Paranormal Beliefs among Science Students

A study at Griffith University brings both good and bad news for Skeptics

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How widely held are paranormal beliefs?

Skepticism exists to investigate paranormal claims, so inevitably the extent of beliefs in paranormal phenomena must be of vital concern. We need to know which beliefs are the most important; which claims the most widespread. Surveys of the general population in Australia and America give some guidance. Table 1 shows responses to surveys carried out by MORI in Australia in 1997 and by Gallup in America in 2001. In all, MORI asked about 12 paranormal items, while Gallup asked about 13[1].

The table is complex, because the questions were asked in different ways. However, the similarities in belief are quite striking. They suggest – though they do not prove – that a substantial majority of both Americans and Australians espouse some sort of paranormal belief. The American study had asked identical questions in 1990, and found that reported belief in most items had risen in the intervening years.

One should be hesitant about reading too much into surveys of this kind, but several conclusions do seem to follow. The first one is fairly obvious. The paranormal is not some minor fringe activity in modern societies. In a very real sense it is the norm. Despite little support from education or the government, the paranormal commands assent from a majority of people, and its belief base may be expanding. In my view, we should count ourselves lucky that the paranormal is splintered into many different factions and beliefs, or it could acquire real and terrible power.

A second conclusion is this. If paranormal belief is massive and widespread, and if skeptical resources are limited, then it seems logical to develop a skeptical policy. That is, we need to decide which areas of the paranormal are most in need of critical scrutiny, and which are relatively harmless. We might decide, for example, that paranormal health is an important area, or that paranormal movements which directly attack science (such as creation 'science') need special attention.

As part of a skeptical policy, we might also decide that certain parts of the community should have a more highly-developed skeptical sense than others. For example, science is often thought to be under attack from the paranormal, from postmodernists and from others as well (eg Levitt 1999, Gross and Levitt 1994). We might expect that,

among science students in particular, skepticism about the paranormal is much more powerful than in the general community.

In fact, previous research on this topic is not reassuring (Goode 2001). It looks as if increasing education does reduce the incidence of some paranormal beliefs (such as creation 'science') but has no effect at all on others (such as ESP and UFOs). Therefore, we need to know about these beliefs among science students, as well as in other places.

Some research has been done on this topic. Marks and Kammann (1980), in New Zealand, reported that about 80% of their students believed in telepathy, while Gray (1985) found that 85% of his students believed in ESP and nearly 70% in UFOs and reincarnation. Gray also found that he could reduce belief in these topics by appropriate teaching, though the results were fairly modest and tended to fade over time (Gray 1987).

An important and logical question is this: how do these unorthodox beliefs compare to the 'official' knowledge which students are supposed to be learning? The percentages believing in the paranormal may be of concern: coupled with a rejection of scientific knowledge, they could become alarming. This was the starting-point for the current study: to place paranormal beliefs among students in context by comparing them to scientifically-based beliefs.

The survey.

I am convenor of a large course for first year students, titled Science, Technology and Society, at Griffith University. The majority of students taking this course will go on to study one of the major sciences, such as chemistry, physics or biology. A substantial minority are enrolled in a pharmacy program, and there is a scattering of other students, such as one doing a commerce degree, and a few working in environmental science. About 230 people enrolled to do this course in 2002, and in July I administered a questionnaire about beliefs in the paranormal. For most students, this questionnaire was administered electronically: a total of 165 completed the form via computer. However, 23 students were not able to access the electronic form, and these completed paper questionnaires. The total response rate was 188 out of 230, or over 81%[2]. In no case did more than three students fail to complete any item.

In the questionnaire, I asked students about a range of paranormal phenomena. However, it seemed important to be able to compare their beliefs with scientific ones. Therefore, I included six other items. Four of these – I'll call them established scientific beliefs — described beliefs which are generally accepted to be verified scientifically. They are taught in universities and, in Kuhn's (1970) term can be regarded as paradigms. These are continental drift, evolution, the big bang origin of the universe and quantum physics. In each case the beliefs are scientifically accepted, but difficult for the non-specialist to envision. I also included two 'scientifically undecided' items: the Oort cloud and intelligent life on other worlds. In Table 2 the scientifically established beliefs are in bold type, the scientifically undecided ones are in italics. In the questionnaire, they were not distinguished in this way, and were mixed up with the paranormal beliefs.

This field of research is bedevilled by a lack of standard questions and measures. I used many of the Gallup formulations for the items, and also took three of the scientific items from the national Science Foundation survey of attitudes toward science (National Science Foundation 2002). Some items — such as the Oort cloud and quantum physics — I made up myself[3].

Table 1.

Belief in paranormal phenomena in Australia and the USA

	Aust 1997	USA 2001
Belief in* ... (Australia/USA)		
Ghosts/Ghosts or spirits of dead people can come back in certain places and situations	40	38
Astrology/Astrology or that the position of the stars and planets can affect people's lives	28	28
Past lives/future lives* */reincarnation, that is, the rebirth of the soul in a new body after death	30/34	25
Alien visitors (ancient)/Extraterrestrial beings have visited earth at some time in the past	32	33
Mind Reading/Telepathy, or communication between minds w'out using the traditional 5 senses	36	36
Psychic healing/Psychic or spiritual healing or the power of the human mind to heal the body	68	54

Sources: Milne (1997); Shermer (2001)

*The Australian questions went: "Do you believe in . . .". The American questions went: "For each of the following items I am going to read you, please tell me whether it is something you believe, in, something you're not sure about, or something you don't believe in. How about . . .?" The Australian survey asked 609 people over 16 by phone, the American survey asked 1012 people over 18 by phone.

**Two separate questions were asked in the Australian survey.

Table 2

Ratings of Items on Percentage of Students Believing or Tending to Believe

	Believe		Tend to Believe	
	%	N	%	N
Continental drift - the continents have been moving their locations for millions of years and will continue to move in the future.	**68.1**	**128**	**23.9**	**45**
Evolution - human beings as we know them today developed from earlier species of animals.	**58.8**	**105**	**25.5**	**48**
There is intelligent life somewhere else in the universe.	*52.7*	*99*	*23.4*	*44*
At its basic, sub-atomic level, the universe is probabilistic and cannot be known completely.	**29.8**	**56**	**26.6**	**50**
ESP or extrasensory perception.	22.3	42	39.9	75
The big bang - the universe began with a huge explosion.	**22.3**	**42**	**31.4**	**59**
Psychic or spiritual healing.	19.7	37	27.7	52
Telepathy or communication between minds without using the traditional senses.	19.1	36	33	62
Extraterrestrial beings have visited earth at some time in the past.	19.1	36	25.5	48
That houses can be haunted.	18.1	34	26.6	50
Ghosts or spirits of dead people can come back in certain places and situations.	17.6	33	34.6	65
Witches.	17.6	33	20.7	39
Clairvoyance or the power of the mind to know the past and predict the future.	17	32	27.7	52
Reincarnation, that is, the rebirth of the soul in a new body after death.	16.1	30	21.5	41
Some comets come from the Oort cloud, which surrounds the Solar System.	*14.4*	*27*	*14.4*	*27*
People can hear from or communicate mentally with someone who has died.	13.3	25	15.4	29
Creation - the world was created in six days, as described in the Book of Genesis.	12.2	23	9.6	18
UFOs are alien craft from another planet or star-system.	9	17	26.1	49
Astrology, or the position of the stars and planets can affect people's lives.	9	17	17	32
Channelling, or allowing a 'spirit-being' to temporarily assume control of a human body during a trance.	9	17	11.2	21

In the questionnaire, I asked the students to indicate whether they believed in each item, tended to believe, did not know or could not say, tended not to believe or did not believe. My aim was to assess how firmly beliefs were held. Clearly, a statement of belief is more of a commitment than a tendency to believe, and this leads to an important finding[4].

Now, what would we expect to find from students' responses? If there were general acceptance of scientific knowledge, then the four items concerning established scientific beliefs should have a far higher belief rating than the rest. The two scientifically undecided items might receive, on the average, 'don't know' ratings, while the paranormal items would rate much lower.

What might we find if the scientific method were not accepted? This is more difficult to say, but one possibility is that all views — scientific or paranormal — would receive similar levels of endorsement. This is the fear of scientists such as Gross and Levitt (1994), with their concern that one belief is regarded as being as good as another.

What did the results show?

Table 2 displays the results of the survey, in order of belief. They fall between the two scenarios outlined above, though perhaps resembling the first one a little more. Of the four established scientific beliefs (bold type), all occupy positions in the top six, and three are in the top four. What is more, the other item in the top four is the existence of intelligent life elsewhere in the universe — one of the scientifically undecided items.

The percentages also give some comfort to advocates of a scientific viewpoint. Over two-thirds of the respondents believe in continental drift, and over a half in evolution. If you include the 'tend to believe' answers, over ninety percent of students accept continental drift, and over eighty percent accept evolution. All four scientifically established beliefs have a majority believing, or

tending to believe them. Compared to the paranormal beliefs, most of the scientifically established beliefs also seem to have 'harder' support, that is, they have a higher proportion of people 'believing' in them, rather than 'tending to believe'.

Things become a little more surprising when we look at the two scientifically undecided items. Well down the list, only one student in seven believes in the Oort cloud, and a similar number tends to believe. This is not quite as bad as it sounds, since only 5 students did not believe, or tended not to believe: a huge majority (68.6%) ticked the "don't know/ can't say" box. This is a reasonable response since, as Raup (1999:19) has said "The Oort cloud has never been seen". Still, one wonders at this massive 'don't know' vote, when one sees that over half the students asserted a belief in intelligent life elsewhere in the universe, and more than three-quarters believed or tended to believe in it!

Why are these two 'scientifically undecided' items assessed so differently? One can only speculate. One possibility is that the evidence for intelligent life is much more compelling than that for the Oort cloud. My own view is that this is not true: there is no direct evidence for either. Another possibility is that most students have never heard of the Oort hypothesis, and so refrained from expressing an opinion. That does imply that they have different standards for the intelligent life hypothesis and the Oort hypothesis.

Thus far, the results look reasonably good for science. However, the responses to the paranormal items have some surprises. Some of them attract appreciable levels of support: over 60% reported believing, or tending to believe in ESP, and over a half in ghosts and telepathy. Support for most of the rest is at the level of a substantial minority. Creation 'science' attracts little support, but even so nearly one student in eight reports believing in six-day creation. This is disconcerting for me: as I survey a lecture class of perhaps 150 students, I know that fifteen to twenty of them support six-day creation. I find myself looking along the rows, asking myself "Which ones?"

On the other hand, the levels of support are appreciably less than those found by Marks and Kammann and by Gray. Even for ESP, the most popular paranormal belief, these ratings are well short of the eighty-plus percentages recorded by these researchers. The popularity of creation 'science' is broadly in line with other studies in Australia (eg Price 1992), but well below that in American universities.

Comparing results

How do these results compare with those of the polls in Table 1? The questions are asked in different ways, so comparisons are difficult. However, it seems clear that support for psychic healing is less, and that for astrology may be as well. Compared to the American survey, support for creationism is well down. A surprising result comes when American responses are compared on the scientific items (National Science Foundation 2002). Student responses to the big bang and continental drift are actually less supportive than those of American adults[5] and only a little higher for evolution.

The low levels of support for astrology and UFOs among the students quite surprised me. It is possible that some support for all the items is an artefact. The students had to complete this questionnaire as part of their course, and it is possible that some simply selected the first category in each answer to get through it as quickly as they could. However, since the least supported items attracted support of only 9%, this is the maximum size of this effect; it alters the size of the percentages, but not the conclusions. It is also worth pointing out some inconsistencies. For example, a total of 153 students believed, or tended to believe, in evolution and 41 believed or tended to believe in six day creation. However, only 188 students completed the questionnaire, and so at least six students must have said they believed, or tended to believe, in both evolution and six-day creation! This seems logically impossible, and I suspect that the result is simply an artefact of a few students giving quick, unconsidered answers.

On balance, these results are mildly reassuring to the supporters of science. Among this class of science students, there was clear support for established scientific viewpoints. Support for the paranormal was somewhat lower than for many other studies. In addition, support for scientific viewpoints was often 'harder' — more definite — than support for paranormal beliefs. On the other hand, there is certainly a disturbingly luxuriant undergrowth of paranormal beliefs. In some cases a majority of the class believed, or tended to believe, in some paranormal phenomena.

To my mind, to tackle the paranormal better, Skeptics need several things. One is a clear policy: bearing in mind their levels of support, which beliefs are most in need of skeptical attention? Second, we need a generally accepted measure of paranormal beliefs: there is a babel of different questions and items, making comparisons between different studies almost impossible[6]. I propose to develop one, based loosely on the items trialled here. Finally, we need a better understanding of how paranormal beliefs fit into people's lives. It is not enough to point to logical errors which lead to paranormal ideas: we need to know why these beliefs appeal, and not others. Thus equipped, we might make the world a better place for skepticism.

Notes.

1. Some of the other items are interesting. 41% of Australians believed in Aboriginal mystical powers, and 42% in angels. 41% of the Americans believed in possession by the devil, but only 15% believed in channelling. The Australian survey did not ask about creation 'science', but Gallup found 45% of Americans supported creation.

2. This is probably an underestimate of the response rate. Some students enrol and then take no further part in the course. Perhaps as many as 20 do this each year, reducing the student population to 210, and raising the response rate to nearly 90%

3. To avoid making a fool of myself, I checked the quantum physics item with a physicist.

4. Incidentally, the Science, Technology and Society Course has nothing directly to do with skepticism or the paranormal. Its content can be found by reading Bridgstock *et al* (1998). Therefore, the students had no 'skeptical cues' regarding the author's viewpoint.

5. Once again, the questions are different. 33% of American adults said it was true that the big bang took place, 79% said that continental drift was true, and 53% that human evolution took place. If you accept that believing is the same as saying something is true, then the comparable Australian student figures are 22%, 68% and 56%. Great caution is needed here.

6. The strongest candidate for a general instrument to measure paranormal beliefs is probably the scale developed by Tobacyk and Milford (1983). However, it has a number of problems. There is a statistical dispute about whether it measures seven dimensions of paranormal belief (Tobacyk and Milford 1983), five (Lawrence, Roe and Williams 1995), four (Hartman 1999) or maybe just two (Lange, Irwin and Houran 2000). That's a lot of uncertainty! The questions ask about different types of paranormality in different ways, which mean that the answers cannot be compared. In addition, the scale contains no measure for astrology, and no direct measure of creationist belief. For these reasons, it does not seem very useful.

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