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Comments on “Is Biological Death Final? Recomputing the *Drake-S* Equation for Postmortem Survival of Consciousness”

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The application of the *Drake-S* equation to the aggregated data suggestive of survival found 30.3% of unexplained variance in the data when other factors were applied to the dataset (including living agent psi, LAP). A number of points are raised in this commentary. These include 1. the aggregated estimate for LAP should factor in implicit psi studies (among others); 2. it is difficult to ascertain the source of psi if psi is not a signal that is caused, but rather an emergent property of a connected system; 3. there may be shared variance between sources that are attributed differently in the equation 4. different sources of evidence for survival are heterogeneous and 5. The attribution of unexplained variance to survival of consciousness is critiqued. Even if it cannot resolve the debate concerning postmortem survival of consciousness, this approach redirects serious academic attention to the study of death and dying.

Keywords: *Psi phenomena; systems approach; entanglement correlations; heterogeneity of evidence; implicit versus explicit psi; strength of cases*

In this commentary, I will discuss the recent application of the *Drake-S* equation to the question of postmortem survival. This application is an extension of an earlier attempt by the same group to apply the equation, but this version also takes living agent psi (LAP) into account as well as other explanations (including mental illness, measurement error, environmental variables, expectancy-suggestion, psychological susceptibility and fraud). In summary, the results found 30.3% unexplained variance in survival evidence, with 8.3% of the data being explained by LAP.

The aggregated data suggestive of postmortem survival (of consciousness) includes a range of evidence deriving from near death experiences, past life cases, mediumship and ghost type phenomena. Some of these data potentially reflect a genuinely discarnate source, but it is often possible to explain survival experiences as the result of normal psychology (what Stephen Braude refers to as “the usual suspects”) or by recourse to psi of the living (extrasensory perception and mind-matter interactions) or via access to some form of psi field, without needing to infer agency on behalf

of the deceased (*cf.* Storm, 2006; Palmer, 2020). The authors of the article have sought to address the question of source by statistically evaluating the contributions of a range of contributors to the overall effect size of evidence suggestive of survival.

This is an innovative way to continue the debate, which currently remains at an impasse with some concluding that stronger evidence suggestive of survival is better explained by normal psychology, others concluding that this reflects [conscious] agency on the part of a discarnate or deceased individual, others concluding that strong evidence suggests a living source of psi and others concluding that these data might be explained by access to a field or “psychic reservoir” of information (*cf.* Merlin, 2020). Some understand all experiences in terms of living person access to a psi field rather than focusing on conscious agency (Storm, 2006). Others consider that *all* sources serve as potential contributors with some experiences reflecting *more than one source* working collaboratively (Merlin, 2020). In truth, it is very easy to interpret the same data with *any* of these lenses. Some contend that it is possible to explore the question systematically

and empirically (e.g., Rock & Storm, 2015) while others have argued that this problem is impossible to solve (e.g., Palmer, 2020). The application of the *Drake-S* equation to the question of postmortem survival borrows from SETI and theoretically allows researchers to systematically evaluate suggestive of survival by ruling out other sources of variance. This approach allows for unbiased and novel thinking, better planning of future experiments and investigations and the collection of data, and quality control in a critical perspective that may enable a better marriage between parapsychological and transpersonal studies and the mainstream. The consideration of the data by applying the *Drake-S* equation may help move away from the impasse in the debate. The authors of the *Drake-S* article conclude their article by noting that their results suggest that for any given set of studies suggestive of an anomaly, “six out of ten cases will be due to known confounds, one out of ten could represent living agent psi and three out of ten cases would thus represent purported evidence of discarnate agency” (p. 17). This is an intriguing and innovative perspective that lends value to all sides of the debate and by so-doing can help to put the survival question back onto the table of legitimacy and away from biased reasoning regarding reality and consciousness.

Living Agent Psi (LAP)

An earlier application of the *Drake-S* equation explored survival evidence by evaluating the contributions of conventional explanations toward survival, but did not consider the contributing role of living agent psi (LAP). The key question is how much we might be able to explain evidence for postmortem survival in terms of what we know about psi of the living from laboratory investigations in academic parapsychology. The application of the *Drake-S* equation found that LAP explains approximately 8.3% of the anomalous effects found in survival evidence (and 3% of the variance explained). In their calculation, the authors have drawn from the research literature and amalgamated effect sizes from what they refer to as the general population¹ and *exceptional participants* (those who are highly creative or demonstrating stronger psychic abilities) who have participated in controlled

laboratory studies. This is a commendable approach as it assumes that the true effect size is somewhere between these effect sizes, and that survival data may often arise from exceptional participants.

I wonder, however whether the true effect size of LAP is captured by this study and look forward to future iterations. Given that this is a scoping review rather than a systematic review, the authors note that they may have overlooked some key information that might have altered results or their conclusion (p. 18). In addition, the calculation of an aggregated effect size for LAP is based on only 17 studies which is rather small as a representation of the findings of an entire field of study. This number is small as it reflects peer reviewed meta analyses such that the data included in the equation were of a very high quality. The authors also note the limitations in not pre-registering the study. The authors note that their calculations provide a limited form of LAP that avoids the postulation of “super psi”. Survivalists have often argued that psi would need to be unduly complex and demonstrate an unlimited capacity, and as such, the current approach allows for a balanced way forward. With that said, the counter arguments in favour of LAP have noted that psi can be complex and perhaps less limited than laboratory experiments suggest (*cf.* Braude, 2003).

At the very least, it is interesting that selected participants clearly demonstrate stronger effect sizes across the board in parapsychological studies, which is an important take home outside of the question of postmortem survival.

This exercise also indicates that living agent psi explains a viable proportion of the data that outperformed “the KCs of mental illness, measurement error, and environmental factors” (p. 16). This corroborates other observations that research in parapsychology provides consistent evidence for an anomalous process of information transfer (psi) that is also consistent with effect sizes in disciplines outside of parapsychology (Cardena, 2018). The authors suggest some other intriguing places to focus attention moving forward, which include focusing on participants who may be more likely to demonstrate psi in the real world (e.g., those who are lucky) in their expanded dataset for

LAP, which may elevate the upper limit for LAP in the current version of the equation.

The data sourced for the current analysis are only from investigations drawing from explicit psi, however. It seems likely that the sorts of psi that occur in cases of survival are more likely to be implicit or unintentional in nature (for the most part) and as such, the data from implicit studies of psi should also be factored in. Research demonstrates that physiological correlates (Radin & Pierce, 2015) and implicit measures of psi (Palmer, 2015) may be superior to those exploring explicit psi. The authors have taken exceptional participants and state of consciousness into account, but this is one possible omission.

Rethinking Psi

Psi has been defined as “anomalous processes of information or energy transfer (e.g., telepathy or other forms of extrasensory perception) that are currently unexplained in terms of known physical or biological mechanisms” (Bem & Honorton, 1994, p.4). In essence, and echoing Braude (2003), survival requires living agent psi in order for it to work. For example, a medium who is receiving information from an apparent discarnate source is receiving information directly and implicitly. Even if this is slightly different, qualitatively, to psi experiences with other sources, the information is acquired anomalously and meets the definition of psi. Psi of the living actually involves various contributing sources indicative of a system. For example, Parker (2000) has articulated a systems model of psi in the ganzfeld which includes experimenter factors (empathy, warmth and expectancy), receiver factors (prior psi experiences, MBTI feeling and perception and involvement in prior studies), sender factors (including the biological relationship between sender and receiver) and target factors including emotional content and change). A different way to look at psi is that it may emerge in the context of a connected system with different contributing components (*cf.* Simmonds-Moore, 2019). Rabeyron (2020) has discussed how psi may be more akin to emergent entanglement correlations as part of a system as opposed to a causal signal that is sent and received. This draws from theories including von Lucadou’s Model of Pragmatic Information. This perspective

has been supported by research that has measured excess correlations rather than looking for psi in one place only (e.g., Walach et al., 2020). If survival effects are also working as a system, it may be that all factors are working *together*. As such, if psi is a system, the identification of one source of psi over another might be difficult. However, if survival psi is associated with stronger effect sizes overall, those interested in consciousness should direct their attention to this unique collection of evidence and seek to ascertain the relative contributions within the system.

Research might seek to systematically explore different contributing factors in an experiment with living individuals, such as the ganzfeld, where it might be possible to ascertain which percentage of the overall effects are associated with receiver factors, which with sender factors, which with experimenter factors and which with target factors in the recipe. As the authors of the *Drake-S* paper acknowledge, there are multiple factors at play in the context of psi. The different contributors to psi effects might then be extrapolated to survival data where different contributing factors might also be at play.

The Role of the Living in Survival Evidence

The authors note that anomalous experiences undermine the assumption that consciousness is inherent to or constrained by the activity of a living brain or other physiological functions. In fact, a lot of survival evidence points directly to the idea that a living system is needed to instantiate information pertaining to prior identities, apparent perception and sentience of deceased others and cognitions of others. For example, near death experiences occur in the liminal space surrounding death and result in a person returning to life; i.e., the tissue that is connected to the experiences of consciousness is liminal in terms of life and death and it therefore has the potential for life. For mediumship and channeling, a living person is connecting to a purported discarnate source and receiving information about the deceased or even incorporating the deceased, and as such, a body is involved. In past life cases, there is a living body that is associated with discarnate identities, perception and sentience and cognitions. In ghost cases, living people are the ones who are interacting with information.

We might reframe the statement as *survival evidence serves as a challenge for the claim that information associated with identity, sentience, perception, cognition is only held in association with a living system that it was originally associated with during life*. This statement allows for different ways to take up the question of the body in survival. The question might be reframed as how the living person is experiencing information differently from different hypothesized sources. In sum, statistical variance cannot speak directly to the agency question. The unexplained variance may have various contributing factors. It might be profitable to systematically explore what else is going on in the context of survival and how the person is picking up on information from either source).

Common Correlates

The authors note that they did not account for covariation between the error factors in the *Drake-S* equation in their calculations. This was done such that there would not be a bias toward skepticism. However, there are some shared correlates that relate to extrasensory perception, Anomalous information reception (AIR) in the context of survival and psychological characteristics that may relate to some of the normal explanations considered here, in particular, the category of psychological susceptibility but possibly also expectancy-suggestion. With the latter, it is noteworthy that one of the core correlates of psi performance is paranormal belief, as noted in the sheep goat effect (Storm & Tressoldi, 2017) and the parapsychological experimenter effect (Palmer, 2017). With regard to the former, individual differences play a key role in anomalous experiences and psi (cf. Baptista et al., 2015) and there are also interactions between states and traits with regard to psi (cf. Cardeña, & Marcusson-Clavertz, 2015). It is also possible that a normal explanation may sometimes be associated with or lead to a genuinely anomalous phenomenon and that interaction effects are certainly at play.

For example, Jawer's exploration of sensitive individuals found that there were normal and paranormal sensitivities and that anomalous phenomena appeared to be bidirectional between the person and the environment and vice versa (Jawer, 2005). A range of paranormal perceptions

and cognitions are associated with tendencies toward making connections and perceiving stimuli (including faces) where none are present, (apophenia and pareidolia, see Farias et al., 2005; Fyfe et al., 2008). These tendencies also underpin creative cognition which correlates with psi experiences (Holt et al., 2021). Others have argued that tendencies to find meaningful connections might also underpin the emergence of genuine psi (Mishlove & Engen, 2007; Simmonds-Moore, 2014). Interaction effects may be associated with some of the emergent properties of neural architecture in variables that are associated with a range of normal and paranormal explanations such as transliminality³ (cf. Lange et al., 2019).

If the correlates of genuine anomalies are also correlated with what looks like psi but is not, then trying to allocate different components of the observed data to different explanatory sources might not be possible. It might be valuable to explore how much of the survival evidence and LAP are differently explained by some of the more intriguing correlates of different forms of psi and parapsychological experiences (which may include the transliminality variable; cf. Lange et al., 2019).

Can We Infer Continuity of Consciousness from Unexplained Variance?

The application of the *Drake-S* equation to survival data takes the perspective that we might explore the probability of a survival explanation *in comparison to* the probability of other explanatory models. The resulting outcome provides apparent support for 30.3% of the data in survival research remaining unexplained. Although the authors are careful in their interpretation of the findings, the title of the paper is strongly suggestive. It is important to keep in mind that we should not explain one anomaly in terms of another, however tempting that may be. The 30.3% of *unexplained* variance is unexplained and may well reflect the unique circumstances surrounding death and dying that may be key factors to consider in a more comprehensive theory of psi and consciousness.

The authors of the *Drake-S* article define consciousness as a *state* that comprises the collective features of identity, perception, sentience and cognition. Under this definition, survival

evidence suggests that “consciousness” may persist following bodily death. Given that the application of the *Drake-S* equation is statistical, we still need to be careful of the claims that can be made. There is certainly evidence of a statistical anomaly that is not explained by known variables (including an assessment of living agent psi). The next steps are to fine tune a research agenda focused more seriously on this anomaly.

For example, in the context of NDEs, trauma/sudden loss of life might play a role in the continued availability of information/consciousness to the self (that might be explained by ESP or other ways to understand consciousness under liminal circumstances). Trauma is also a key player in past life experiences, where a sudden loss of life seems to be implicated in the continued availability of information/consciousness to a different person (Tucker, 2008). This pattern also plays out in the context of ghost type experiences, where violent death was associated with more apparitions than other types of death (Haraldsson, 2009), which suggests some kind of increased availability of information to the living. It is noteworthy that in parapsychological research, target variables of interest also include emotional changes and entropy, (e.g., an explosion rather than an image of a static object) (*cf.* Baptista et al., 2015)

Thus, assuming that the unexplained variance is survival is premature, when it might be a good opportunity for innovative thinking about the specific circumstances surrounding evidence suggestive of survival. The unexplained evidence may indicate that psi may occur more intensely in the context of survival than that which occurs in the laboratory, even when lab studies focus on exceptional participants. Thus, I strongly agree with the authors, in their assertion of the need for greater academic focus on death and dying. The authors include some interesting reflections on psi processes in the context of this particular liminal state.

Unpacking Strong Versus Weak Survival Evidence

The article delineates weak from strong examples of LAP and then extrapolates how data may contribute variance to the overall presented evidence for survival. The authors conclude that there is 8.3% of survival evidence explained by recourse

to LAP. It seems pertinent that an assessment of strong versus weaker survival evidence might also be factored into the calculations as well as “survival” versus “living agent psi”. Stronger evidence includes the statistically significant evidence for anomalous access to information associated with discarnate personalities in the context of mediumship (Sarraf et. al., 2020), statistically significant evidence in localized haunting events (Maher, 1999), solved past life cases (Tucker, 2008) and strong rather than weak NDEs (Greyson, 2010).

Some forms of survival evidence are stronger than others and it is not clear from this article how decisions were made with regard to which evidence went into the original equation or if any weighting was done for strength of cases. There is considerable nuance in the different areas of survival research. For example, a recent paper has articulated the complexities of defining death and highlighted the challenges regarding the distinction of experiences of death from other categories of experience, that span from being unconscious (but alive) and coma (see Parnia et al., 2022). The authors note that there are a number of criteria that can be applied to a given experience that would help in these difficult distinctions. This paper may help to fine-tune statistical probabilities regarding different ways of being conscious and unconscious in the moments surrounding bodily death (which is itself liminal).

Stephen Braude’s (2003) ideal case scenario might be something that might be applied to cases to determine their strength and by so-doing, help to eliminate additional noise. In his list, Braude notes that researchers should ascertain a distinct aetiology from dissociative identity disorder and no prior trauma in the case of past life experiences; no psychological need should be served for the living involved in the case; evidence provided should be more aligned with the agenda of the deceased; facts should be collected about case (past life) before any investigation into the purported deceased individual it pertains to; verifiable evidence should be provided; intimate details regarding history and behavior of the deceased that are recognized by more than one person; idiosyncratic skills or traits are displayed; skills that are foreign to the experiencer

are displayed (perhaps from a different culture); skills displayed would usually require practice and are rarely found among savants and to verify information, there should be multiple physically, culturally and geographically remote sources. Tucker (2000) has also developed a strength of case scale that has been used to ascertain better examples of past life evidence. In addition, near death criteria (*cf.* Parnia et al., 2022) might also help to identify better evidence for survival compared to subtle distinctions between related states of unconsciousness surrounding death. This might help to ascertain what is more challenging for materialist perspectives on the brain and mind. Table 3 certainly demonstrates that some forms of survival evidence seem stronger than others, with NDEs and past life experiences being associated with higher percentages of the overall dataset than other forms.

Different Types of Survival Evidence

The aggregation of survival evidence in the *Drake-S* equation may also occlude insights from exploring characteristic differences in survival evidence. These features may be important for a comprehensive understanding of consciousness in the context of death and dying and the possibility of postmortem survival, which might occur in diverse ways. From the statistical aggregation of survival evidence, it is not possible to note which experiences seem to be more aligned with the psychological needs of the living or the deceased or other characteristics. Some survival experiences are highly localized or place-related, as seen in haunting phenomena and in the close proximity of many past life cases to the location of the former (deceased personality). Other experiences appear to relate to people rather than places/locations, including ADCs and mediumship. Survival experiences also differ in terms of their frequency, with some being one off instances (e.g., crisis apparitions) while others are recurrent, including hauntings and poltergeists and past life memories. Some phenomena relate much more to events from the past (hauntings, psychometry and past life cases) while others relate more to current concerns and issues, while others seem to be an intriguing mixture of the psychology of the living and information from past events (e.g., Roll & Tringale, 1983). Some experiences happen in

close temporal proximity to the processes of death and dying (e.g., death bed experiences, NDEs, crisis apparitions, post mortem apparitions and past life cases), while others are often temporally distant from death and dying (hauntings, psychometry, mediumship). Some reflect more physical anomalies including anomalous photographs (Mayer, 2015), telephone calls and texts (*cf.* Cooper, 2018) and object related information (psychometry, Barrington, 2016). Some haunting experiences involve object movements and other observable physical effects, while others seem to *mimic* the movement or sounds of objects (L.E Rhine, 1960). It is also the case that some experiences are *embodied* or experienced via the living⁴. Experiences also differ in terms of how they manifest. Some are private internal events, while others are external and sometimes shared (Belz & Fach, 2015). The types of psi which emerge in the context of survival may relate differently to laboratory psi. In an effort toward open minded scientific exploration, it might be appropriate to repeat the exercise with different types of survival evidence. Some forms of survival evidence may be found to exhibit different levels of unexplained variance when evaluated with the *Drake-S* equation. This might help to distinguish survival evidence that seems more aligned with extrasensory perception and other evidence that is more difficult to explain in this way on the surface. Attention to different forms of survival related psi may also facilitate theorizing on consciousness in the context of death, dying and postmortem survival.

Apples and Oranges

It is also possible that researchers might be muddying the survival waters by bringing different types of survival evidence together. Near death experiences, mediumship, past life cases and ghost type phenomena all contribute different aspects of the survival picture, and I wonder if these might be considered separately *in addition to* the larger equation. The *Drake-S* equation might be applied in the context of each body of evidence to explore relative contributions of different factors in each of the different forms of evidence.

The aggregation of all survival evidence might be like comparing apples with oranges as different things might be going on under different

circumstances and the different survival databases have each had different levels of systematic study. Another way forward might be to explore different databases and compare survival research to equivalent or matched research in parapsychology. It might also be better to begin with a body of studies that has received the most attention and been the most self-critical in terms of its methodological development. One obvious candidate here is mediumship studies, whereby systematic methodological developments have taken place to the point where there are now 5 levels of blinding and attempts to include only research mediums who have gone through a screening process. Studies with mental mediumship might be compared with an equivalent body of studies (with LAP) which has also gone through systematic methodological developments over time and is well respected. Here, a good candidate is the ganzfeld which has itself been critiqued and improved over time and currently also seeks to preselect participants who exhibit certain characteristics (*cf.* Baptista et al., 2015). This kind of comparison could allow for a clearer picture of the various contributors to the overall effect sizes.

Expanding the Alternative Explanations: Unpacking fraud

As the authors note on page 19, there may be other ways to account for the contribution of fraud in this dataset. Fraud is always a potential, albeit small, contributor to any given body of scientific studies. Stokes (2015) has argued that all laboratory psi is Error Some Place (ESP) and that the statistical outcomes in these studies are inflated by biases toward or against publication and tendencies for some experimenters to commit fraud. Stokes lends more weight on spontaneous cases, while others have criticized the evidentiary value of spontaneous cases (e.g., French, 2003). Stokes (2015) explains the effect sizes for laboratory psi away by arguing for different types of experimenter who publish or do not publish and who find significant results (some by committing fraud) and those who do not. This is factored into the data from meta analytic studies that are included in the *Drake-S* equation as these are conducted on the better quality studies and usually a file drawer calculation is made. Given the

argument that survival psi and LAP are different forms of psi, assessments of fraud in addition to the other non-psi explanations might need to be applied separately to the body of studies for LAP and the body of studies for survival. It might then be possible to apply a modified assessment of the data for LAP back to the survival data.

Braude's "Unusual Suspects"

The authors do not include a full assessment of what Braude (2003) calls "the unusual suspects". Braude's term the unusual suspects is used to describe *both* living agent psi and also the latent potential associated with acquired savant and dissociative/altered states of consciousness. This latter explanation for some survival experiences reflects the untapped potential of human consciousness that might be accessed in dissociated states associated with some correlates of survival experiences. This has been applied to some instances of apparent xenoglossy and other skills and abilities that seem to have been acquired rather than learned. This is a viable explanation for some of the observations and one which might explain some of the currently unexplained variance. There may be additional factors that may also be factored into a future version of the equation. In an earlier section, I discussed the common correlates of psi, survival-evidence and some psychological explanations. It might be possible to include some assessment of individual difference factors alongside factors relevant to the survival hypothesis that may relate to assessments of strength of case including a strength of case rating (for past life cases), a strength of NDE rating (from NDE scales and also recent criteria published by Parnia et al (2022) pertaining to subtle distinctions between related states of unconsciousness surrounding death with a view to more firmly pinpointing what is more anomalous/challenging for materialist perspectives on the brain and mind.

Conclusions:

Is Biological Death Final?

In terms of the question posed, the authors imply that the data for survival cannot be explained by mainstream explanations and living agent psi, which suggests that there is room for the survival

hypothesis. From the points made above, I have suggested that we cannot answer questions about what happens after biological death from the data presented. Instead, there are many more questions that can be generated, which is a valuable outcome from this exercise. It would be nice to have a neat equation that can support life after death. My suspicions are that this unexplained variance might be a placeholder for other factors that we are not yet sure about. Some of these factors might include attributes of psi that only emerge under certain, very extreme circumstances as is the case in some examples of death and dying. These currently unexplained factors may well include some contribution from discarnate sources, but this will need to be systematically explored, and perhaps determined on a case by case analysis, or like-like analysis, rather than assimilating these different bodies of data together to see what might be left over when we explain what we already know (in terms of percentages of variance). The application of weightings from the strength of case scales such as that developed by Tucker (2000) and criteria emerging in the context of near death experiences (e.g., Parnia et al., 2022) could be an intriguing way forward. I would agree with the authors that the question of postmortem survival is of great importance to biomedical and transpersonal theory and practice and is not constrained to the area of academic parapsychology or pseudoscience. The systematic and serious consideration of the topic is timely and, although this approach has some limitations, it is a good starting point for more serious consideration of the question and for moving beyond a binary way of approaching survival evidence. Serious research into the survival question is a highly fruitful area for enriching consciousness studies, transpersonal psychology, parapsychology as well as philosophy and more general psychology (among others).

Notes

1. This might be reframed as *unselected participants*, given that many studies are not conducted with the general population but rather with university students and other self-selected volunteers.

2. This might include tendencies toward making causal connections when there are none, misattributions of source, etc.
3. Transliminality reflects an enhanced tendency for information to cross thresholds in the mind, brain and body and between the person and the world and has been characterised most recently as a tendency for greater neuroplasticity that correlates with a range of paranormal and transpersonal experiences, in addition to relating to perceptual biases relating to normal explanations (Lange, Houran, Evans & Lynn, 2019)
4. These are noted in some examples of mediumship (where incorporation is experienced) and in past life memories—in particular where there are birthmarks or defects that correspond to the mode of death of the former personality (Stevenson, 1993).

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