Practitioner's Approach Workshop                                                                                                                                           DOP Learning a Living website <a href="http://www.bps.org.uk/dopws06/dopws06_home.cfm">http://www.bps.org.uk/dopws06/dopws06_home.cfm</a></td>
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<td><strong>3rd May '06</strong></td>
<td><strong>5th May '06</strong></td>
<td>Qualitative Research and Marginalisation A three-day international conference at the University of Leicester                                                                                   please visit our web site at <a href="http://www.le.ac.uk/pc/QRM">www.le.ac.uk/pc/QRM</a> or call 0116 252 5482 or email <a href="mailto:dclinpsybookings@le.ac.uk">dclinpsybookings@le.ac.uk</a></td>
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<td><strong>11th May '06</strong></td>
<td><strong>11th May '06</strong></td>
<td>Managing People Through Change: Keys for Successful Business Transformation Workshop                                                                                                             DOP Learning a Living website <a href="http://www.bps.org.uk/dopws06/dopws06_home.cfm">http://www.bps.org.uk/dopws06/dopws06_home.cfm</a></td>
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<td><strong>13th May '06</strong></td>
<td><strong>13th May '06</strong></td>
<td>Division of Counselling Psychology Annual Conference 2006                                                                                                                                         Alison Clode Baker or Sam Smith 0116 2529555 0116 2557123 <a href="mailto:DCOP2006@bps.org.uk">DCOP2006@bps.org.uk</a></td>
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<td><strong>18th May '06</strong></td>
<td><strong>18th May '06</strong></td>
<td>DOP Professional Practice Workshop 2006 'Building Skills for Practising Occupational Psychologists'                                                                                              The BPS Conference &amp; Events Team (0116 2529555) or <a href="mailto:dopppe@bps.org.uk">dopppe@bps.org.uk</a></td>
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<td><strong>8th June '06</strong></td>
<td><strong>8th June '06</strong></td>
<td>Coaching in Organisations: Becoming a Skilled Coach (Advanced) Workshop                                                                                                                          DOP Learning a Living website <a href="http://www.bps.org.uk/dopws06/dopws06_home.cfm">http://www.bps.org.uk/dopws06/dopws06_home.cfm</a></td>
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<td><strong>9th June '06</strong></td>
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<td>Counterproductive Behaviours at Work Masterclass                                                                                                                                                  DOP Learning a Living website <a href="http://www.bps.org.uk/dopws06/dopws06_home.cfm">http://www.bps.org.uk/dopws06/dopws06_home.cfm</a> site</td>
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<td><strong>21st June '06</strong></td>
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<td>Group and Individual Facilitation Skills for Psychologist (Advanced) Workshop Office                                                                                                               DOP Learning a Living website <a href="http://www.bps.org.uk/dopws06/dopws06_home.cfm">http://www.bps.org.uk/dopws06/dopws06_home.cfm</a> Living website</td>
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By: Petra M. Boynton, Psychology Press. Hove. Published 2005

Reviewed by David Moore – Sheffield Hallam University

You’re beginning a research project but how do you start? Many of us will have turned to a research methods book for advice with how to undertake our research and will probably have been disappointed by lots of not very useful information about the theoretical backgrounds to different techniques and the philosophical underpinnings of research ethics. This, however, is not the case with The Research Companion, which deals with the practical realities of research.

Petra Boynton has authored a book which manages to interweave a clear and straightforward account of research methods with humorous real examples from herself and her colleagues. Petra starts her book by discussing the inadequacy of methods teaching to real world research, as providing an ideological view which is nothing like the reality, particularly of carrying out research on non-students. The book continues by addressing a number of important planning issues which most other books ignore, such as developing your research idea, sources of and applying for funding, working with a steering group to obtain the best research, the real world of piloting every element of your research, from the method to your letters, as well as listening to your participants to modify you research appropriately.

This book devotes its largest chapter to how to interact with participants. This is an exceptionally useful account which deals with everything you will need to know about your relationship with your participant group from how to approach them, and making sure you get their name right to dealing with upset or aggressive participants and ending your
relationship. This chapter really makes you think about what is important to your participants and how they feel and suggests ways of making the research process as smooth as possible. By the use of its exercises, checklists and tables this chapter covers everything you need to know about the time you spend collecting data, and the helpful examples of letters, consent forms, answer phone messages etc, these make you think of all the nuances involved in your contact with the public.

Because of the stage I'm at in my research I found the section on ‘Keep on keeping on’ very useful, by acknowledging that research is a very lonely business and suggesting motivational strategies this made for a reassuring read. I also found the section on reporting your findings to be very useful as I am approaching a stage where I am thinking of disseminating the data I am currently collecting. This chapter got me to think about the other ways to present my data and in particular about the ways I could present my findings to my participant group and those organisations that have helped me in recruitment.

This book covers research in an engaging style, which includes real examples of both successes and failures from Petra and her colleagues; these both inform and reassure the reader of the unpredictable nature of research, and offers useful suggestions on how to react when it all goes wrong. In addition to the text this book offers a further unique resource, a message forum for researchers to discuss research, swap tips for everything from data to ethics, and advertise conferences and training courses. This is available at http://www.psypress.co.uk/boynton.

The content and style of this book make it an essential read for all individuals wanting to undertake a career in social science research,
from the recently graduated research assistant or postgraduate embarking on their PhD to the Professor managing a research unit.

5th Seattle Club Conference Review

December 2005, Cardiff

Deborah Riby, University of Stirling

The Seattle Club conference takes place once a year and is for active researchers in intellectual disabilities in the UK. The get together is of great benefit to young or new researchers in the area of learning difficulties and, as the conference is only open to people actually presenting research, it is great to see what else is going on. The clear focus of the conference is therefore on reporting methodologically sound research and the size of the meeting is constrained to allow the focus to be equally on oral and poster presentations. Oral presentations are predominantly given by researchers at an early stage of their career, whilst more established researchers present posters.

This year the setting was Cardiff and the meeting took place in early December 2005. My presentation was part of a symposium on ‘phenotype studies’ encompassing my own talk on Williams syndrome alongside presentations largely focused on cognitive aspects of Fragile X syndrome and Cornelia de Lange syndrome. Throughout the two day conference there were a large number of presentations focused on the important aspects of care for individuals with learning difficulties; for example aspects of diagnosis and parents’ experiences of this, residential placements for individuals with learning difficulties and the effects of caring in relation to staff burn-out. Focusing on the wider
implications of intellectual disability was also addressed with talks concerning the effects on siblings or parents, and this was succinctly presented in the keynote talk concerning family adjustment (by Richard Hastings).

This meeting is of great benefit to researchers in the early stages of their career investigating intellectual disabilities and is attracting large numbers of researchers fulfilling this criteria. Next year the conference will be held in Lancaster and I would thoroughly recommend attending these conferences in the future. This was the second time I have presented at this group meeting and I have found the experience invaluable and the feedback from fellow researchers extremely useful. More information concerning these conferences can be found on the web.
PsyPAG Committee Members 2005-2006

(August 2005)

If you have any questions or issues you would like to raise, please contact the relevant committee member by e-mail, writing PsyPAG in the subject line. Addresses can be found at:

http://www.psypag.co.uk/committee/members.html

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<td>April 2004</td>
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<td>Rachel Pye</td>
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<td>Glenda Pennington</td>
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