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Are our assumptions more anomalous than the phenomena?

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Psi: a neutral term denoting the unknown factors that underlie parapsychological phenomena
Psi effects/phenomena: observable outcomes attributed to the action of psi
Psi agent: a person thought to play an active role in the production of psi effects

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One major criticism of parapsychology is that it lacks accepted theoretical models, and that those it does have tend to make use of the more esoteric and speculative areas of physics. Part of the reason for the widespread scepticism and dearth of viable theories is, I think, due to the perceived properties of psi effects rather than properties that are necessarily real. Given our current knowledge, it is difficult if not impossible to model psi effects as the claimed properties rarely appear to be consistent with theory and observation in other areas of science. But are the claims often made for psi phenomena really justified? Here, I look at three of the more common claims made by parapsychologists and critically assess the assumptions that led to them. I will try to show how the different assumptions we make about psi effects can radically alter the physical requirements of any potential mechanisms and suggest alternative perspectives on some parapsychological phenomena.

Claim number 1: psi effects are independent of space.

That is, phenomena such as telepathy work as well when the sender and receiver are separated by thousands of miles as when they are in adjacent rooms. It's a claim that you see made in many places, both in popular books and academic papers.. For example, Radin (1997: p.278) states that laboratory data "...suggest that psi effects are completely independent of space..." and that a good theory must take this into account; Hardy (2000: p.1) writes that "positive psi results... show no systematic declines with increases in distance between subject and target" and concludes that this "...largely undermines 'transmission' models of psi". Even the FAQ section of the Parapsychology Association (2008) states that "...parapsychological phenomena... do not appear to be limited by the known boundaries of space or time...". So what is the basis for this claim?

Part of the reason comes from theoretical ideas in parapsychology. Schmidt (1975) developed a *Teleological Model of Psi* which suggested that the psi agent need only concentrate on the desired outcome of an event, the psi effect being a skewing of the probability of that event happening. This model meant that any psi effect would not only be independent of space, but also of time and task complexity. A more complex but similar model was developed by Walker (1975, 1984), who developed the *Quantum Mechanical Theory of Psi* suggesting that conscious observation somehow affects the system

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("collapses the wave-function"). Again, this would mean that psi effects were space-independent: all that is needed is some sort of feedback to the psi agent about the target system. Whether this feedback is about a system in the next room or on the next continent would not matter. Both of these models (usually collectively referred to as "Observational Theories") have had a strong influence on the way parapsychologists conceptualise their research and interpret their results.

There is also empirical support drawn from experimental research. A common reference is to long-range remote viewing (RV) studies. For example, Targ and Puthoff (1976) showed that subjects could successfully identify the location of a remote person over distances of up to 14.5km, noting that "...the [RV] phenomenon is not a sensitive function of distance...". Other (Schlitz & Gruber, 1980; Schlitz & Haight, 1984) attempted to replicate this, with their 'receiver' and 'sender' separated by 854km in the latter study and over 7000km in the former, and found significant results comparable to studies where sender and receiver were separated by only a few metres. Again, they concluded that distance was not a relevant factor.

So do these and similar results mean that psi effects are indeed independent of distance? In making such a claim, there are 3 inherent assumptions:

1) The target (person, object, etc.) is the direct source of any information gained.
2) The receiver is the active person who is responsible for the psi effect(s).
3) Task success is a quantitative measure of the psi effect(s).

So we have to ask whether these assumptions are necessarily valid. As mentioned earlier, the theoretical basis for the claim of spatial independence is accompanied by a prediction of temporal independence i.e., psi effects can also be seen where the receiver and target are separated by time. In the case of the Observational Theories, then the receiver is not receiving any information about the remote target but is instead selecting the outcome that matches their prediction. In the more general case, if it is possible to receive information from the future, then the receiver may not be getting the information from the distant target but from a future self who is later given sensory feedback about the actual target. In any of these cases, spatial separation would be irrelevant and assumption 1 would not be valid. Although the concept of precognition is one about which it is hard to theorise, and one which exceeds many people's boggle threshold, there is a lot of experimental research which can be interpreted as providing support for precognitive phenomena (e.g., see the metaanaylsis of Honorton & Ferrari, 1989). It must therefore be a factor we take into account when designing and evaluating any studies looking at the effect of distance. If we prefer to stick to real-time processes, then we must also consider the possibility of alternative (though still nonsensory) channels of information. If we take the Schlitz and Gruber (1980) study as an example, we find that success was based on the ratings of independent judges i.e., people otherwise unconnected to the study were given the RV descriptions of the receiver and asked to rate how well these descriptions matched each of the locations used as targets in the study. We would normally assume that the receiver's mentation contained the target information but, in the absence of knowledge of underlying mechanisms, this is just an assumption. We could also posit that the judges were the actual 'receivers', that they were using some ESP faculty that biased their evaluation of the RV descriptions and allowed them to pick out the target-relevant parts of an otherwise random mentation. Perhaps these judges psychically gained this information directly from

the sender, or from the site itself (given that they visited each of the target sites and so bypassed the distance aspect)? It is hard to evaluate such possibilities but, with current knowledge, it is as likely that the judges played an active role as it is that the receiver was able to gain the information over large distances. Assumption 2 then may also not be valid. This also highlights an important point about the terms used in parapsychology (and other areas of science): they are used to help the researcher conceptualise a given situation but this does not mean that the system under study is constrained by those terms. Nature does not need to conform our expectations and any experimental model is at best an approximation of what is really going on.

Finally, and perhaps most importantly, success at most psi tasks, remote viewing or otherwise, is rarely a useful measure of how an information channel may have been affected by distance. Saying whether a target has been correctly identified or not does not tell us much about the characteristics of the underlying processes. For example, I could call out my name from in front of you or from a few metres away. In both instances, you could successfully pick my name out from a list but the characteristics of the information you receive would still have been affected by the distance: my voice would be louder when I was closer to you. As I got further away, there would come a point when you could no longer hear me. Up until that point, if you used task success as the key measure, you might conclude that distance had no effect. With psi effects, we similarly have few if any precise measures that might be *expected* to show relationships with distance (or other physical factors). This is a point that has been made before [2], and parapsychologists are starting to show more awareness of it (Irwin, 2003: p. 76; Braud, 2005: pp. 48-9), but it does not yet appear to have had much influence on experimental design or on model-building. Thus, with the possible exception of some physiological measures (although this is as yet far from clear), we can conclude that assumption 3 is definitely not valid.

So it seems that there is still reason to consider a role for distance in our attempts to understand psi effects. Whether there is a parapsychological equivalent to the inverse-square law, or whether psi effects really are 'non-local' as the Observational Theorists propose, we cannot afford to treat assumptions as facts. With this in mind, future researchers might consider explicitly stating the distances involved in their experimental set-up, including all parts of the system under study. At the moment, the majority of studies published in parapsychology journals do not provide sufficient detail to even infer such information.

Claim number 2: consciousness is a requirement for psi effects to occur.

The second claim refers to what is seen by many as a fundamental property of psi effects: they are produced by a conscious mind. This is something that is even implicit in the terms we use to describe the phenomena. Psychokinesis literally means “movement by the mind”, telepathy comes from “feeling at a distance” and is more commonly described as “transfer of information from mind to mind”, DMILS is the direct *mental* interaction between living systems. Suggesting that consciousness may not be necessary for psi effects to occur is at best unfashionable and at worst heretical! I'm not saying that consciousness is not involved at all. I imagine that it would have to be required for any higher level use of psi effects, but only in the sense that having consciousness is the reason humans are so successful at interacting with their environment in general. Consciousness is thought to represent “...an integrated response that incorporates [information from] all major bodily systems, including psychological systems.’ (Thayer, 1989). Whatever else it is,

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consciousness is the current best evolved adaptation for integrating a whole range of information into a unitary structure, enabling humans and other animals to better adapt to, and ultimately alter, their environment. But there seems to be little evidence to suggest that it is any more involved with psi effects than with other processes by which we interact with the world around us. For example, vision involves the detection of light (an electromagnetic 'signal') by light-sensitive cells in our eyes. The light enters our eyes and causes retinal cells to momentarily increase their electrochemical activity that is propagated along nerve pathways to the brain (i.e., the signal is detected). If there is enough light, then the electrochemical activity is sufficient to be registered consciously (i.e., the light is perceived). Even then, this perception may be neglected if it is not the current focus of attention (if you are engrossed in a book, you tend not to be aware of all the patterns of light and dark around you). If however, the perception is of something that has immediate relevance to you, you will become very aware of it and your focus will shift (say out of the corner of your eye you see a thrown object rapidly approaching you!). Having consciousness may give us an advantage in the way we use the light to gain information about our surroundings and alter our behaviour where necessary, but this does not mean that consciousness is necessary for the light to be detected. Even when there is a change in behaviour, this still need not involve consciousness. For example, we may respond to qualities of the light - our pupils will dilate and we will blink if the light is bright - but this is a purely automatic response).

I suggest that we have no reason to think the same does not hold true for psi effects. Whatever the mechanism, it seems likely that there will be a physical process by which psi effects are manifested in the human body and that this will then have subsequent effects on conscious behaviour. This does not reduce the psi experience itself to a purely physical phenomenon any more than a knowledge of the way light refracts reduces the experience of seeing a rainbow, but it does differentiate between the physical mediator of information and the experience itself. We are talking about two interrelated but discrete levels of the phenomena. Moreover, it is not clear where consciousness needs to be involved. There are numerous examples of psi effects on target systems to which we would not normally attribute consciousness: Nash (1984) offers results apparently showing a psychokinetic effect on the mutation rate of E. coli bacteria; Barry (1968) conducted experiments on the effects of intention on fungal growth, finding significant results in 85% of cases; and Brier (1969) found significant results for the effects of a participant’s attention on one of two plants wherein bio-electrical activity was increased only for the focus plant. We could argued that such effects were due to the influence of a consciousness-possessing agent on a wide variety of internal processes within the target systems, but we could equally well (and perhaps more economically) conceptualise the effects as being relevant responses initiated by the target systems themselves when they detected some sort of signal from the agent. If we start thinking of psi effects as being responses to physical signals of some sort, this also widens the range of effects we might expect to find, suggesting we he possibility of effects even in the absence of any consciousness-producing agents (e.g., between plants, or even between nonbiological systems).

So perhaps the argument is that there needs only to be an active agent who possesses consciousness? Again, it depends on what we mean by consciousness as there are many studies showing psi effects based on unconscious responses (e.g., Braud, 1975; Ballard, 1980; Schmidt, 1974) including the numerous studies explicitly looking at electrodermal activity as the primary measure of interaction between people (Schmidt, Schneider, Utts, &

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Walach, 2004). Indeed, the general consensus in the field is that unconscious responses are typically more reliable measures than conscious ones (Sah & Delanoy, 1994).

Claim number 3: psi involves complex information transfer

Even though practically nothing is known about how information might be transferred to give the psi effects we observe, several potential mechanisms are generally considered to have been ruled out purely on the basis of theoretical considerations of the bandwidth needed to transmit complex information. 'Mental radio' models are now dismissed by most parapsychologists due to the low emissive capabilities of biological systems (both in terms of the strength of any signal and in the rate at which information could be transmitted) and the problem of noise degrading the intelligibility of any signal's information content over large distances. Most parapsychologists therefore think that psi effects must not be a signal in classical terms, and adjust their theoretical ideas accordingly. However, an alternative suggestion may be that the information transferred is not complex at all, and that much simpler 'signalling' may be involved in some apparently complex psi effects.

One good example is the commonly reported experience of telepathy between 2 people (also the basis for most of the Ganzfeld ESP experiments, one of the most common experimental procedures used in lab-based parapsychological research) wherein the people notice that there is an apparent exchange of thoughts or that some other aspect of their behaviour appears to be matched. Ignoring cases where the matching between person A and person B is retrospective – as this is more easily explained by more conventional psychological processes such as selective memory and shared experience – a typical experience would consist of two elements (see figure 1):

1. Person A talks about, or otherwise indicates by their behaviour, their current thoughts (either spontaneously or as part of an ongoing conversation). Meanwhile, Person B is 'broadcasting' their thoughts in some manner.
2. Person B hears Person A and, if their thoughts correspond in some way to what they were thinking, they get excited, thinking telepathy had occurred.

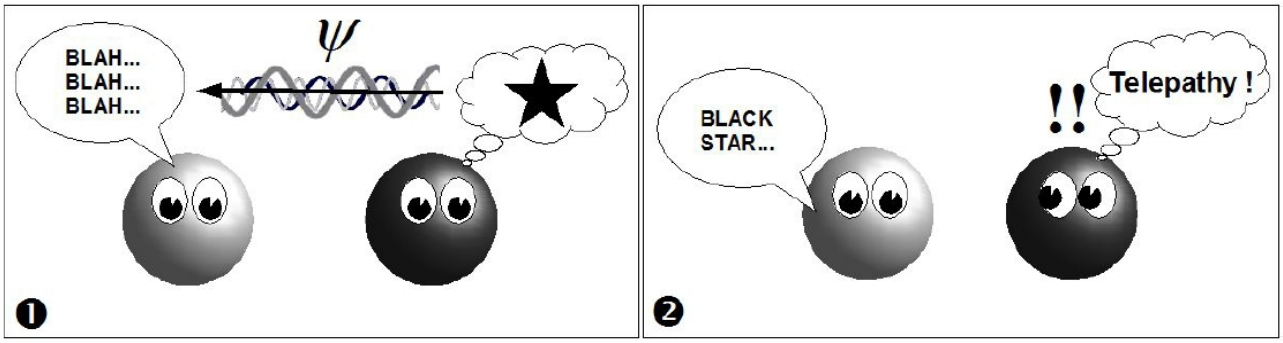

Figure 1: Traditional view of telepathic experience

If chance occurrences, external cues and conventional sensory cues such as body language have been ruled out, it is unsurprising that such experiences might lead people to think that the thoughts of one person had somehow been transferred to the other. But think what this would really mean. Even with the simplest information (e.g., thinking about

a black cat), there is a lot of information which needs to be transferred. Whether it is a visual image (the most commonly reported experience), the semantic concept or just the words, we would have to come up with a theory that would (a) allow this information to be packaged ("encoded") in a form that could be transmitted, (b) specify a physical signal that a person can emit that would be able to carry this information, and © allow the information to be unpacked ("decoded") by the receiving person in such as way that it would be understandable. No wonder that parapsychology lacks viable theories!

So let's think about the same situation in a slightly different way (See figure 2):

1. Person A talks about, or otherwise indicates by their behaviour, their current thoughts (either spontaneously or as part of an ongoing conversation).
2. Person B hears this and, if those thoughts happen to correspond in some way to what they were also thinking, they get excited. This act of getting excited generates a very simple signal (i.e.,some increase in the energy emitted from person B, perhaps in terms of the magnetic field generated by their increased physiological arousal).
3. Person A detects this signal on an unconscious level (perhaps they also experience a change in physiological arousal).
4. Person A then looks for a reason for this change within themselves and attribute it to what they were just saying (i.e. the signal reinforces their current behaviour), perhaps thinking of it as a telepathic "hunch".

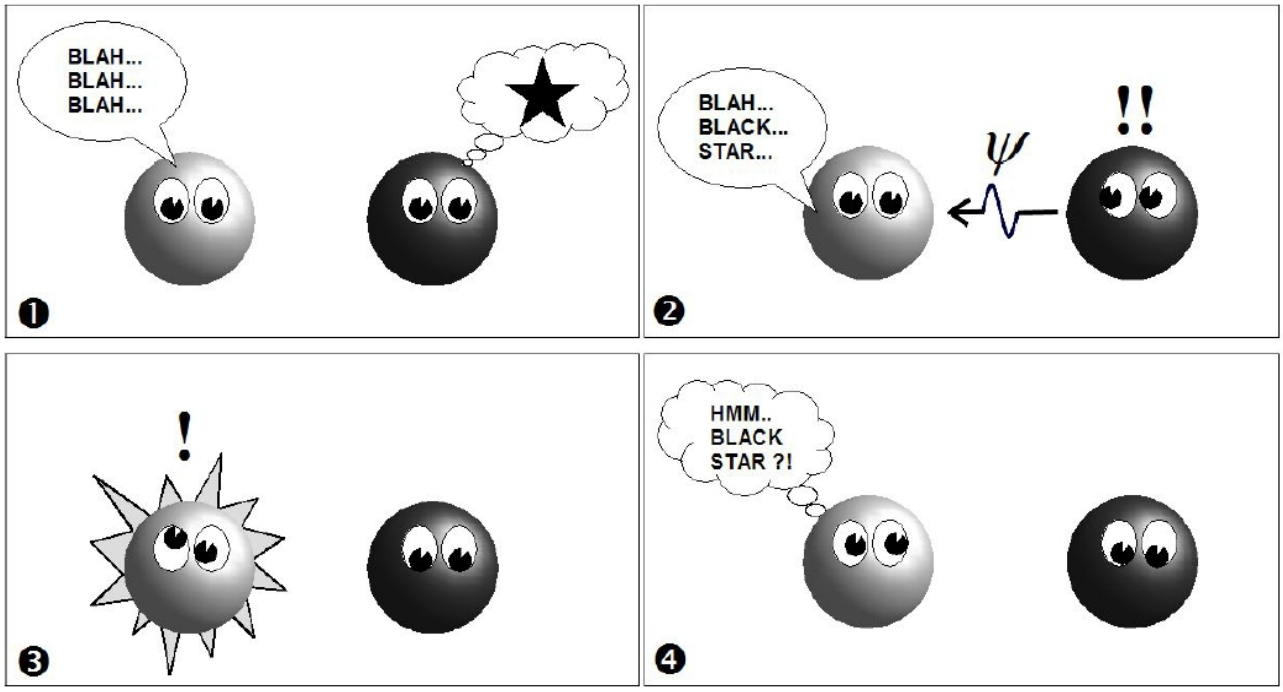

Figure 2: Simple information transfer view of telepathic experience

So how is this different? There is still information transfer and it would still count as a telepathic experience. However, here the hypothetical signal need not contain any complex information about the thoughts of either person – it simply exists. No matter what the situation, the signal in step 2 could have the same characteristics and would cause the same initial reaction when detected by person A. All the complexity of the experience is transferred by the conventional senses: person A verbally describes the complex

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information (step 1) and it is reinforced by a simple “telepathic” signal (steps 2-4) if it is relevant to person B.

If this is a valid idea, then it changes the way we think about a lot of parapsychological experiences. Any experience that involves some kind of sensory feedback between the people involved could be conceptualised in this way, whether it is a spontaneous event or a lab-based study. The conventional senses provide the complexity and richness of the experience while the the psychic part may actually be one of the simplest components, involving some sort of signal with relatively low information content. So could this be a valid perspective? Well, there is some support from general findings within parapsychology. Analyses have shown that a 'free-response' protocol, where people are free to describe the target as they see fit, is more successful than a 'forced-choice' protocol, where people are asked to choose from a small set of possibilities (Utts, 1995). The kind of model proposed would suggests that you need a wide-range of thoughts to be expressed, giving the greatest chance for any of those thoughts to happen by chance to be relevant and so get reinforced by the 'psi signal'. Forced choice protocols would therefore restrict the possibility of this reinforcement being able to occur. It has also been noted that emotional targets do best (Bem and Honorton, 1994), a suggestion which ties in with anecdotal reports of spontaneous ESP. This is usually interpreted as showing that emotionally-charged events are the best psi targets, but perhaps the success is because emotional states are associated with high levels of arousal and physiological activity. Such states might therefore generate stronger or more consistent 'psi signals'. Finally, the basic process involved with the model - that person A will show a measurable response when person B simply gets excited – is an effect already established in the experimental parapsychology literature (Schmidt et al, 2002).

Additionally, I carried out an experimental series specifically looking for this kind of effect during Ganzfeld ESP sessions (Stevens, 2004). This is a common technique in parapsychology, usually involving a Receiver, who describes their thoughts and feelings ('mentation') at the time a Sender is watching a randomly selected video clip in a remote room. The Receiver then uses their mentation to try to pick the correct target video clip from among 3 other decoy video clips. The Sender can hear what the Receiver is saying but has no way of communicating with the outside world via the conventional senses. It was hypothesised that the Receiver in the Ganzfeld (a mild state of sensory deprivation involving audio white noise, low level red light and a relaxed physical state) would show a change in skin conductance (a measure of physiological arousal) every time the Sender decided that they were producing verbal mentation relevant to the target. The sender indicated this by pressing a button that recorded the exact time and was later matched to the record of the receiver's skin conductance. The change in skin conductance at these times would reflect a change in the baseline arousal of the receiver (due to the hypothetical 'psi signal') and would hopefully act to reinforce the theme of whatever the receiver was describing at the time.

What was found did indeed suggest that the proposed model of simple information transfer was valid. Receivers did show an increase in their arousal at times of Sender button presses and this was significantly different from times of no button presses (see figure 3). The appearance is very much what would be expected if the Receiver were responding to a sensory stimulus, even though no such stimulus was present. Unfortunately, the conscious responses of the Receivers (their choice of which video clip was the target),

was less successful. Even though they appeared to be responding to the Sender on some level, they were not able to make use of this enough to significantly demonstrate successful ESP. Again this goes back to the point I made earlier: there is a difference between the detection of a signal and being aware or able to make use of it.. Even then, the information it conveyed may be ignored if it is not judged to be relevant.

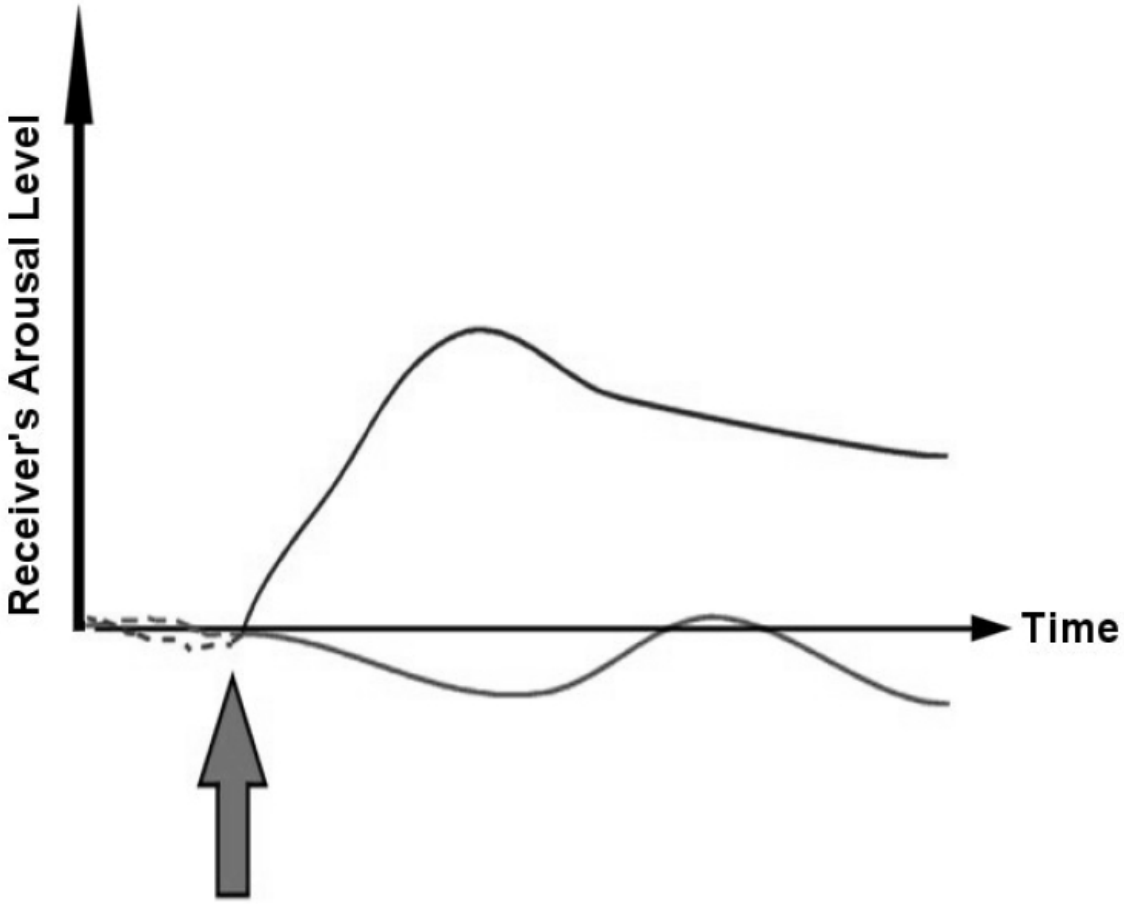

Figure 3: Comparison of averaged Receiver arousal levels at times of Sender button presses. The arrow indicates the time when the sender thinks the receiver has said something relating to the target (i.e., presses the button) and the topmost line shows the subsequent average change in Receiver's skin conductance. The lower line shows the Receiver's resting level of arousal (i.e., at time when there were no button presses).

Conclusions

Most parapsychology researchers would agree that the experimental literature demonstrates that the anomaly we term psi needs to be taken seriously and does not simply represent methodological flaws or statistical errors. It is equally true that few of us agree on what psi effects do represent. The years of careful research have have not enabled us to explain the erratic nature of the phenomena or to develop useful theoretical models. I think this strongly indicates the need for a return to first principles, a questioning of the assumptions that have become part of accepted doctrine in the field. Here, I have tried to highlight three areas which I feel are important to our understanding of psi phenomena. My hope is that the questions raised might offer incentive to other researchers, current and future, to think again about the nature of parapsychological

phenomena.

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Footnotes

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1 The experimental work described was carried out while the author was a Research Fellow with the Koestler Parapsychology Unit, University of Edinburgh.

2 “Frequently, it is stated that, since the strength of any physical radiation declines proportionally to the square of the distance from the source – the 'inverse-square law' – the ESP test scores should decline with distance accordingly. However... the inverse-square law decline applies to the power of the carrier wave, but ESP scores would depend on the intelligibility of the information.” - Hoyt Edge (Edge et al, 1985).