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"Everybody Knows Parapsychology Is Not a Real Science" Public Understanding of Parapsychology

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Abstract[2] – Despite over a hundred years of associated research effort, the status of parapsychology is disputed. Taking the perspective of "public understanding of science," this situation seems quite general as many people perceive the study of human behavior as unscientific.

Methods: A small survey was conducted through a French-language social-media network on a non-representative population (n = 89). Inspired by the Knowledge-Attitudes-Practices paradigm, the questionnaire has 28 Likert 5 items assessing attitudes towards parapsychology and 10 open items assessing key knowledge about parapsychology.

Results: On average, participants have an adequate representation of the perimeters of parapsychology but do not recognize it as a full scientific discipline. A split between participants claiming familiarity (n = 53) or unfamiliarity (n = 35) with parapsychology shows the effect of a "level of knowledge" variable: Individuals familiar with the topic are better able to recognize parapsychology as a science and score more highly on key knowledge items than participants unfamiliar with the topic or than participants overall. A second split in the familiar group between those who recognize parapsychologists as genuine scientists (Proponents, n = 26) and those who do not (Skeptics, n = 26) shows strong attitude differences and better scores in almost all key knowledge items for Proponents. Discussion of results: While the common representation of parapsychology is that it is not a real science, two factors seem to influence the answers: the "self-assessed level of knowledge" and the "prejudice against parapsychologists' scientificity". This is discussed in relation to other works showing biases against parapsychology in populations of students and researchers populations.

Conclusion: The public understanding of parapsychology draws us into the realm of "reflexive anomalistics". More research addressing social representations of parapsychology in the general population is expected.

Keywords: public understanding – psychology – general population – social representation – reflexive anomalistics – epistemic biases

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2 For an extended German abstract (Erweiterte Zusammenfassung), see pp. 461–462.

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Introduction

Parapsychologists purport to apply scientific method to the investigation of commonly reported experiences and phenomena of an exceptional nature. Despite more than a hundred years of associated research effort, "the status of parapsychology as a scientific endeavour is disputed by a substantial section of the contemporary mainstream scientific community" (Irwin, 2007: 8). We often blame other scientists for so unfavorable a situation, but it appears less regrettable and even unsurprising when placed whithin a wider context, for in fact many people regard the study of human behavior in general as inherently unscientific (Lilienfeld, 2012). As a related discipline to psychology, parapsychology faces the same criticism.

Psychology is Not a Real Science

Scott Lilienfeld's 2012 article argued that psychological science is experiencing a public perception problem caused jointly by public misconceptions about psychology and the failure of the psychological science community to distinguish itself from popular psychology and questionable therapeutic practices. Ferguson (2015) employed the following quote in his title: "Everybody knows psychology is not a real science." Currently several researchers are seeking to document this public skepticism toward psychology.

For instance, Newman, Bakina and Tang (2012) developed a framework to elucidate (a) the form skepticism takes about psychological science; (b) the roots of such skepticism; and (c) how one might address or even refute these forms of skepticism.

Lilienfeld examined six basic forms of skeptical claims against psychology:

1. Psychology is merely common sense;
2. Psychology does not use scientific methods;
3. Psychology cannot yield meaningful generalizations because everyone is unique;
4. Psychology does not yield repeatable results;
5. Psychology cannot make precise predictions;
6. Psychology is not useful to society.

Data reveal these forms of skepticism to be widespread. Similar data regarding parapsychology are lacking but it would be interesting to know whether or not the skepticism encountered by parapsychology differs significantly from the anti-psychology skepticism assailing us.

Lilienfeld offered rebuttals to these basic forms of skepticism. For instance, in response to the claim "psychology is merely common sense" he collected over 300 examples where psychol-

ogy findings violate popular wisdom (Lilienfeld et al., 2010). In his article he gave a sample of psychological misconceptions with the percentage of surveyed undergraduate participants who endorsed each one. In a similar way we might work on the multiple misconceptions about parapsychology even if parapsychologists themselves often fail to reach a reliable consensus about various aspects of their field (Irwin, 2014).

Lilienfeld also addressed 8 potential sources of public skepticism toward psychology:

1. Psychology's failure to police itself;
2. The problematic public face of psychology;
3. Confusion between psychologists and psychotherapists;
4. Hindsight bias (or "feeling of obviousness");
5. The illusion of understanding (psychology seems easier than physics);
6. Greedy reductionism (oversimplified explanations);
7. The 'scientific impotence excuse' (Munro, 2010), whereby people discount scientific evidence disconfirming important beliefs by endorsing the idea that scientific methods are incapable of addressing the topic;
8. Failure to distinguish basic from applied research.

Do we not have symmetrical problems within parapsychology?

Lilienfeld argued that while some of these sources reflect cognitive errors like hindsight bias, or misunderstandings about psychological science such as the failure to distinguish basic from applied research, others like psychology's failure to police itself or its problematic public face actually reflect the failure of professional psychology to get its own house in order.

Public skepticism can be seen as an opportunity to help psychologists become more effective communicators of psychological science.

Psychologists should curb the facile temptation to place all of the blame for their field's tarnished image on widespread public misunderstanding. At least some of psychology's negative reputation appears to be deserved, according to Lilienfeld.

The public face of psychology is often not psychology scientists themselves but flashy media personalities who have routinely put forth psychological claims having minimal scientific grounding. Exacerbating the problem, research, practicing, and educational psychologists have all been reluctant to devote their time to disseminating good scientific practice to the public, combating bad science, or correcting misconceptions of their field

(Benjamin, 2003). Lilienfeld offered several individual and institutional recommendations for enhancing psychology's image and contended that public skepticism toward psychology may, paradoxically, be one of the field's strongest allies.

Indeed, he listed four reasons why a knowledge of the skepticism of non-psychologists towards the field is important:

1. It forearms psychologists encountering resistance to psychological findings from students, therapy clients, and laypersons and therefore equips them with intellectual arguments against misguided criticism of their field.
2. It allows psychologists to anticipate commonplace objections to psychological research from policymakers and thus helps psychologists explain the pragmatic and theoretical significance of their research to outsiders.
3. Such knowledge is valuable in its own right because it sheds light on the psychological sources of resistance to the scientific study of human nature. In this respect, it may help us to grasp why so many educated individuals believe psychology to be unscientific.
4. Knowledge may aid psychologists in crafting recommendations for counteracting public and policymakers' misunderstandings of psychology.

Perception about Parapsychology

This paper's purpose is to encourage the development of a similar perspective within the research topic of "public understanding of science" but viewing skepticism towards parapsychology as a matter worthy of empirical study. As Irwin (2007: 9) explained: "The existence of paranormal processes is widely perceived to fly in the face of scientific knowledge, so parapsychology has variously been depicted as an unscientific, pseudoscientific, or even antiscientific enterprise and its practitioners dismissed as mere closet occultists in pursuit of the miraculous (e. g., Alcock, 1981; Moss & Butler, 1978; Park, 2000; Romm, 1977)". Beyond the epistemological debate about the scientific status of parapsychology, we should regard these claims as social phenomena that have constructed the current image of the discipline. Whether we agree or disagree with these labels, we must take a step back to consider the universe of discourse implied by these labels.

While current hypotheses promote the idea parapsychology supports a challenging worldview making it repulsive and scary (Cardeña, 2015; Tart, 1984), psychology's worldview seems less explicit and unacceptable. Another limitation is that skeptical claims against psychology are mainly made by laypeople, whereas skeptical claims against parapsychology are mainly associated with other scientists and those wishing to become so (Carter, 2012). Is parapsychology's situation really symmetrical to that of psychology? We need to explore in greater depth the

skepticism of laypeople and the several biases and misconceptions that have been disseminated about the field.

Skepticism From the Public

The perception of parapsychology by the public is heavily conditioned by the degree of belief about paranormal phenomena and the degree to which exceptional experiences are endorsed. Because such beliefs and experiences have high prevalence, we should naturally expect an enormous acceptance of the paranormal. Instead, however, we find a huge discrepancy between personal events and the consideration of the scientific discipline dedicated to their study. These experiences and beliefs become institutionalized in systems other than that of parapsychology, like cults, heterodox or religious groups (Mayer & Gründer, 2011).

People who endorse paranormal beliefs and experiences may have obvious interests in supporting the scientific recognition of a discipline that helps them to be taken seriously. But this support is mostly lacking. We found seven motives working against this logic:

- *Scientific skepticism*: People agreed that parapsychology has failed to become a true scientific discipline;
- *Scientific impotence excuse*: People argued that the paranormal domain is outside the scope of science;
- *Pseudo-parapsychology*: People misconceive parapsychology as an applied practice devoted to the development of paranormal powers, their involvement tending toward pseudo-parapsychological causes;
- *Disappointment with parapsychology*: As this discipline should ideally be ideologically neutral and focused on accumulating knowledge about psi, it does not satisfy all the needs of people who have paranormal beliefs and experiences;
- *Social prejudice*: People keep their paranormal experiences private since there is a social taboo against sharing them;
- *Scientific disengagement*: Few laypeople develop a scientific culture by reading scientific journals or becoming members of scholarly societies. This applies broadly to all scientific disciplines and is not typical of parapsychology;
- *Lack of opportunities*: While these people may be interested in scientific parapsychology, they rarely have any contact with it.

These motives combine well with one another to suppress the massive support we should expect from the vast majority of people who endorse paranormal beliefs and experiences.

Nevertheless, these tentative hypotheses about the public's engagement with parapsychology require empirical confirmation.

Skepticism From Scientists

One aspect which has received minimal empirical consideration is the perception by the specific population comprising members of the scientific community. This shows that parapsychologists and sociologists are mostly interested with the issue of demarcation and legitimization of parapsychology as a science. Although these data are interesting they fail to provide a complete picture.

The scientific legitimacy of parapsychology has been shown to be rejected most strongly by certain members of the 'scientific elite' (McClenon, 1982), and more strongly by psychologists than by other scientists: 34 % were believers while 56 % of all social scientists in the study fell into that category (Wagner & Monnet, 1979).

	1973	1981
	College professors of social and natural sciences	Administrative elite scientists
	n = 533	*n* = 339
ESP an established fact	9.6 %	3.8 %
ESP a likely possibility	46.2 %	25.4 %

Table 1: Comparison of two surveys on ESP

In 1981, James McClenon surveyed the "administrative elites" of the American Association for the Advancement of Science (AAAS), specifically Council members of the AAAS and members of section committees. The table 1 presents McClenon's data, along with that from an earlier survey of college science professors by Wagner and Monnet. The elites were decidedly less accepting of ESP.

This should not be taken a priori as the result of a specific demarcation expertise, because a closer look reveals the presence of numerous biases. In Wagner and Monnet's survey, this skepticism is most often based on prejudices about the impossibility of such phenomena and they found that 100 % of all the social scientists in their study believing "ESP is an impossibility" were psychologists.

However, these data are very old and their validity unclear. Some specific studies have addressed these biases affecting the perception of parapsychological productions.

Effective Biases Against Parapsychology

Bethany Butzer (2020) conducted a study on bias in the evaluation of identical abstracts framed as "parapsychological" or as "neuroscientific". One hundred participants with a background in psychology were randomly assigned to read and evaluate one of two virtually identical study abstracts (50 participants per group). The results revealed that participants rated the neuroscience abstract as having stronger findings and as being more valid and reliable than the parapsychology abstract, despite the fact that the two abstracts were identical.

In an exploratory analysis, Butzer showed that the "Transcendentalism" trait (assessed through the Beliefs about consciousness and reality questionnaire; BCR-Q) mediates the evaluation of research: individuals with high transcendentalist beliefs may be more likely to evaluate parapsychology research in a more favorable manner; and individuals with lower transcendentalist beliefs (i. e., more materialist) may be more likely to evaluate parapsychology research in a less favorable manner. The Transcendentalism score does not affect the evaluations of the neuroscience abstract. This suggests the existence of two confirmation biases: one within the evaluation of parapsychology research itself, and another against parapsychology research when directly compared with neuroscience.

In sum, preferred beliefs reinforced these biases. This confirms the notion that belief-contradictory information is resisted. This is supported by a great deal of research in the area of biased assimilation (Munro, 2010).

Butzer confirmed previous studies:

- For example, in a seminal study, Goodstein and Brazis (1970) randomly assigned a group of 1,000 psychologists to read one of two virtually identical abstracts that described a fictitious study on astrology. One abstract reported significant effects of astrological predictors and concluded that additional research would be beneficial, whereas the other abstract reported no significant relationships and concluded that additional research would not be productive. The results showed that participants rated the non-significant abstract as being better designed, more valid, and as containing more appropriate conclusions than the significant abstract.
- Similarly, Koehler (1993) surveyed 195 parapsychologists and 131 scientists affiliated to various skeptical organizations, with a fictional 7-page Ganzfeld-ESP report. Six versions of the report were prepared, with manipulations of the methodological quality

(high, low) and the results (positive, negative, or no results). He found scientists judged studies disconfirming parapsychological theories (i. e., studies in line with prior beliefs) to be more relevant, methodologically sound and clearly presented than otherwise identical studies that were out of line with prior belief.

- Roe (1999) found a similar effect, namely that psychology students rated a hypothetical study as being of poorer quality when the study challenged their a priori beliefs about paranormal phenomena.
- In a more recent study, Hergovich et al. (2010) conducted an experiment in which 711 psychologists were asked to rate an abstract describing a hypothetical study attempting to predict 40 different behaviors. The authors manipulated three aspects of the abstract, which varied between participants: 1) Predictors of the behaviors (either Big 5 personality factors or astrology factors); 2) The methodological quality of the study (low, medium, high) and 3) The results and conclusions of the study (confirmation or rejection of hypotheses). The participants also completed a questionnaire about their belief in astrology prior to reading the abstract. Results showed participants rated the abstract as being of higher quality and more appropriate when the results confirmed their expectations (which in this study, involved cases in which astrological hypotheses were rejected).

Preliminary research on these potential biases suggests that even scientists are subject to confirmation biases, and anomalistics makes these issues very obvious. Sometimes, following the "scientific impotence excuse" (Munro, 2010), people discount scientific evidence disconfirming an important belief by endorsing the idea that scientific methods are unable to address the topic. These confirmation biases are also affected by the assessment of the credibility of the source, which has been shown to influence the persuasiveness of narratives with paranormal components (Ramsey, Venette & Rabalais, 2011). The same attitudes of believing and disbelieving in paranormal phenomena are known to induce perceptual biases, beyond intellectual ones (Simmonds-Moore, 2014).

Such biases may have an impact on all the scientific assessments of parapsychology, for instance in the process of peer-review (Murray & Fox, 2007; Cardeña, 2015). But we may hypothesize that similar biases affect nonpsychologists in the same way.

Results of a Small Survey in French

An Exemplary Work on the Social Representation of … Psychoanalysis

A model for constructing the present study was a survey conducted by French social psychologist Serge Moscovici (1961) about psychoanalysis among representative parts of the French population. This research is a concrete illustration of his theory of social representation: ideas do not belong to their authors. Their master is the public. It is the public who holds and manipulates knowledge. First, most participants need to "transform" psychoanalysis by adding or removing an attribute to make it compatible with their ideological system, for instance juggling with the Freudian concept of libido. The social representation of knowledge would therefore be the plural form a theory takes depending on the different audiences interacting with it.

For his survey, Moscovici called for a non-expert perspective: experts were not solicited for this survey. This represents an interesting shift to another form of knowledge, namely that which has permeated the public, without however managing to link it completely to its production chain.

Moscovici discussed how these social representations influence psychoanalytic practice, therapeutic engagement and efficiency. He identified a negative prejudice regarding the penetration of science into the public domain. Do we not have the impression that knowledge is degraded when it circulates from one group to another, generating "the conviction that the majority of people are not capable of receiving it, of using it correctly"? In French, the term "popularization" always has a pejorative connotation. It is so easy to compare the specialized version with the popular version of research to conclude "that a shared science is a fallen science" (Moscovici, 1961: 23).

When the public uses knowledge in its own way, something more emerges: the formation of a type of knowledge adapted to other needs and constraints, in a specific social context, which Moscovici calls "socialization of a discipline" (Moscovici, 1961: 24). It is scientifically relevant to consider what each person does with knowledge, how he appropriates it or even re-appropriates it. Otherwise it would be damaging to confiscate it in a sort of "Great Sharing" (Latour, 1991) and not recognize that the "relationship to knowledge" is everyone's business. It is of great interest to know why some endorse a discipline such as psychoanalysis and others do not.

Therefore, for every ounce of knowledge, whether it comes from the humanities or the hard sciences, whether the knowledge is hegemonic or rejected, *a duplicate of this knowledge* is constructed which might mobilize the public, collectively and individually.

French Survey: "What is Parapsychology for You?"

This survey was developed on the basis of the Knowledge, Attitude and Practices (KAP) paradigm (Andrade et al., 2020). The KAP survey essentially records opinions based on declarative statements as well as testing knowledge through key concepts by asking for the name of a parapsychologist, skeptic, and journal in the field, etc. KAP surveys can identify gaps in knowledge, cultural beliefs, and behavioral patterns that may facilitate understanding and action; it also poses problems and exposes barriers to efforts to developing knowledge. We hypothesize that the level of knowledge is an essential component in its structure and representation (Salesses, 2005).

Displayed in June 2021, the survey was completed by n = 89 people (26 women, 59 men, 4 others). Participants were aged between 22 and 87 years, with a mean age of 42. All participants were informed about the study through the Facebook social network. Three recruitment techniques were combined but without being able to trace the strategy that worked for each participant:

- *Convenience sampling*: the first strategy was carried out through my personal page, with many contacts having a prior interest in science in general and the paranormal in particular.
- *Snowball sampling*: the second strategy was linked to contacts' sharing the announcement, in particular through other networks by contacts with an interest for science but where the paranormal was less preeminent.
- *Clustered sampling*: the final strategy deployed a paid advertisement via Facebook to unknown people aged 18, who had in common a declared interest in "science": 1315 people saw this advertisement at least once and it was connected to the page in my book on the history of parapsychology (Evrard, 2016).

The questionnaire contained 28 likert-5 questions and 10 open items seeking an illustration of the participant's knowledge. Likert-type items ranged from "Not at all" (=1) to "Totally" (=5): they are translated and listed in Table 3 below.

A basic definition of parapsychology was given at the beginning to avoid any confusion: "Parapsychology can be defined simply as the study of the phenomena of extra-sensory perception (telepathy, clairvoyance, premonition) and psychokinesis."

The questionnaire covers several aspects: Perimeters of parapsychology (6 items), Parapsychology and scientificity (14 items), Parapsychology and skepticism (7 items), Parapsychology and education (5 items), Development of parapsychology (5 items), and a free-text zone devoted to the participant's description of parapsychology in his or her own words.

Mean Representations of Parapsychology

The neutral Likert scale response modality was used, meaning no opinion or neutral opinion. An ideal theoretical population whose indifference to each assessed statement was considered the standard response. The midpoint is a "refuge modality" that is often chosen if explicitly proposed (Presser & Schuman, 1980), especially when placed, as here, amid possible answers (Brignier, 1991). Any significant deviation from this "zone of indifference or tolerance" (Parasuraman, Berry & Zeithaml, 1991) will be considered a polarized response.

To compare mean scores (indicated below as "m"), a two-tailed Student t-test was applied for an unique sample, with three levels of significant deviation from the standard, i. e., neutral answer "3": $p < 0.05$ (*), $p < 0.01$ (**), $p < 0.001$ (***).

Perimeters of Parapsychology

On average, people understand: parapsychology does not training in psychic abilities (m=2.1***); paranormal phenomena are quite the same as in olden times (m=2.23***); and are not produced by entities (m=1.81***); the survival issue is beyond the scope of parapsychology (m=2.61**).

Parapsychology and Scientificity

On average, people think that parapsychology is not based only on testimony (m=2.60*) but they are unsure whether it uses scientific methods (m=3.11, n. s.). They do not think parapsychologists manage to obtain reproducible results (m=2.42***) or precise predictions through theoretical models (m=1.95***). Their opinion is that parapsychologists do not make proper use of quantum theory to explain these phenomena (m=2.30***).

According to them, parapsychological journals are below the standard of other academic journals (m=2.13***), and parapsychologists are not seen as true scientists (m=3.14, n. s.). Parapsychology as a whole is not perceived as a scientific discipline recognized by the scientific community (m=1.72***) and has not really made any clear progress (m=2.88, n. s.). People are not sure if paranormal phenomena have escaped attempts to control them objectively (m=3.06, n. s.).

Parapsychology and Skepticism

On average, people do not think that parapsychology represents a general threat (m=2.5**). They do not know whether skeptics provide adequate criticism of parapsychology (m=3.09, n. s.), but believe that they have done experimental work to check the reality of psi phenomena (m=3.51***).

Regarding sources of information, people are unsure whether or not parapsychology is favored by the media (m=2.89, n. s.), and Wikipedia is mostly regarded as an unreliable source of information on the topic (m=2.62**).

Parapsychology and Education

Most participants admit that they are not trained in parapsychology (m=1.49***). They are unsure whether educational opportunities exist in academic settings (m=2.80, n. s.), and are also unsure whether parapsychology has a place in such settings (m=3.13, n. s.).

Development of Parapsychology

On average, parapsychology's lack of financial support is not considered as a real issue (m=2.79, n. s.), whereas the utility of parapsychology for society is all but obvious (m=3.03, n. s.). Military and intelligence agency interest in parapsychological applications appeared to be unknown (m=3.15, n. s.). It is uncertain whether parapsychology may contribute to our general understanding of the world (m=3.16, n. s.), but critically, the profession of parapsychologist is not recognized (m=1.76***).

One peculiar finding at this level of analysis was that all significant deviations are below the neutral value "3", but this is unrelated to the formulation of the items as they have both positive and negative tones.

Knowledge of Parapsychology

Several items in the questionnaires assess key knowledge about the field. They were included to verify what lay behind the answers to previous questions about representations. They also offer a tentative explanation for the observed trends.

One issue in assessing these items is the application of "expert knowledge" when categorizing answers as "wrong" or "right". As this kind of knowledge is debatable, the categorization used here may seem arbitrary and controversial. For instance, the idea that James Randi's Million-dollar challenge cannot acceptably be included under "experimental research done by skeptics" may seem arguable.

What we generally observe with these key knowledge items is that the response rate is much lower than for the opinion items (95 % for 26 opinion items; 38 % for 9 knowledge items). In their comments, participants said they found the questionnaire difficult because of these items. Some react to these items with mockery or confessions of ignorance. In the analysis, we first have the score relative to the number of correct answers among all given answers, then the absolute score based on the number of correct answers divided by the total number of participants.

When asked to give at least one parapsychologist's name, 70 % give a correct answer, mostly a non-French researcher (Radin, Rhine, Dessoir, Wiseman …). The absolute score is 37 % only. Wrong answers were psychics like Uri Geller, or people who had an interest in the field but are hardly representative of scientific parapsychology (Kardec, Freud, Warren couple, Zener, etc.).

By contrast, when asked to give the name of at least one skeptic, 94 % give a correct answer (56 % of the absolute score, as this key knowledge item was completed by 60 % of the participants). Most correct answers were the names of French-language media skeptics (Henri Broch, Jean-Michel Abrassart, Thomas Durand, Gérard Majax …). Some foreign skeptics were also cited (Wiseman, Randi …). In sum, it is easier for this sample of the French public to identify a local and vocal skeptic than a (local) researcher in parapsychology. This shows how the first available and widespread knowledge about parapsychology comes from the skeptical perspective.

This trend became more and more obvious when participants were asked to identify one parapsychological journal (53 % correct answers; but 18 % of the absolute score); an experimental paradigm in parapsychology (38 % correct answers, 17 % of the absolute score); a theoretical model in parapsychology (35 % correct answers, 8 % of all the panel); and a reference book in parapsychology (84 % correct answers, 24 % of all the panel). For this last category, a huge portion of correct answers referred to my historical book (Evrard, 2016), which was associated with this survey. When that bias was removed, the scores were respectively 76 % and 15 %.

All in all, less than a quarter of the panel had some basic knowledge about parapsychology.

They were almost all unable to describe any progress made by parapsychology (30 % relative score; 11 % absolute score); or to identify one training course in parapsychology (43 % relative score; 11 % absolute score).

Their understanding of skeptics' activities is also distorted. When asked to quote one experimental research programme carried out by a skeptic, correct answers were very low (3 % relative score; 1 % absolute score). They relied on media paranormal challenges, such as Randi's Prize, a magician's debunking of psychics, or amateurish opportunist studies by French zeteticians (which are not published in peer-reviewed journals).

The general observation is that misconceptions regarding parapsychology are highly prevalent in our sample. A KAP survey helps to look beyond opinions to see how these representations are guided by pseudo-knowledge.

Introducing the "Self-Assessed Level of Knowledge" Variable

We hypothesized that two groups would emerge. The first was people claiming to know a lot about parapsychology (score > 2 to item 1). This group comprises people claiming to be "familiar" with parapsychology. The other "unfamiliar" group included people claiming to know little about parapsychology (score < 3 to item 1). I chose to include the so-called neutral "3" answers among the familiar group, because the wording of item 1 suggests a strong claim to "know parapsychology *well*." Someone who disagrees with this claim displays true unfamiliarity, whereas someone who is "neutral" is assumed to be a "knower" displaying humility.

There were $n = 35$ people claiming to be unfamiliar with parapsychology, and $n = 53$ who claimed to be familiar with it (score >2 to item 1). One participant did not reply to item 1 and was excluded from the sampling.

	Not at all	Rather no	Neither yes nor no	Rather yes	Totally
Scores at item 1	16	19	33	16	4

Table 2: An example of the Likert-Scale with results to item 1

Only 14 participants claimed to be trained in parapsychology (score >2 to item 21), while 74 claimed the contrary. All but one participant claiming to be trained also claimed to be unfamiliar with the field, so 75 % have a kind of "innate expertise," that is, 45 % of the total number of participants think they know about parapsychology without any specific training.

The familiar differ from the unfamiliar in their assessment of the scientificity of parapsychology. They are more convinced that parapsychology is not based merely on testimony (m=2.38** vs m=2.60*) but also uses scientific methods (m=3.40* vs m=3.11, n. s.). They are more uncertain about the reproducibility of psi phenomena (m=2.64, n. s. vs m=2.42***). They consider the quality of parapsychological journals to be slightly better (m=2.41** vs 1.67***) and recognize parapsychologists as true scientists (m=3.38* vs m=3.14, n. s.).

Owing to the small sample of size, it is difficult to show more differences in attitudes between the familiar and unfamiliar groups. However, it is possible to look at the differences in knowledge (Table 3).

Key-knowledge	Number of correct answers and absolute score of all participants (*n*=89)	Number of correct answers and absolute score of familiar participants (*n*=53)	Number of correct answers and absolute score of unfamiliar participants (*n*=35)
Name parapsychologist	33 (37%)	27 (51%)	6 (17%)
Experimental paradigm	15 (17%)	13 (25%)	2 (6%)
Theoretical model	7 (8%)	6 (11%)	1 (3%)
Journal	16 (18%)	14 (26%)	2 (6%)
Progress	10 (11%)	12 (23%)	1 (3%)
Name skeptic	50 (56%)	34 (64%)	15 (42%)
Experiment by a skeptic	1 (1%)	0 (0%)	1 (3%)
Training	10 (11%)	10 (19%)	0 (0%)
Reference book	21 (24%)	18 (34%)	3 (8%)

Table 3: Comparison of absolute scores on key knowledge items between total, familiar and unfamiliar participants

The findings show that people familiar with parapsychology contribute most to the total positive score because they have a better knowledge of key components of the field than unfamiliar people. The self-assessed level of knowledge seems to be an important variable for the knowledge items, as this subjective expertise is mostly verified on basic key knowledge.

But do all familiar people contribute in the same manner? Can we reintroduce the common distinction between advocates and counter-advocates of parapsychology?

The "Prejudice for or Against Parapsychologists' Scientificity" Variable

Inside the familiar group, we planned to differentiate "Proponents" and "Skeptics" through one item:

- item 11: "Are parapsychology researchers genuine scientists?"

We postulate that positive answers (mean score >3) to item 11 may characterize strong basic preconceptions about the recognition of parapsychology as a science, whereas neutral or negative answers (mean score <4) to the same items place parapsychology on the pseudo-scientific side. 26 familiar participants were qualified as "Proponents" and 26 as "Skeptics" through their answers to item 11 (see Figure 1). One familiar participant did not reply to that item and was removed from this sample.[3]

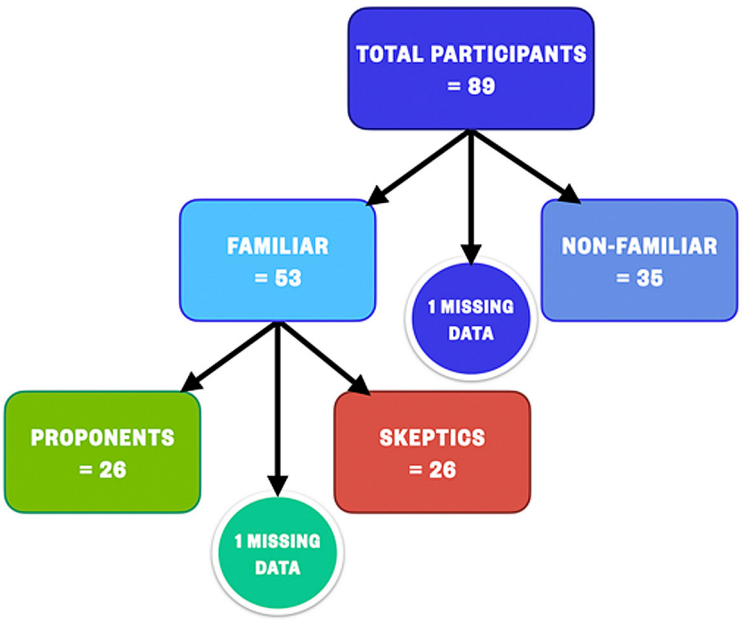

Figure 1: Subgroups for the analysis

Comparing their attitudes, there are several significant divergences between them (Table 4).

3 The 35 non-family members can also be divided into 11 Proponents and 23 Skeptics. I did not conduct a differential analysis of their attitudes because 1) the groups are too unequal; 2) by their own assessment, their knowledge is a priori weak and their opinions less well-founded. The differences between them were expected to be small. On the other hand, a greater contrast, given the small number of subjects, could be obtained among participants who claimed to have a culture of parapsychology.

Items	Total mean score (*n* = 89)	Proponents mean score (*n* = 26)	Skeptics mean score (*n* = 26)	Difference Proponents vs Skeptics
Do you know parapsychology well?	2.69*	3.54***	3.38**	n. s.
Does parapsychology allow the development of latent or unrecognized psychic abilities?	2.1***	2.52, n. s.	1.73***	*
Are parapsychological phenomena less powerful today than in the past?	2.23***	2.2**	2.12**	n. s.
Are parapsychological phenomena produced by entities (deceased, demons or other entities)?	1.81***	2.15***	1.52***	*
Is parapsychology intended to examine the possibility of the survival of the soul after bodily death?	2.61**	2.62, n. s.	2.69, n. s.	n. s.
Is parapsychology based only on testimonials?	2.60*	1.73***	3.08, n. s.	**
Does parapsychology use scientific methods?	3.11, n. s.	4.19***	2.69, n. s.	***
Does parapsychology produce replicable results?	2.42***	3.36, n. s.	1.92***	***
Do theoretical models in parapsychology allow accurate predictions to be made?	1.95***	2.39**	1.69***	**
Are parapsychology journals at the same level as scientific journals?	2.13***	3.4, n. s.	1.46***	***
Are parapsychology researchers real scientists?	3.14, n. s.	4.46***	2.31***	***
Is parapsychology recognized as a scientific discipline by the scientific community?	1.72***	2.19***	1.54***	**
Is parapsychology making progress?	2.88, n. s.	3.8***	2.16**	***
Do parapsychological phenomena escape attempts to control them objectively?	3.06, n. s.	3.3, n. s.	3.24, n. s.	n. s.

Items	Total mean score ($n = 89$)	Proponents mean score ($n = 26$)	Skeptics mean score ($n = 26$)	Difference Proponents vs Skeptics
Do parapsychologists make reasoned use of models from quantum physics?	2.30***	3.08, n. s.	1.71***	***
Is parapsychology a danger?	2.5**	1.77***	2.73, n. s.	**
Do zetetics and scientific skepticism offer adequate criticisms of parapsychology?	3.09, n. s.	2.16***	3.52, n. s.	***
Have zeteticians or skeptics carried out experiments to verify the reality of parapsychological phenomena?	3.51***	2.6, n. s.	3.52, n. s.	***
Is parapsychology favored by the media?	2.89, n. s.	2.08***	3.5, n. s.	***
Is Wikipedia's online encyclopedia a reference resource for parapsychology?	2.62**	2.42*	2.70, n. s.	n. s.
Are you trained in parapsychology?	1.49***	2.08*	1.46***	n. s.
Can we train in parapsychology as part of higher education (university)?	2.80, n. s.	3.62*	2.2**	***
Does parapsychology have its place at university?	3.13, n. s.	4.5***	2.46, n. s.	***
Is the funding of parapsychological research sufficient?	2.79, n. s.	1.73***	3.5, n. s.	***
Does parapsychology have any utility for society?	3.03, n. s.	4.38***	2.46, n. s.	***
Are (military) defense and intelligence interested in the applications of parapsychology?	3.15, n. s.	3.65**	3.12, n. s.	n. s.
Is the profession of parapsychologist recognized?	1.76***	1.69***	1.73***	n. s.
Does parapsychology contribute to our general understanding of the world?	3.16, n. s.	4.42***	2.5, n. s.	***

Table 4: Comparison of Proponents ($n = 26$) and Skeptics ($n = 26$) and all participants ($n = 89$) mean scores among familiar participants; $p < 0.05$ (*), $p < 0.01$ (**), $p < 0.001$ (***).

A two-tailed Student t-test was applied comparing two independent samples, with three levels of significant deviation from the standard: $p < 0.05$ (*), $p < 0.01$ (**), $p < 0.001$ (***).

Regarding the perimeter of parapsychology, two small significant differences are applied to the fact that Proponents are slightly more hesitant to account for phenomena through the intervention of supernatural entities (m=2.15*** vs m=1.52***); and are not convinced that this discipline allows the development of psi abilities (m=2.52, n. s.), whereas Skeptics were fully against this idea (m=1.73***). These differences in response may be conditioned by people's different appraisals of the field of parapsychology. For Skeptics, since supernatural entities and psi abilities have no grounding in reality, they are more readily rejected as they are unthinkable.

Regarding the scientificity of parapsychology, results show nine very significant differences in attitude. Proponents are certain parapsychology is not based merely on testimonial (m=1.73***), whereas this is not clear for Skeptics (m=3.08, n. s.). A logical reason is that Proponents claim parapsychology uses scientific methods (m=4.19***), while Skeptics remain uncertain (m=2.69, n. s.). The production of replicable results is viewed as possible by Proponents (m=3.36, n. s.), while Skeptics strongly assume that this is currently not the case (m=1.92***). The scientific quality of parapsychological journals is uncertain for Proponents (m=3.4, n. s.), but clearly weak for Skeptics (m=1.46***). In the same vein, our clear-cut item 11 distinguished those who claim parapsychologists are genuine scientists (m=4.46***) from those who do not (m=2.31***), those who think parapsychology is making progress (m=3.8***) and those who do not (m=2.16**), those who are uncertain about the way parapsychologists make use of quantum physics models (m=3.08, n. s.) and those who think something is going wrong (m=1.71***). In general, parapsychology's theoretical models are seen as slightly more efficient by Proponents (m=2.39***) than by Skeptics (m=1.69***). Proponents are also less pessimistic about the current recognition of parapsychology as a scientific discipline (m=2.19*** vs m=1.54***).

Four significant divergences also occur regarding parapsychology and skepticism. For Proponents, parapsychology is not a general threat (m=1.77***), while Skeptics are unsure (m=2.73, n. s.). This defensive stance is also marked in the way skeptical criticisms are seen as inadequate (m=2.16***) or neither one nor the other (m=3.52, n. s.). Skeptics are sure that their group produces experiments that verify the non-reality of parapsychological phenomena (m=4***), while Proponents are not (m=2.60, n. s.). Regarding sources of information, Proponents think that parapsychology is disfavored by the media (m=2.08***), whereas for Skeptics media treatment is considered balanced (m=3.5, n. s.).

Training in parapsychology in an academic setting is disregarded by Skeptics (m=2.2** vs m=3.62* for Proponents), while Proponents see it as the right place for the discipline (m=4.5*** vs m=2.46, n. s. for Skeptics).

The development of parapsychology again follows the split in of our groups. Proponents say that the funding of parapsychological research is insufficient (m=1.73***), while this is not an issue for Skeptics (m=3.5, n. s.). Indeed, Skeptics are unsure about parapsychology's utility to society (m=2.46, n. s.), especially for the general understanding of the world (m=2.5, n. s), while Proponents take these three aspects very seriously (respectively, m=4.38*** and m=4.42***).

In sum, both groups show strong significant divergences in nineteen of their attitudes toward parapsychology. This is not self-evident as these two groups are firstly distinguished here only on the basis of a single item which seems to play a key role in establishing two profiles, i.e., the attitude that may be termed "Prejudice for or against parapsychologists' scientificity."

A comparison of exact knowledge between the two groups may be interesting, but the number of answers collected is too low here for a sufficient statistical analysis. Data only suggest that Proponents give systematically better answers on the key knowledge items (see Table 5), except in the task of naming a skeptic.

Key-knowledge	Number of correct answers and absolute score of all participants (*n* = 89**)**	Number of correct answers and absolute score of Proponents participants (*n* = 26)	Number of correct answers and absolute score of Skeptics participants (*n* = 26)
Name parapsychologist	33 (37%)	17 (65%)	10 (38%)
Experimental paradigm	15 (17%)	9 (35%)	4 (15%)
Theoretical model	7 (8%)	5 (19%)	1 (4%)
Journal	16 (18%)	10 (38%)	4 (15%)
Progress	10 (11%)	8 (31%)	2 (8%)
Name skeptic	50 (56%)	14 (54%)	20 (77%)
Experiment by a skeptic	1 (1%)	0 (0%)	0 (0%)
Training	10 (11%)	8 (31%)	2 (8%)
Reference book	21 (24%)	12 (46%)	6 (23%)

Table 5: Comparison of absolute scores on key knowledge items between total participants, proponents and skeptics.

These data suggest that another factor influences both attitudes and knowledge: "prejudice for or against parapsychologists' scientificity" serves to distinguish two groups among those who claimed to be familiar with parapsychology. These groups, called "Proponents" and "Skeptics," present several divergences in their attitudes. Additionally, the Proponents group apparently shows better knowledge of key components of the parapsychological field.

Implications for Future Research

This exploratory study has many limitations. Firstly, the small samples gathered here cannot be considered representative of the general population, and future studies should employ a single, more systematized sampling technique. This sample seems particularly enriched by people who are interested in science in general and the paranormal in particular, which puts any generalization into question. In addition, too little socio-demographic data were collected (e. g., profession) to develop psycho-social interpretations.

Statistical comparisons were made with a theoretically ideal population. It might be interesting to use more refined statistical tools, such as factor analysis and cluster analysis.

The distinctions categories "Familiar / Non-Familiar" and "Proponents / Skeptics" are still too arbitrary, owing to items leaving room for variable interpretations. It would have been interesting to extend the analysis of the differences in the non-familiar group with respect to the variable "Prejudice for or against parapsychologist's scientificity."

Items could be improved by presenting them not in the format of questions but in the form of statements and also with different polarities. This avoids known disruptive effect of social desirability. Some items were also too imprecise, like item 21 on "training" into parapsychology.

Finally, the key-knowledge questions were considered too difficult by the participants. This could be related to an expertise bias: even where they are trying to compensate for it, experts wildly overestimate the average person's familiarity with their field (Fisher & Keil, 2016). Future studies should better calibrate the knowledge portion of the survey. Without a comparison with identically structured items from other disciplines, the findings can only be interpreted to a limited extent. For example, how many respondents can name a chemist, a chemistry journal, or an experimental paradigm in chemistry? A direct comparison with psychology would obviously be relevant.

Besides these limitations, I would stress the remaining interest of this topic. In the parapsychology community, only Richard Wiseman, best qualified as an activist skeptic, holds an academic position, as Professor in the Public Understanding of Psychology at the University of Hertfordshire. Apart from him, the topic of "public understanding of science" has received little attention inside parapsychology. Empirical research has mainly focused on scientists, and, among them, on people with training in psychology. But, in line with research on social representation, we should expect a very different picture if we really look at the image of parapsychology in other social categories.

Public understanding needs to be explored in cases where parapsychology meets with an over-enthusiastic reception, often mixed up with all kinds of paranormal and supernatural

claims (Evrard & Ouellet, 2019); but the studies of the impacts of disbeliefs and misconceptions should not be forgotten (Irwin, Dagnall & Drinkwater, 2017). The study of biases against parapsychology and their correlates is fruitful, and may serve to prevent the dissemination of such biases and favor arguments for the legitimacy of the field. Identifying widespread misconceptions about parapsychology offers us targets for public education and information. Such knowledge may aid parapsychologists in crafting recommendations to counteract misunderstandings of their field among the public and policymakers.

Nevertheless, we should develop a broader perspective than that founded on the line of the demarcation issue. Many more questions should be asked about the social representation of parapsychology than those that concern researchers in their specific environment. Indeed, public understanding of parapsychology invites us to enter into the realm of "reflexive anomalistics" (Schetsche, Mayer, Schmied-Knittel, 2015) which can be characterized as follows: Being aware of (a) the epistemic features of the phenomena being researched, (b) the methodological problems of scientific investigation related to these features, and (c) the areas of tension between subjective evidence, scientific proof and social discourse – features which characterize this specific research field – and taking these factors systematically into account. As responsible and reflexive scientists, we should attempt to understand why and how people appraise our research and how this affects the very way we carry out and communicate it.

Developing our understanding of the public's representation of parapsychology may change our feelings of rejection and taboo. In fact, we may gather empirical data comparable to those of the related discipline of psychology (Lilienfeld, 2012), which could help to set a baseline for the appreciation or depreciation of the characteristics of the parapsychological field.

The French pedopsychiatrist Paul-Louis Rabeyron (2002), who has been giving an introductory course on parapsychology in Lyon for 25 years, highlighted many interesting aspects of developing a "common cultural baggage" among students from every discipline and from other auditors. Beyond the academic context, a baggage of common knowledge about exceptional experiences may also prevent some of their negative consequences for mental health (Goulding, 2004: 2).

Ethically, we can also circumvent the stigmata associated with parapsychology when recruiting participants for experimental studies. The use of "covert tasks" may also improve the experimental procedure to test "implicit psi." For instance, Pütz et al. (2007: 50) conducted a covert Ganzfeld telepathy experiment because, in overt tasks, "participants with a preconceived interest or belief in the 'paranormal' will perceive the task differently from participants without such beliefs, who may find the task strange, ridiculous, or indicative of a 'mission impossible' situation".

All in all, it would seem to be most relevant for parapsychologists to take an authentic scientific interest in laypeople's views on parapsychology, and not only in order to seduce them for commercial or political purposes.

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Erweiterte Zusammenfassung

„Jeder weiß, dass die Parapsychologie keine echte Wissenschaft ist": Das Verständnis der Öffentlichkeit von Parapsychologie. Parapsychological Association, Presidential Address

Zusammenfassung: – Parapsychologen behaupten, wissenschaftliche Methoden bei der Untersuchung von häufig berichteten außergewöhnlichen Erfahrungen und Phänomenen anzuwenden. Trotz einer über ein Jahrhundert damit verbundenen Forschungsanstrengung „wird der Status der Parapsychologie als eines wissenschaftlichen Unterfangens von einem erheblichen Teil der zeitgenössischen wissenschaftlichen Mainstreamcommunity bestritten" (Irwin, 2007). Diese Situation erscheint weniger bedauerlich, wenn sie in einem größeren Kontext betrachtet wird. In der Tat empfinden viele Menschen das Studium menschlichen Verhaltens, wie es die Psychologie untersucht, als unwissenschaftlich. Meine Absicht ist es, im Rahmen der Forschung zum „öffentlichen Verständnis von Wissenschaft" die Entwicklung einer ähnlichen Perspektive bezogen auf die Parapsychologie zu

ermutigen und den Skeptizismus gegenüber dieser Disziplin als ein Thema zu betrachten, das eine wissenschaftliche Untersuchung wert ist.

Methoden: Über ein französischsprachiges Social Media Network wurde eine kleine Untersuchung an einer nicht-repräsentativen Population (n = 89) durchgeführt. Angelehnt an das Knowledge-Attitudes-Practices-Paradigma hat der Fragebogen 28 likert-skalierte Items, die die Einstellung der Parapsychologie gegenüber einschätzen, und 10 offene Items zur Einschätzung des Grundwissens. Er deckt fünf Aspekte ab: Gegenstand der Parapsychologie (7 Items), Parapsychologie und Scientizismus (14 Items), Parapsychologie und Skeptizismus (7 Items), Parapsychologie und Erziehung (5 Items) und Entwicklung der Parapsychologie (5 Items).

Ergebnisse: Im Durchschnitt haben die Teilnehmer eine ausreichende Vorstellung vom Gegenstand der Parapsychologie, erkennen sie aber nicht als volle wissenschaftliche Disziplin an, die wissenschaftliche Methoden benutzt, um reproduzierbare Ergebnisse, theoretische Bestätigungen oder andere Formen des Fortschritts zu erlangen. Vorherrschende Meinung ist, dass Skeptiker experimentelle Arbeiten zur Prüfung der Realität von Psi-Phänomenen durchgeführt haben, aber dass unbekannt ist, ob sie angemessen kritisch in diesem Bereich sind. Parapsychologisches Training in einem akademischen Setting wird nicht als wünschenswert angesehen; ebenso ist der Wert dieser Disziplin für die Gesellschaft und unser generelles Verständnis von der Welt nicht offensichtlich. Eine Aufteilung der Teilnehmer, die angaben, mit Parapsychologie vertraut (n = 53) oder nicht vertraut (n = 35) zu sein, zeigt den Effekt der „Wissensniveau"-Variable: Personen, die mit der Materie vertraut sind, erkennen Parapsychologie als eine Wissenschaft eher an und haben höhere Werte in Items, die das Grundwissen betreffen, als Teilnehmer, die damit nicht vertraut sind. Eine zweite Aufteilung in der Gruppe der mit der Materie Vertrauten zwischen denen, die Parapsychologen für richtige Wissenschaftler halten (Befürworter, n = 26), und solchen, die das nicht tun (Skeptiker, n = 26), zeigen große Unterschiede in der Einstellung und bessere Ergebnisse in fast allen Grundwissen-Items bei den Befürwortern.

Diskussion der Ergebnisse: Während Parapsychologie in der üblichen Darstellung keine richtige Wissenschaft ist, scheinen zwei Faktoren die Antworten zu beeinflussen: „selbst bewertetes Niveau an Wissen" und „Vorurteile gegen die Wissenschaftlichkeit von Parapsychologen". Dieser Befund wird im Verhältnis zu anderen Arbeiten diskutiert, die bei Stichproben von Studenten und von Forschern eine Voreingenommenheit gegenüber Parapsychologie zeigen.

Fazit: Das Verständnis von Parapsychologie in der Öffentlichkeit führt uns in den Bereich der „reflexiven Anomalistik": Wir sollten versuchen zu verstehen, warum und wie Personen unsere Forschung beurteilen und wie dies die Art und Weise beeinflusst, wie wir sie betreiben und darüber kommunizieren. Mehr Forschung zu gesellschaftlichen Darstellungen von Parapsychologie in der Allgemeinbevölkerung ist zu erhoffen.

Schlüsselbegriffe: Öffentliches Verständnis – Psychologie – Allgemeinbevölkerung – Gesellschaftliche Darstellung – Reflexive Anomalistik – Epistemische Voreingenommenheit