

Invited Editorial

Ganzfeld-ESP: Pondering Three Reports and Looking Ahead¹

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This issue of the *Journal of Parapsychology* provides three reports of ganzfeld-ESP research, each providing findings and commentary that can usefully inform future work in that domain and potentially in other domains using the same or similar methods. The comments below on specific studies reported in this issue are in alphabetic order by surname of the report's senior author. A General Discussion follows, focused on improving construct validity in work investigating internal attention states and psi-task performance, but that discussion often will have broader applicability.

“Changes in State of Consciousness and Psi in Ganzfeld and Hypnosis Conditions” (Cardeña & Marcusson-Clavertz, 2020)

This richly informative paper might be deemed something of a mini-dissertation. It begins with an extended –but not highly detailed– overview of evidence related to altered states of consciousness (ASC) and psi, divided into several categories of evidence, some far less scientifically rigorous than others. Some sections are jam-packed with lists of correlational figures whose *p*-value plethora at times came close to exhausting my attention in the absence of something more substantively integrative for such information (e.g., meta-analysis). Any ennui thus engendered was, though, effectively mitigated by the extended remarks near the end of the paper that provide well-informed, thoughtful commentary aimed at trying to understand the very mixed research outcomes relative to psi and altered states. Those remarks might well inspire some valuable conceptual and methodological innovation. They include the important insight that psi-task performance may be dependent on characteristics of the respondent interacting with the methodological features of the study (i.e., trait x situation interaction). There is also the acknowledgment that an ASC might not be needed for some individuals to evince psi. These authors seem to be suggesting that discovering the particular way(s) psi naturally functions (or is thwarted) in specific individuals in particular settings might support conceptual advance and replicability. We are left wondering why certain state-related predictor variables performed notably more successfully in their hypnosis/ganzfeld condition than in the one with hypnotic suggestions sans ganzfeld accoutrements. Some possibilities in that regard were noted. Scatterplots (Figures 1 and 2) are a helpful feature of this report's data presentation, each related to correlational findings displayed separately for ganzfeld and hypnosis conditions.

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“Performance at a Precognitive Remote Viewing Task, With and Without Ganzfeld Stimulation: Three Experiments” (Roe et al., 2020)

This is a well written, thoughtful report on a carefully planned and executed series of three deliberately very similar studies intended to allow comparison of results from two well-known extrasensory research paradigms, ganzfeld and remote viewing (within-subjects design) and to assess the possible role of internal attention states in extrasensory performance. Pooling across those three very similar studies, the sum-of-ranks analysis for ESP in ganzfeld was highly significant. Remarkably, ganzfeld scoring also was, with that pre-specified primary analysis of psi success, significant in all three studies!

This report well justifies the conclusion of free-response precognitive success with geographical targets in a ganzfeld precognition setting, but not in the case of the remote viewing (RV) paradigm. A major problem with the RV condition might have been the difficulty of novices to grapple with the highly complex cognitive demands of the verbal RV guidance and instructions. The authors’ remarks reflecting on poorer performance in the RV condition are very graphic relative to the participants’ expressed frustration with the demands of that condition’s instructions, and they merit readers’ attention.

Back to ganzfeld: Following relaxation suggestions, the volunteers heard what, to my mind, was a masterful set of instructions! It lets them know that what they will be experiencing is very natural, like sleep or daydreaming, and it will happen on its own. One simply needs to watch and report what transpires without trying to make something happen. The well-framed instructions might well have played a substantial role in the significant psi outcomes in all three studies (and overall). They seem a well-blended verbal potion for a pleasant and psi-productive mental trip.

Worthy of special consideration are that: (a) participants saw only their target, never the foils, at session’s end; and (b) that the rating of session mentation relative to target and foils was done by an independent judge. As Roe et al. note, this might have played a role in the success of the ganzfeld studies, at least in part by obviating precognitively driven displacement onto foils.

Both this work and that of Cardeña and Marcusson-Clavertz employed a within-subjects design. Given also that within-subjects was the dominant design (21/25 studies) in the Stanford and Stein (1994) meta-analysis of ESP in hypnosis/comparison work, my General Discussion (below) ponders some statistical and conceptual ramifications of such designs.

“Testing Precognition and Alterations of Consciousness with Selected Participants in the Ganzfeld” (Watt et al., 2020)

It is refreshing to read a report bringing strongly into question, with exceptionally high-quality methodology and pre-registration, what may be for some a psi-research myth, namely that a telepathic agent is somehow central to psi success in ganzfeld. It was gratifying to see this major effort rewarded by a significant overall hit rate with a high-security design, joining a small number of other researchers’ earlier successful ganzfeld-precognition results (studies cited in their Table 1).

This clearly written report of carefully described work is thoughtful and rewardingly informative, including the justification, in-part on security grounds, for using a precognition design. The design was

well-informed by past research (including meta-analyses) that led to its sizeable ($N = 60$) participant sample consisting, by very large majorities, of individuals self-designated as: creative/artistic, having practiced some form of mental discipline, and/or having had some prior experience thought to involve psi. Potentially very important, care was taken to make the laboratory's physical ambience pleasant and social interactions welcoming and friendly. It was gratifying to learn that potential participants were screened via a query about mental health in the preceding five years, given that the study invited and encouraged opening oneself up to viewing and talking about inner experience in what might be deemed an altered-states-favorable setting. The use of dynamic targets might be deemed another major "plus" of this study.

General Discussion

Methodology: Enhancing Construct Validity plus Some Statistical Considerations

What do you hope to learn from your study? Some Important things to consider before selecting a between-subjects design

The following discussion, for simplicity and psi-research typicality, assumes two experimental conditions manipulated in a same-subjects design.

Despite the much acclaimed value of same-subjects designs relative to effort, cost, and statistical power (but re. power, see "major caveat" below), there are several reasons why using, instead, a between-subjects design (i.e., random assignment to conditions) allows a clearer conceptual understanding of the consequences of the experimental manipulation.

Misconceptions about effectiveness of counterbalancing: Some investigators seem to think that counterbalancing the order of conditions across volunteers can rid one's analyses of bias related to practice (and other undesired across-conditions influences of the design such as differential liking, affect, and/or exertion), but the validity of that assumption depends on there being *symmetry of transfer* (SOT) across testing orders. In other words, counterbalancing is intended to control for cross-condition influences but can, in principle, do so optimally *only* when something about condition A affects subsequent performance under condition B in the same manner (direction) and degree as going from condition B to A. SOT is a conveniently favorable assumption that may or may not be valid in the case at hand. There may, instead be asymmetry of transfer (AOT), which can strongly cloud the interpretation of differences of means related to the experimental manipulation. For example, Poulton (1982) provided a series of meticulously explained examples of how one particular, but widely manifest, type of AOT (related to test-taking strategies) might have produced confounding in published cognitive psychology studies of several kinds, leading to unjustified conceptual interpretation of the independent-variable outcomes.

The bottom line regarding choice of design: between- or within- subjects: A well-designed, thoughtfully large-sample, random-assignment study stands a good chance of illuminating the consequence(s) of a given independent-variable condition (or level, if quantitative) *in its own right* and can support examination of the comparability of outcomes across independent-variable conditions (or levels); but (b) one cannot justifiably assume that the same kinds (and/or magnitudes) of outcomes will

occur if one uses, instead, a within-subjects design. The latter often provides a decidedly different and more complex psychological milieu on account of temporally juxtaposed conditions—a set of circumstances too often ripe for unwanted and unsuspected influence(s) on variables measured during the session (including, potentially, both the dependent variable and predictor variables). The most conceptually justifiable reason for using same-subjects designs is to learn the consequence(s) of task juxtaposition, but for full understanding of that one also needs data from a comparable between-subjects study.

The acclaimed superior statistical power of within-subjects designs – a major caveat: *The statistical power for comparing condition means in a within-subjects design is influenced, sometimes very profoundly, by the magnitude and direction of the correlation across the dependent-variables scores for the manipulated conditions.* The larger a positive correlation, the greater the test statistic's power to detect a difference of means. If the correlation is negative, the larger it is, the less the statistical power for evaluating the difference of means. *Psi researchers contemplating using a within-subjects design should therefore consider that between-conditions correlations of psi-task scores often are notably less than optimally large.* In that case, the smaller sample sizes in same-subjects designs may mean surprisingly deficient statistical power. Authors of same-subjects studies always should report inter-condition correlations, which potentially have value in understanding what has happened in the study, both statistically and psychologically.

More on Protecting and Enhancing Construct Validity plus Learning More from Research Participants

Reducing method-driven artifacts when studying traits as predictor variables: Trait measures are intended to measure the strength of the respondent's relatively stable response disposition(s) in trait-relevant situations. In a research situation where the trait-measurement item(s) are unbuffered (i.e., not intermixed with same-format trait measures for other traits), the disposition under study may well be inferred by participants, and they may then correctly infer the investigator's expectations, given what they know about the trait and the other elements of the study. *If so, there may be artifact-driven participant concurrence with the researcher's expected outcomes related to that trait.* A plausible mediational route for such an artifact in a psi study is that if participants, thus knowledgeable about the investigator's expectations, believe that those expectations reflect expert knowledge and insight and that they apply to self, then such a *belief* might automatically favor one's producing the hypothesized psi-task performance. Another mediational possibility for non-psi dependent variables is deliberate compliance with the inferred hypothesis.

How might such an artifact be obviated? On a date not far preceding the session that measures the dependent variable, the predictor-trait scale (e.g., Tellegen Absorption Scale, TAS) is administered in a different setting by another experimenter (fully in accord with informed consent). It may be a good idea, additionally, to *moderately* buffer the TAS items in the earlier session—but not so many total items as to bore or bother the respondent. If independent-setting administration is not possible, one still can buffer the predictor-trait items. Kirsch and Council (1982) included trait-transparency-related correlational artifacts (also called *context effects*) in their review of work on the TAS as a predictor of hypnotizability. They also noted context-dependent relations as having been reported in studies evalu-

ating trait hypnotizability and five other personalistic measures (including belief in paranormal events). Alas, studies that involved predictor-trait transparency were common. They concluded their review of TAS-hypnotizability context-effects (p. 272) with a strong warning that those who use transparent trait measures but do not obviate context effects may obtain artifact-produced significant effects. A review by de Groh (1989, p. 60) reached similar conclusions. To study psychological traits as predictor variables in psi studies, we must strive for the same level of predictor-variable construct validity as we do for the psi-task dependent variable.

Foster construct validity and replicability through thoughtfully selected unobtrusive—hence, non-reactive—objective measurement of key constructs: It can be easy to forget that the use of subjective, self-report measures—whether of traits or states—can necessitate extensive introspection that often may require attribution (i.e., interpreting experiences as meriting a construct label, such as “altered state,” “absorption,” or whatever). Such introspection and its reporting are subject to the vagaries of memory, social desirability/undesirability of particular response(s), and experiment-related demand characteristics (relative to understood or supposed investigator expectations). Research participants may, with too much testing, become tired, bored, aggravated or even apathetic, potentially adversely affecting what follows. Very importantly, the queries that provide such data potentially can be *reactive* (i.e., produce unwanted and even unanticipated effects on later thinking and responding in the study). One example of this reactivity may appear if one administers the same inventory (or other measures) more than once in a session and the participant’s thinking and responding in the later administration(s) are influenced by reflections upon the earlier one(s).

There is great potential value in learning about mental and psi functioning via unobtrusively acquired temporally logged data from session recordings (e.g., of EEG measures and verbal utterances) made during critical parts of the session (e.g., during pretest relaxation/meditation and psi testing). Unobtrusively acquiring such data is non-reactive, for it is based simply on the analysis of records of what was transpiring—without any query—during the session. Verbal transcript analysis may be useful for investigating whether and, if so, in what ways verbal-behavior patterns covary with psi-task performance. Some years ago (Stanford et al., 1989a; Stanford et al., 1989b; Stanford & Frank, 1991) research assistants and I did ganzfeld-ESP research aimed at assessment, through verbal transcript analysis, of spontaneity, arousal level, and internal attention state and used these indices to try to predict receptive-psi performance. Future studies seem warranted and might be aided by computerized transcript analysis. Also, bringing selected EEG measures into the picture, as potentially convergent (or supplementary) indices of mental function may prove useful.

Unobtrusively acquired, hence nonreactive, data reflecting conceptually targeted variables, may decidedly favor enhanced replicability. The most replicable of my personal research findings relative to internal attention state and extrasensory response have come from using, as psi-task predictor variables: (a) frequency (in Hz) of EEG alpha rhythms during pretest relaxation/meditation (significant negative correlation in Stanford & Lovin, 1970 and Stanford & Stevenson, 1972); and (b) pretest-to-psi test *shift* in frequency of such rhythms (significant positive correlation in Stanford & Lovin, 1970, Stanford, 1971, and Stanford & Stevenson, 1972). Suggesting methodological robustness, such findings have emerged not only in between-subjects work with forced-choice ESP testing (Stanford & Lovin, 1970;

Stanford, 1971), but also in a within-subject (i.e., single-subject) 80-trial study with free-response ESP testing (Stanford & Stevenson, 1972). Moreover, such findings seem conceptually interpretable, based on concepts derived from non-psi EEG-alpha work).

Potential high importance of end-of-session interviews: If we only gather the kinds of information that are part of the formal study, we may be missing highly revealing, important participant thoughts, memories, and insights that might enhance our understanding of the study and suggest areas for improvement. The post-session interview could begin by letting the participant know that learning about his or her personal experiences in and reactions to the study as a whole or any of its elements is greatly valued and the information, unique—that no one else can supply that information, which can help in understanding the study and its outcomes. The experimenter should invite, relative to any aspect of the study, questions, comments, good or bad experiences in it, concerns about it, and anything else that seems worth sharing. One should mention that the information reported in the interview will have the same level of anonymity as the data of the formal study and that participation in the interview or any part of it is not required, but that any information the participant might provide would be deeply appreciated. Do not rush things. Allot ample time for such interviews. Give the participant time to ponder the queries and to try to recall and put into words the reactions and experiences to be disclosed. Be attentive to any nonverbal signs that perhaps should inform the discourse. The tone should be inviting (not commanding) and friendly, much as if one were asking a good friend for help.

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