PSYCHEDELIC SUBSTANCES AND PARANORMAL PHENOMENA: A REVIEW OF THE RESEARCH

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ABSTRACT: This paper reviews the research on psychedelic substances in relation to so-called paranormal phenomena, such as telepathy, clairvoyance, and precognition (i.e., ESP), as well as out-of-body experiences (OBEs) and near-death experiences (NDEs). Reference is made to the age-old shamanic use of these substances to specifically induce such experiences, and to contemporary reports from within academia and psychotherapy bearing witness to such phenomena. However, the review focuses primarily on describing and critically evaluating the contribution of controlled experiments that have attempted to induce ESP using psychedelics, and of surveys, which have either directly or indirectly investigated the belief in, and experience of, the paranormal in relation to the use of such substances. Furthermore, a methodological critique of the experimental research is offered alongside some recommendations for further research in this field.

Experimental efforts to investigate the apparent paranormal effects of psychoactive drugs began with simple stimulants and depressants such as caffeine, amphetamine, and alcohol (e.g., Huby & Wilson, 1961; Rhine, 1934), and has been reviewed elsewhere (Palmer, 1978; Rao, 1966). The present review, however, is focused on psychedelic substances, which Braud (2002) has suggested primarily cause qualitative rather than just quantitative alterations to the user's state of consciousness and are seemingly much more favorable to the facilitation of psi and other paranormal experiences, anecdotally at least. Earlier reviews of psychedelics in parapsychology exist (Blewett, 1963; Krippner & Davidson, 1974; Parker, 1975; Rogo, 1976; Wilson, 1949) and these have been incorporated into the current paper, yet a systematic analysis of the empirical research to date is overdue.

The active use of psychedelic substances for paranormal purposes supposedly extends back to the ancient Greek oracles at Delphi (von Bibra, 1855/1994) and even into prehistory (Devereux 1997). Since the beginning of the 20th century, when Zerda Bayon (1912) isolated harmaline from the South American jungle decoction ayahuasca and named it "telepathine," anthropologists, ethnobotanists, mycologists and other field researchers have continued to report psychedelic-induced paranormal activities among ritual users of these substances (e.g., Andritzky, 1989; Shannon, 2002; Slotkin, 1956; Wasson, 1979; Winkelman, 1989). Some have even reported the direct observation or experience of this themselves (e.g., Kensinger, 1978; Stamets, 1996; Wasson & Wasson, 1957) and such pharmaco-magical practices are now once more fairly common among contemporary occultists in the United States and Europe (Vayne, 2001; Louv, 2005). Indeed, following the cultural explosion in psychedelic drug use during the 1960s, reports

of ostensible paranormal phenomena such as ESP became commonplace among both psychedelic psychotherapists (e.g., Eisner, 1995; Grof, 1975, 1980; Harman, 1963; Holzinger, 1964; Pahnke, 1968; Stolaroff, 2004) and so-called recreational users (e.g., Eisner, 1989; Gaskin, 1990; Krippner & Fersh, 1970; Osmond, 1968; Stevens, 1989; Wolfe, 1971), as well as among parapsychologists (e.g., Krippner, 2006; Millay, 1999, 2001, 2004).

Anecdotes aside, there are good theoretical reasons for investigating psychedelic-induced ESP and other paranormal phenomena. Given that an altered state of consciousness (ASC) is a common feature in the occurrence of subjective paranormal experiences (Alvarado, 1998; Parker, 1975) and has often been incorporated into experimental attempts to induce ESP (e.g., see Palmer, 1978), then visionary drugs are, potentially, a repeatable means of accessing such a state. Several researchers have documented some of the mind-altering features of the visionary-drug experience that are considered conducive to the production of ESP (Blackmore, 1992; Blewett, 1963; Krippner & Fersh, 1970; Millay, 2001; Garrett, 1961; Huxley, 1961; Nicol & Nicol, 1961; Osis, 1961; Panhke, 1968; Parker, 1975; Rogo, 1976; Tart 1968, 1994). These have been categorized as follows:

1. Increase in vividness and quality of the mental image and the dreamlike state.
2. Altered perception of self-identity, such as unity consciousness.
3. Altered body perceptions and dissociation (of particular interest to the study of OBEs).
4. Distorted sensory input.
5. Increased absorption and focused attention.
6. Increased empathy, which is of interest for telepathy.
7. Emotional flexibility, which may also assist in negotiating fears about manifesting psi.
8. Increased alertness and awareness.
9. Increased spontaneity.
10. Sensitivity to subtle changes and intensity of feeling.
11. Physical relaxation.
12. Increased suggestibility.
13. Increase in intuitive thought processes.
14. Reduced critical conscious faculty, and increased optimism toward impossible realities.
15. Increased openness and extroversion.
16. Release of repressed or unconscious material into the conscious mind.
17. Complex distortions, and transcendence, of space and time.

In addition to these temporary alterations that may occur during the psychedelic experience, it is arguable that long-term alterations to the person's philosophical outlook, such as changes in concepts of reality

(Conway, 1989; Strassman, 2001), might also be psi-conducive. In a follow-up survey of 113 LSD-psychotherapy clients (82% response rate) 78% reported an increased tendency to view telepathy and precognition as possibilities warranting investigation (International Foundation for Advanced Study, 1962). Furthermore, the distinguished medium—and founder of the Parapsychology Foundation—Eileen Garrett asserted that the use of LSD had made her a better, more accurate sensitive (Garrett, 1961).

Aside from the subjective psychedelic experience, there is a reasonable possibility that exceptional mental phenomena, such as psi and OBEs, involve quite specific neurochemical activity in which psychedelic molecules may play a role. Indeed, the endogenous psychedelic *N,N*-dimethyltryptamine (DMT) and the unique pineal gland neurochemistry that is speculated to accompany it—though presently unproven—have been put forward as the neurochemical basis for the near-death experience, and possibly for alien abduction experiences too (Strassman, 2001). Roney-Dougal (1986, 1991, 2001) also suggested that this same neural system, along with the complex interaction of psychedelic and endogenous β-carbolines, might also be fundamental in the occurrence of psi experiences and OBEs. Similarly, Jansen's (1997, 2001) ketamine model posits that *N*-methyl-D-aspartate (NMDA) antagonists, such as the psychedelic dissociatives ketamine and phencyclidine (PCP), have a fundamental role in the neurochemical mediation of near-death experiences (Jansen, 1997, 2001).

Surveys

Belief in the Paranormal

Investigating correlates of belief in the paranormal, Kumar, Pekala, and Cummings (1992) asked their convenience sample of 574 psychology students a yes/no question about recreational drug use (including psychedelics). Drug users reported greater paranormal and psi-related beliefs, as part of a larger subscale. For more direct assessment of this relationship, Gallagher, Kumar, and Pekala (1994) created the Anomalous Experiences Inventory (AEI) with a drug-use subscale complementing four other subscales relating to anomalous/paranormal belief, experience, abilities, and fear. The AEI was successfully validated against other paranormal experience and belief scales using a convenience sample of 400 psychology students. The drug-use subscale (with items relating to the use of mind-altering substances, LSD, marijuana, heroin, cocaine, and alcohol) correlated positively, although only very weakly, with the AEI anomalous/paranormal beliefs subscale, $r(399) = .16$; $p < .01$, and also marginally with most of Tobacyk's (1988) Revised Paranormal Belief subscales, $r(399) =$ from .10 to .17; $p < .05$, but negatively with "traditional religious beliefs," $r(399) = -.14$; $p < .01$.

Additionally, some specific items in the AEI drug-use subscale correlated with Tobacyk's (1988) overall scale, although only very weakly. Overall paranormal belief correlated negatively with heroin use, $r(399) = -.12$; $p < .05$, but positively with the use of LSD, $r(399) = .11$; $p < .05$, and mind-altering substances, $r(399) = .15$; $p < .01$. There were no significant correlations for marijuana, cocaine, or alcohol. Similarly, the AEI anomalous/paranormal belief subscale correlated with the same AEI drug-use subscale items; mind altering substances, $r(399) = .18$; $p < .001$; LSD, $r(399) = .15$; $p < .01$, and also marijuana, $r(399) = .16$, $p < .01$, but not heroin. Additionally, for all categories of drugs except heroin there was a small significant negative correlation with the fear of psi, from $r(399) = -.12$ to $-.24$, whereas alcohol correlated positively $r(399) = .13$, $p < .05$. Nevertheless, these correlations are uncorrected for multiple inferential tests, so they should be accepted cautiously.

Using a convenience sample of 413 psychology students, Pekala, Kumar, and Marcano (1995) correlated the AEI with measures of hypnotic susceptibility and dissociation, finding no relationship. However, drug-use once more correlated positively with anomalous/paranormal beliefs, $r(412) = .25$; $p < .001$, and negatively with fear of the anomalous/paranormal, $r(412) = -.14$, $p < .01$, supporting Gallagher et al.'s (1994) findings.

A further AEI survey with a convenience sample of 107 students (Houran & Williams, 1998) provided further support for the small, but significant, relationships between drug use and anomalous/paranormal belief, $r(106) = .22$; $p < .05$, and fear of the anomalous/paranormal, $r(106) = -.18$; $p < .05$. Elsewhere, Simmonds and Roe (2000) used the AEI in relation to schizotypy and temporal lobe lability with a convenience sample of 145 psychology students, similarly finding a small significant correlation between drug use and anomalous/paranormal belief, $r(143) = .20$; $p < .05$. Following a Bonferoni correction for multiple tests, this correlation failed to remain significant, yet it is consistent with previous surveys and so is probably genuine, albeit small.

The relationship between AEI drug use and belief in the paranormal was further replicated by Thalbourne's (2001) convenience sample survey of 125 psychology students, $r(124) = .24$; $p < .01$. Thalbourne also investigated this relationship with respect to Kundalini experiences and transliminality—the proclivity for psychological material to cross thresholds in or out of consciousness. There was a significant positive correlation between drug use and transliminality, $r(124) = .29$; $p = .001$, and the "new age philosophy" (NAP) subscale of Tobacyk's (1988) Revised Paranormal Belief Scale, $r(124) = .23$; $p < .01$. However, there was no significant correlation with Tobacyk's "traditional paranormal beliefs" (TPB) subscale, and reanalysis of Thalbourne's data by Houran and Lange (2001) found the difference in reports of drug use in relation to NAP and TPB to be significant ($p < .001$, uncorrected for multiple analyses, exact statistics not reported), reinforcing their argument for two distinct paranormal belief groups. Additionally,

there was a suggestive but nonsignificant negative correlation between drug use and fear of the anomalous/paranormal.

A post hoc analysis identified small but significant positive correlations, ranging from $r(124) = .20$ to .27, between transliminality and all of the AEI drug-use categories except for alcohol. Thalbourne suggested that this relationship may be due to the need to use drugs to escape the unpleasant aspects of the transliminal state or that drug use may be a means of promoting the psychic phenomena that high transliminal scorers may have become deprived of. However, it is possible that both of these hypotheses are correct, concurrently, but only for particular substances, as it is actually highly unlikely that psychedelic drugs are used to escape the transliminal state because, according to Vayne (2001), these substances are used expressly to cause the opposite effect. However, some nonpsychedelic drugs, such as alcohol may ameliorate transliminality. Alternatively, Thalbourne has speculated that an "openness to experience" trait underlies the relationship between drug use, transliminality, and paranormal experience.

In a follow-up survey (Thalbourne & Houran, 2005), a convenience sample of 200 psychology students completed an extended AEI drug-use subscale, which included a new item relating to ecstasy (MDMA) and another relating to speed (amphetamines). As previously, drug use correlated marginally, although significantly, with transliminality, $r(199) = .21$, $p < 005$, one-tailed. Furthermore, scores on the Oxford Happiness Questionnaire indicated transliminality, a syndrome related to schizotypy, was not related to happiness and that the majority of high transliminals were actually happy. This offers some support for McCreery and Claridge's (1995) notion of the pathology-free "happy schizotype," prone to paranormal experiences. However, unhappy high-scoring tranliminals reported significantly more drug use that happy high-scoring transliminals, $t(76) = 1.98$, $p < .05$, somewhat supporting Thalbourne's speculation that transliminality, akin to psychosis, can be an unhappy state that such people attempt to escape from with drugs. Unfortunately, Thalbourne and Houran's findings sweep several different types of drugs—including psychedelics, narcotics, stimulants, and alcohol—together under one umbrella, revealing very little about which of these diverse psychoactive drugs relate to each particular syndrome. Given the system of scoring in this study, it is possible that the use of just one drug, such as opiates/opioids, entirely accounts for the differences in substance use between happy and unhappy transliminals, and a replication with more specific analysis is needed.

Recently, a wealth of epidemiological psychiatric research has surveyed reports of cannabis use and schizotypal symptoms, finding fairly consistent correlations (for a review see Castle & Murray, 2004). Items relating to telepathy and other kinds of thought broadcasting are often included, and it deserves mentioning that the subscales in which these items appear tend to correlate with cannabis use (e.g., Johns et al., 2004).

However, although relevant, this research is largely indirect to the present study as incidence rates for specific types of paranormal-like experiences are scarcely reported, though when given they are reported anyway with a diminished incidence rate than in the apparent absence of pathology.

In summary, a small but consistent significant relationship was found between the drug-use and anomalous/paranormal belief subscales of the AEI, ranging from $r = .16$ to $r = .25$, and where specified this relationship was mostly due to correlations between anomalous/paranormal belief and the LSD, r = from .11 to .15, mind altering substances, r = from .15 to .18, and marijuana use items, $r(399) = .16$, of the drug-use subscale, whereas cocaine, alcohol, and heroin either did not correlate or correlated negatively: heroin, $r(399) = -.12$. A similar, but negative, relationship existed between drug use and fear of psi, r = from -.14 to -.18, where reported, with the majority of the effect being due to psychedelic drugs, whereas heroin did not correlate and alcohol correlated positively. Two studies also found a relationship between transliminality and drug use generally, r = from .21 to .29, and this was particularly related to unhappy transliminals, although the types of drugs accounting for this relationship were not specified. Furthermore, in relationship to Tobacyk's PBS, the New Age Philosophy subscale was found to be a better predictor of drug use than the Traditional Paranormal Beliefs subscale. Within psychiatric epidemiological research, correlations between self-reports of cannabis use and thought transmission are apparent, often indirectly, though similar experiences are also more widely and commonly reported in the apparent absence of pathology, with or without cannabis.

Paranormal Experiences

Several major surveys of psychic experiences have included questions regarding the use of psychoactive drugs. Palmer (1979) originally created a psychic experiences questionnaire for use in a randomly distributed postal survey. It was completed by 354 townspeople (T) and 268 students (S), treated as different samples, with response rates of 51% and 89%, respectively. Those who reported using "mind-expanding drugs" also responded positively to being an ESP agent, having a recurrent spontaneous PK experience, T only, $N = 354$ $p < .01$, (exact χ^2 not reported), haunting experience, T only, $p < .05$, aura vision, S only, $p < .05$, and OBEs, S only, $p < .01$. Despite reported drug-use differences between samples, equal proportions from each group (T: 29%; S: 28%) reported psi experiences actually occurring during use. Kohr (1980) criticized the analysis for not reporting the chi-squared statistic and for using an underpowered test.

Kohr (1980) surveyed a special sample of self-selecting respondents (N = 406) from the Association for Research and Enlightenment, an organization formed of those intrigued by the legacy of the renowned psychic and Christian mystic Edgar Cayce. Using Palmer's questionnaire,

Kohr failed to find any association between subjective paranormal phenomena and the use of mind-expanding drugs, although figures for drug use were not actually reported, so little inference can be made. A special-sample survey with attendees at an occult conference demonstrated the opposite effects to Kohr's (Roney-Dougal 1984). Of the 33 respondents, 30 (91%) reported psi experiences, of which 12 (40%) reported the use of mind-expanding drugs, indicating both the slightly higher reported use of psychedelics (36% of the sample) and the greater reporting of paranormal experiences among occultists compared to other populations, though this observation needs replicating.

Palmer's (1979) questionnaire was later modified (Usha & Pasricha, 1989a, 1989b) to suit the needs of an Indian student population ($N = 328$; response rate 79% using convenience sampling). Use of mind-expanding drugs was reported by 11%, who were also significantly more likely to be Hindu, $\chi^2(1, N = 328) = 4.17$, $p < .05$, or male, $\chi^2(1, N = 328) = 14.3$, $p < .01$, probably largely due to the sacred use of marijuana among many Indian men, mostly Hindus. Of those reporting drug use, 18% reported psi experiences during the drug experience, somewhat less than Palmer's 28–29%. Yet, similar to Palmer's work, the use of mind-expanding drugs was positively associated with OBEs, $\chi^2(1, N = 328) = 6.87$, $p < .01$, and additionally with waking ESP, $\chi^2(1, N = 328) = 5.24$, $p < .05$, apparitions, $\chi^2(1, N = 328) = 6.6$, $p < .05$, and déjà vu experiences, $\chi^2(1, N = 328) = 7.07$, $p < .01$. However, none of the studies using Palmer's 46-item questionnaire (Palmer, 1979; Kohr, 1980; Usha & Pasricha, 1989a, 1989b) made corrections for multiple inferential analyses.

Returning to the surveys of paranormal *belief* among students reviewed above, these studies also investigated anomalous/paranormal experiences, and Kumar et al. (1992) found drug users reported significantly more of these. Each of the five later surveys (Gallagher et al., 1994; Houran & Williams, 1998; Pekala et al., 1995; Simmonds & Roe, 2000; Thalbourne, 2001) utilizing the Anomalous Experiences Inventory reported a significant positive correlation between the drug-use and the anomalous/paranormal experience subscales (comprising 29 items relating to a range of experiences including psi experiences, NDEs, OBEs, déjà vu, apparitions, past-life memories, aliens, UFOs, mystical experiences, and attendance at séances), ranging from $r(399) = .13$ (Gallagher et al., 1994) to $r(124) = .29$ (Thalbourne, 2001), and Pekala et al. (1995) additionally found that drug use was positively correlated with a "shamanic or encounter-like experiences" subscale, $r(412) = .23$; $p < .001$, which included items relating to OBE and contact with spirits.

Thalbourne (2001) also found a relationship between drug use and Kundalini experiences, $r(124) = .28$; $p < .01$, which is a syndrome of various psychophysiological phenomena described as bodily energy surges and certain transpersonal experiences. Thalbourne suggested the relationship between paranormal experience, drug use, and the Kundalini

experience indicates that certain drugs may either trigger a Kundalini experience or alleviate it. Alternatively, Thalbourne proposed that this relationship indicates a need for nonstandard sensations, or that the physiological aspects of the kundalini experience were being misinterpreted as paranormal. However, this final supposition is inconsistent with age-old Tantric teachings that warn of psi-like Kundalini experiences, called "siddhis." Furthermore, as an alternative to Thalbourne's interpretations, the results may simply be due to an overlap of subjective psychic experiences common to both the Kundalini and the drug experiences, as suggested by Naranjo (1987) and demonstrated by DeGracia (1995). Perhaps the activation of endogenous psychedelics found in the brain such as DMT—which, based on the availability of certain neurochemicals, is speculated but certainly not proven to be made in the pineal gland (Roney-Dougal, 2001; Strassman, 2001)—underlies both factors, resulting in subjective paranormal experiences. Indeed, Roney-Dougal (1991) notes that the pineal gland has been considered by some yogis to be primary in the control of Kundalini psi experiences, and other tentative evidence suggests such a link (e.g., see Roney-Dougal, 1986, 1991, 2001).

Summarizing the paranormal experiences surveys with either student or general samples, significant associations were found between those reporting the use of psychedelics and those reporting auras, apparitions, hauntings, déjà vu, and RSPK experiences in at least one study using the Palmer questionnaire, with the report of OBEs being associated with psychedelic drug use in two samples. No such associations were found for the members of the Association for Research and Enlightenment, possibly due to this sample's high incidence of religiosity, which is known to correlate negatively with drug use. Occultists, on the other hand, had a higher reported incidence of both drug use and psi experiences. Correlations between drug use and scores on the anomalous/paranormal experiences subscale of the AEI were all positive and significant for each of the five published studies and ranged from $r = .13$ to .29. Kundalini and "shamanic or encounter-like experiences" also correlated with drug use.

Psychedelic User Samples

DeGracia (1995) conducted a self-selecting internet survey with 61 experienced psychedelic users about their Kundalini-like experiences. The results demonstrated a large overlap between reported psychedelic experiences and experiences common in spontaneous Kundalini awakenings. Psychedelic users frequently reported an enhanced sense of empathy (75%), OBEs (40%), intuition, psychic powers, and the recall of past lives (no statistics given). This triadic relationship between reported psychedelic use and both paranormal and Kundalini experiences is further supported by Thalbourne (2001).

A survey (Tart, 1993) conducted in California in 1970 with 150 experienced users of marijuana recruited by anonymous snowball sampling found an even higher incidence of paranormal experience than the student and general samples discussed above. The sample consisted of 76% students, 72% of whom had tried LSD, although only 7% had tried hard narcotics (e.g., presumably, heroin). Experiences occurring on marijuana include 69% reporting telepathy (rising to 83% in a later sample), 32% precognition, 13% PK, and 50% seeing auras, with heavier users reporting significantly higher frequencies of these experiences in each category (Tart, 1971).

A Swedish survey similar to DeGracia's investigated transpersonal drug experiences among an anonymous snowball sample of 16 experienced psychedelic users (Kjellgren & Norlander, 2000). Respondents reported OBEs (53%), telepathy (60%), the loss of the sense of a discrete self (47%), traveling clairvoyance, (62%), contact with entities (20%), time travel (40%), animal shapeshifting (53%), and visions of mythological beings (33%), all under the influence of psychedelics. All respondents reported having some experiences, with heavier users and those practicing mind-expanding, spiritual, or ritual techniques reporting more of these experiences than infrequent users. However, significant differences in the quantity of experiences between low and high users were found only for telepathy, $U = 12$, $p < .05$, two-tailed, and for a combined index of all paranormal experiences, $U = 7$, $p < .05$, though uncorrected for multiple analyses. This partially supports the hypothesis that subjective paranormal experiences occur more frequently during the use of psychedelics, although alternative explanations are possible.

White (2002) conducted an incidental survey through the collation of unsolicited responses to a "frequently asked questions" (FAQ) article about dextromethorphan (DXM) that was posted on a drug information website. White received so many reports of paranormal experiences with DXM, a dissociative drug commonly found in cough remedies, that a summary of the reports was published, and it is independently supported in part by a psychiatric admission report published elsewhere (Price & Lebel, 2000). DXM-users reported OBEs, NDEs, and a loss of the sense of causality, as well as a sense of presence, encounters with entities, and the occasional experience of ESP, although not PK (no statistics given).

Summarizing the surveys of paranormal experiences among psychedelic-user samples, the studies show that self-reported incidence rates are as high as 83%—for telepathy experiences occurring while under the influence of marijuana (and 60% for psychedelics)—with high rates also being reported for traveling clairvoyance (63%), OBEs (40–53%), animal shapeshifting experiences (53%), seeing auras (50%), precognition (32%), and even PK (13%). In some cases incidence rates were significantly higher for heavier users, lending more support to the notion that paranormal experiences occur more frequently during the use of psychedelics.

Out-of-Body Experiences (OBEs)

Special attention has been given to the relationship between psychoactive substances and OBEs. Combining two convenience samples of students (N = 192), Blackmore (1982) reported that of the 35 (18%) claiming to have had at least one OBE, 13 (37%) occurred when taking drugs, most often LSD or marijuana. A later questionnaire survey with students (convenience sample, N = 96) found 31% claimed to have had an OBE, and they were significantly more likely than those who did not claim to have had an OBE to have taken drugs such as cannabis, LSD, or opium derivatives (Blackmore & Harris, 1983).

Although these two surveys suggest that the use of psychedelic substances is an important correlate of OBEs, this relationship is less pronounced in populations other than students. A later randomized postal study (Blackmore, 1984) with a sample of "OBEers" revealed that only 18% of respondents reported that OBEs occurred after taking drugs and medicines (type not specified). Blackmore (1992) concluded that hallucinogenic drugs undoubtedly helped induce the OBE.

The Blackmore OBE surveys support Palmer's (1979) finding that a higher percentage of students than townspeople report OBEs (S: 25%; T: 14%; $p < .01$), which Palmer attributed to the likely greater use of "mind-expanding" drugs among students. Indeed, only 7% of the townspeople reported the use of mind-expanding drugs compared to 32% of the students. In addition, 13% of the townspeople and 21% of the students reporting OBEs said that at least one OBE had occurred under the influence of such drugs, figures more comparable to the reports by 18% of the general OBE population (Blackmore 1984) than to the 37% in Blackmore's (1982) student OBE group. Nevertheless, reviewing OBE surveys, Irwin (2004) agreed with Palmer that the higher reports of OBEs among students (20–48%) compared to the general population (8–15%) were probably due in part to students' more frequent experimentation with "psychotropic" drugs, but perhaps also partly due to factors of education and survey familiarity.

Using Palmer's questionnaire, Kohr (1980) failed to find any relationship between OBEs and drug use with the members of the Association for Research and Enlightenment although Usha and Pasricha (1989a, 1989b) did find a positive association between OBEs and the use of mind-expanding drugs, $\chi^2(1, N = 328) = 6.87$, $p < .01$, supporting Palmer's findings. Tart (1993) also found that 44% of marijuana users reported OBEs, with 58% of this group indicating that their OBE occurred since using marijuana and 54% reporting at least one experience while actually under the influence (Tart, 1971). Most of Tart's sample were also students (72%), supporting Alvarado's (2000) suggestion that the relationship linking psychedelics with OBEs shown in student populations is not evident among the nonstudent populations, although this assertion is arguably too exclusive

of nonstudent drug users, as is evident from surveys with psychedelic users. DeGracia (1995) found that 40% had an OBE while under the influence of psychedelics, and in Kjellgren and Norlander's (2000) sample, of which only 25% were students, OBEs under the influence of psychedelics were reported by 53%, a figure comparable to Tart's marijuana group. Further testament to the prevalence of psychedelic-induced OBEs comes from a survey of 28 first-time ayahuasca users in two Brazilian churches, 32% of whom reported alterations in self body-image ranging from fusion with the environment to full OBEs (Barbosa, Giglio, & Dalgalarrondo, 2005).

Reports of OBEs are also evident with practically every psychedelic drug, ranging from nitrous oxide, hasish, and ether (Crookall, 1961) to LSD (Grof, 1975, 1980), PCP (Rudgley, 2000), DMT (Strassman, 2001), harmaline, and ayahuasca (Andritzky, 1989; Roney-Dougal 1986). In particular, OBEs reportedly occur most frequently and reliably with ketamine (Jansen, 1997, 2001; Lilly, 1978). Some early researchers considered drug-induced OBEs to be both different from and inferior to natural OBEs (Crookall, 1961), though the evidence for this is lacking. Nevertheless, a formal comparison of drug-induced and nondrug-induced OBEs could be highly informative.

In summary of the surveys relating OBEs to drug use, it can be seen that OBEs are one of the most prevalent paranormal experiences to occur on psychedelic substances and occur with a very wide range of different substances. The use of psychedelic substances has been suggested as one of the reasons why students report more OBEs than the general population, with some evidence to support this. The reporting of OBEs in the general public (8–15%) is certainly lower than that for student groups (20–48%), of which 37% in one study reported the experience to occur under the influence of psychedelics (or opium). Marijuana users also frequently reported the occurrence of OBEs (44%), as did regular users of psychedelics (40–53%) and first-time only users of ayahuasca (up to 32%) supporting the notion that OBEs occur more frequently with persons on psychedelic substances than they do normally.

Summary of Main Survey Research Findings

In summary, these surveys reveal a small but consistent relationship between drug use and anomalous/paranormal experiences, r = from .13 to .29, and belief in the anomalous/paranormal, r = from .16 to .25, although the size of this latter relationship was more pronounced in Tart's (1993) marijuana study. Furthermore, among students and general populations, those reporting ESP, apparitions, and anomalous/paranormal experiences were found to be significantly more likely to use psychedelics. One study found the same for RSPK as well, although only tentatively (Palmer 1979). Additionally, of those reporting the use of psychedelics, 18–83% reported psi experiences—most commonly telepathy—actually occurring during drug use, with heavier users reporting more experiences, where specified,

whereas PK during drug use was reported only by a few respondents in the marijuana study. OBEs are also a common feature of psychedelic experiences and are reported to occur with a wide variety of drugs.

Experimental ESP Research

Forced-Choice Designs

Whittlesey (1960) used an unspecified dose of LSD in a forced choice ESP task with 27 participants, mostly psychiatric outpatients receiving psychotherapy (with LSD, presumably). Using ESP cards concealed within opaque envelopes, participants performed two runs of 25 guesses, one before and one after dosing. Neither performance yielded significant deviations from mean chance expectation (MCE), although a chi-squared analysis revealed a significant reduction in variance ($p < .001$, exact χ^2 not reported) for scores in the experimental condition. Under the influence of LSD, participants had reported that the card-guessing task was "ridiculous, petty, mundane, etc." (p. 221) and Whittlesey suggested that the exceptional lack of deviation from MCE was possibly due to participants feeling so constrained by the task.

Making similar use of ESP symbols, Pahnke (1971) reported a pilot study with five participants given a high dose of LSD (200–400 micrograms) and tested 8–9 hours later. There was no increase from predrug scores for the experimental condition, and Pahnke cited the long delay in testing from dosage and, somewhat similarly to Whittesley (1960), the use of an ESP machine with sterile symbols as counterproductive factors.

Masters and Houston (1966) also experimented with an ESP-card guessing procedure, with each participant performing ten 25-card runs. Only 4 out of the sample of 27 participants did better than chance, but those few participants performing better were known very well by the trip guide and had reported a high degree of empathy (with the guide, presumably). Masters and Houston note that participants very quickly became bored with the task and complained that it was "psychedelically immoral" to have them perform card guessing while tripping.

As part of a larger series of ESP tests with 36 participants under the influence of psilocybin, Asperen de Boer, Barkema, and Kappers (1966) found that in ten 25-card runs, no individual scored significantly better than in his or her own no-drug control condition. The results of the 29,000 ESP-card trials for the 36 psilocybin and 44 control participants (a few participants did multiple conditions) were significantly above chance (reported as $p < .0006$, exact test statistic not reported but calculated from the results of all the trials using binomial calculation, $z = 2.89$, $N = 29000$, $p = .0019$) overall, but the experimental and control groups were not compared as a whole, only individually. However, a closer inspection of the results showed that, when compared as a group, those in the psilocybin condition scored higher,

mean correct = .208 (MCE = .2), $z = 2.94$, N trials = 20000, $p = .0016$, than the control condition, mean correct = .203, $z = .83$, N trials = 9000, $p = .20$, although there is concern about the statistical independence of these data. However, there is some indication that order effects reduced any difference between the groups because the psilocybin condition always occurred after the control condition, resulting in test fatigue, as demonstrated by those participants performing two control conditions.

Kugel (1977) very briefly reported the only LSD telepathy experiment in which test scores actually declined in the experimental condition compared to the periods before and after drug influence. Participants had been given trial-by-trial feedback and Kugel noticed that there was a very strong tendency for participants to respond with the same ESP symbol following feedback of a hit, and a different symbol following a miss. Analysis revealed that this "feedback susceptibility" increased under the influence of LSD, perhaps accounting for the poorer test performance, although no further details about the methodology or statistical results were provided.

In an indirect experiment with participants selected for good psi scoring, Palmer, Tart, and Redington (1976) found a positive correlation between scores on an automated ESP-symbol guessing task and the reported frequency of marijuana use outside of the laboratory, with a negative correlation between ESP scores and alcohol consumption (see Tart, 1993). However, a follow-up study (Tart, Palmer, & Redington, 1979) failed to replicate these results, although Tart (1993) suggested that might have been due to the difference in sample groups and the rising popularity of marijuana, an "active-placebo," as a social drug rather than as a tool of self-development.

Despite earlier cautions (e.g., Masters & Houston, 1966; Pahnke, 1971; Whittesley, 1960) that ESP-symbol tests are too boring for those affected by psychedelic drugs, two later studies (Tinoco, 1994; Don et al., 1996) found further support for this view with the use of ayahuasca in Brazil. In a series of 825 ESP-card guessing trials conducted in two 90-minute sessions with one sender and one receiver, both under the influence of ayahuasca, no significant deviation from MCE was found (Tinoco 1994). A second automated ESP-card precognition test involved one of the previous participants in a further 625 trials over two separate sessions lasting 1 hr and 40 min each, the scores of which were slightly below chance but not significantly so. However, no control conditions were evident for comparison, and as with forced-choice studies, both participants volunteered that the tasks were boring, meaningless, and unimportant because it was more important to live the visions of the moment.

As part of a larger investigation into EEG variations with ayahuasca use, Don et al. (1996) similarly found no significant deviation from MCE with a small group of (presumably experienced) participants on ayahuasca using the automated "ESPercisor" procedure, though, like Tinoco's study, without nondrug controls.

Unlike most of the other forced choice designs, a series of successful experiments were reported by Puharich (1959, 1962), one of which utilized a 10-image unseen picture-matching test with participants who had ingested the psychedelic mushroom *Amanita muscaria*. Controlled experimental work with 26 unselected participants in independent trials revealed an overall chance occurrence of hits in the control condition (106/1140; MCE = 114, exact test statistic not reported but calculated from the results of all the trials using binomial calculation, $z = .84$, N trials = 1140, $p = .20$) compared to the experimental group (141 hits; $p < .01$, exact test statistic not reported, but binomial calculation, $z = 2.67$, N trials = 1140, $p = .0038$) indicating a positive effect of the mushroom on ESP, later repeated in a telepathy-type design.

To summarize the forced-choice designs, early experiments all returned null results and were reported by the participants as being mundane, sterile, "psychedelically immoral" and so on, while under the influence of the psychedelic substance. Similar results were also obtained in two more recent experiments with ayahuasca in the 1990s in which the participants again reported their desire to have experienced the visions undisturbed rather than do repetitive and boring tests. Nevertheless, one early study found an increase in psi scores with psilocybin (significance unknown), and another study found a significant effect of *Amanita muscaria* mushrooms on psi, but caution is raised about the lack of peer review with the latter study. Finally, a positive correlation between marijuana use outside the lab with forced choice psi scores in the lab was originally reported but later failed to replicate. Overall, forced choice designs have not proved successful.

Free Response

Psychometry. In an exploratory study using a special sample of six mediums, presumably inexperienced with psychedelics, Osis (1961) administered 100 or 125 micrograms of LSD prior to a psychometry test, in which participants are given an object to obtain clairvoyant information about its history or ownership. Five performed at chance whereas one was extremely successful, unfortunately without details, though Osis noted that the others were too absorbed in either the aesthetic pleasure of the experience or the quest for philosophical knowledge.

In 1950, in probably the first reported psychedelic ESP experiment, Smythies (1987) conducted a preliminary psychometry investigation with one volunteer using mescaline. Although the participant was unable to discern the targets under blind, remote-viewing style conditions, informal questioning about the target location typical of psychometry tasks elicited promising responses. Similarly using mescaline, a series of pilot studies with three participants "failed in card-guessing tests but showed encouraging success in tests with free material, particularly token objects" (Rush & Cahn,

1958, p. 300), though, unfortunately, further details were not supplied in this paper.

The most extensive psychedelic object-reading tests formed part of an ESP test battery in a large-scale psilocybin study (Asperen de Boer, Barkema, & Kappers, 1966). In a no-blind repeated-measures design, 44 no-drug control and 36 test participants (30 participants did one of each condition, with 6 doing multiple control conditions) given 10 or 20 mg of psilocybin, were individually tested for an entire 4 hr for ESP performance with ESP cards, object reading, remote viewing (traveling clairvoyance), telepathy, and clairvoyance tests. Using a complex and outdated, bias-prone analysis, the experimenters jointly estimated the degree of probability for each participant statement and then determined the extent to which the probability of correct statements outweighed the number and probability of incorrect statements. All participants were considered to have performed better than chance overall in the object reading, remote viewing, and clairvoyance tests, but those in the psilocybin condition were not considered to have performed better than those in the control condition.

Asperen de Boer et al. (1966) concluded that it is not possible to induce ESP with psilocybin, although Bierman (1998) argued that their participants should be pitied for having to do such a range of boring and strenuous tests while tripping, a burden unlikely to be imposed in modern research. Parker (1975) also criticized the study for promoting a scientific methodology at the expense of interpersonal factors. Furthermore, Asperen de Boer et al. made little account for their methodological shortcomings despite reporting that more than half of the psilocybin participants, mostly drug novices, were distracted from the tasks by their visions. Nevertheless, they did acknowledge the influence of order effects due to the psilocybin condition always following the control condition, which was shown to cause fatigue effects independently of the drug. Asperen de Boer et al. also reported briefly on a previous series of more promising unpublished psychometry trials with LSD that were conducted prior to switching to the "less distracting" psilocybin. Out of several LSD participants, some exceptionally accurate accounts of object reading were given, for which Kappers (1983) later suggested only a paranormal explanation seemed possible.

Summarizing the psychometry-type studies, it can be said that some degree of success appears to have been obtained, which in some cases was quite compelling for the researchers (although lacking in details in the reports); nevertheless, the lack of a means of accurately assessing the statistical success of these techniques dictates that clear evidence for psi is unforthcoming from these studies. However, on the surface it appears that such tests are potentially better suited than forced choice tasks for eliciting psi with participants under the influence of psychedelics.

Other clairvoyance-type experiments. Cavanna and Servadio (1964) reported extensively on a repeated-measures clairvoyance design with the

alternate use of LSD and psilocybin in what was primarily an ideographic, psychoanalytic study. In a series of three control, five psilocybin, and four LSD trials, three participants performed in a single-blind (water placebo) free-response clairvoyance test. In each trial there were 10 ESP targets. Participants, who were drug novices, were given low doses of LSD (40–75 micrograms) and psilocybin (10 mg).

The participants' mentations were rated for correspondences by three experimenters and then independently by two blind judges, with reasonable correspondence between the judging groups. Compared to the control conditions, the blind judges' results with both the LSD and psilocybin showed a clear improvement in ESP ability, with some accurate correspondence with about one in five of the targets for both drugs. No success at all was achieved in the three control conditions, though unfortunately no estimation of the probability of the results was given, nor were inferential statistical analyses possible because the design had no decoy targets in the judging process. Although the results are positive, caution is raised concerning any inferences drawn from so few trials.

Seeking to avoid the earlier boring and repetitive test procedures, a series of pilot "ganzfeld" experiments (i.e., in a controlled, sensory-reduction environment) with cannabis (marijuana) and psilocybin were conducted (Wezelman & Bierman, 1997; Bierman, 1998). Initially, Wezelman and Bierman utilized an automated ganzfeld set-up with 40 participants preselected for experience with marijuana. In a randomized crossover design, participants performed two trials each: one self-dosing marijuana condition and a control condition. All but four participants, who became nauseous and dropped out after the first session, completed both trials. A planned mixture of either subject judging or external judging was used. The control condition had a hit rate of 15% (MCE = 25%) compared to 30% for the marijuana condition. However, scores for the experimental group were not significantly different from MCE.

Wezelman and Bierman (1997) also reported on findings from a no-sender ganzfeld pilot study conducted with six psilocybin-experienced participants performing two trials each under the influence of psilocybin. There was no control condition. Utilizing a buddy system to deter "bad trips," pairs of receivers were placed in the ganzfeld room together. Using only subject judging, participants in the psilocybin group scored 7 direct hits out of 12 trials (58%), a figure that even with only a few trials is significantly deviant from MCE ($p < .05$, exact test statistic not reported), although uncorrected for a stacking effect (Milton & Wiseman, 1997, p. 93).

In summary of the three clairvoyance-type studies reported here, it can be said that the results are positive in two of the three studies, albeit without adequate probability estimates in one study and with too few independent trials in the other study. Nevertheless, again the free response type designs implemented here show more promise in obtaining significant results than do the forced choice task designs.

Telepathy-type experiments. Utilizing the standard sender-receiver pair set-up used in telepathy research, Bierman (1998) followed up the psilocybin research using a within-subjects control condition with 20 psilocybin-experienced participants who each performed one control and one psilocybin ganzfeld trial with a "sober" sender. Participants in the psilocybin condition scored at chance (25%) whereas in the control condition they performed slightly below (20%), with no significant difference between the two. However, a post hoc analysis revealed an interaction between target emotionality and drug state, with a much higher hit rate for emotionally positive clips (44%) than for emotionally negative clips (8%) in the psilocybin condition and a reversal of this effect in the control condition. This interaction was explained in terms of psilocybin participants possibly detecting the positive ESP targets but blocking the negative images to deter bad trips, given that participants were tripping alone this time. However, the reverse effects for the control condition are not as easily explicable, and the effect needs to be replicated prospectively.

Masters and Houston (1966) demonstrated a greater understanding of psychedelic research methodology than their contemporaries in a series of ESP experiments. They provided an experienced trip guide, with whom most participants were familiar, and utilized experienced trippers as participants. Only the 62 receivers were given LSD, with their guide as the sender of the 10 static image targets. Using independent judges, the majority of the receivers (77%) gave free-recall responses approximating the target at least 2/10 times, with five of these participants approximating the target image 7/10 or 8/10 times. The remaining 14 participants (23%), who performed worse, were either unknown to the guide, anxious, or primarily interested in their own personal psychological narrative rather than the ESP task. Parker (1975) noted that nonverbal communication from the guide could not be ruled out. Once again, no estimation of the probability of describing the target image is given because no decoy images were used in the judging process and no comparison was made to a control condition to establish if LSD actually improved scores. Nevertheless, accuracy rates were similar to those reported in the clairvoyance procedure of the same nature by Cavanna and Servadio (1964), in which LSD and psilocybin scores exceeded those in control conditions. Cavanna and Servadio further reported an exploratory sender-receiver telepathy design with one LSD trial and one control, in which only the receiver took LSD. The results indicated accurate comparisons in approximately 1 in 3 of the targets for LSD, with a rate of only 1 in 10 for the no-drug control condition.

Finally, Puharich (1962) followed up his earlier success at clairvoyance using the *Amanita muscaria* mushroom with a demonstration for four Los Angeles news reporters who also acted as participants and who were either skeptical or hostile toward the idea of drug-induced psi. The design relied on a computerized random number (1–9) guessing task with a nondrugged sender elsewhere, though where, exactly, was not specified, so sensory

leakage cannot be ruled out. Participants scored at chance in the control condition (35 hits in 297 trials, nonsignificant) and significantly above chance (65 hits in 432 trials, reported as $z = 2.6$, $p = .0047$) after ingesting *Amanita muscaria*. Scoring returned to chance after 2.5 hr, as they had in the previous clairvoyance experiment. However, because there are a different number of trials in the two conditions, there is also the possibility that "optional stopping" occurred in this latter experiment, such that the number of trials was not prespecified but rather stopped when the results became significant. Krippner (2006) also raises concern that Puharich's research, as with Masters and Houston, was reported in a self-authored book rather than a peer-reviewed journal. In addition, an anonymous referee pointed out that *Amanita muscaria* contains a different class of psychoactive chemicals than the other substances experimented with in this review. Indeed, the most psychoactive constituents of *Amanita muscaria* are muscimol and ibotenic acid, which work, respectively, as a GABA agonist and an NMDA agonist (in an opposite manner to dissociative psychedelics such as ketamine), which is a very different mode of neurochemical action to that of the serotonergic (e.g., LSD, psilocybin, DMT, mescaline) and dopaminergic (e.g., cannabis) substances primarily discussed in this paper.

In summary, all of the four telepathy-type designs mentioned here have reported positive results, albeit with the use of post hoc evaluations in some cases, lacking exact probability estimates in others, and possibly exhibiting optional stopping in one study. So, as with the clairvoyance-type designs, the results for the telepathy-type designs appear to be at least promising though they are a far cry from offering any conclusive experimental evidence due to poor design issues and the current lack of prospective replication.

Summary of Experimental Research

Due to the exploratory nature of most of these experiments, it is difficult to fully assess the efficacy of psychedelics for producing ESP. In most cases this could have largely been improved with an adequate control condition, without order effects (Palmer 1978), and with the blind use of decoy targets in the judging process as a gauge for what may be achieved by chance alone. Procedures using subjective probability estimates by experimenters (such as Asperen de Boer et al., 1966) are now virtually obsolete in parapsychology because they are so difficult to assess and are prone to bias (Parker 1975). In the one ESP-card experiment to use a control condition, scores in the psilocybin condition were significantly different from chance and were also superior to the control condition, although significance of difference between the groups is unknown (Asperen de Boer et al., 1966). Nevertheless, it is apparent that those experiments using ESP-card type symbol guessing procedures were mostly unsuccessful compared to chance expectation.

However, the use of the symbol guessing procedure has been widely criticized for being far too mundane under the influence of psychedelics (Grof, 1980; Masters & Houston, 1966; Pahnke, 1971; Parker, 1975; Rogo, 1976; Smythies, 1960; Tart, 1968; Whittesley, 1960). Even so, using *Amanita Muscaria*, Puharich (1962) demonstrated that forced-choice procedures could be successful with picture-sorting tasks. More engaging, free-response procedures have demonstrated at least some success in all but one of the studies that have used psychometry, although rarely with any control condition for comparison. A clearer indication still of possible psychedelically induced ESP, even in comparison to control conditions, where used, comes from the clairvoyance and telepathy designs, with the exception only of the Asperen de Boer et al. (1964) study and the marijuana ganzfeld study (Wezelman & Bierman, 1997). Replication, however, is needed and, in some cases, with better methodology and preplanned analyses.

Methodological Critique of Experimental Research

Experimenters and reviewers alike have highlighted the difficulties involved in attempting to test for psi with tripping participants. Asperen de Boer et al. (1964) suggested that the participant's willingness to perform in the task was important, but given the participants' difficulty maintaining alertness, self-control, focus, and orientation to the task (Edge et al., 1986; Millay, 2001) it seems much more important to consider the participants' *capability* to perform rather than their mere willingness. A participant's increased sensitivity to subtle influences under psychedelics is both a boon and a bane to research (Parker 1975) and using psychedelics to induce psi is a double-edged sword, as all of the reasons cited in the introduction that make such research alluring also make participants poor test subjects. In addition, participants may have difficulty communicating because of the lack of adequate language (Lilly, 1969), the overwhelming flood of ideas and emotions (Ryzl, 1968), and the speed of change of the internal experience (Blewett, 1961, 1963).

However, it is apparent that these obstacles to research may be greatly alleviated or even eliminated if participants have experience using psychedelics (Blewett, 1963; Parker, 1975; Tart, 1977). Indeed, about a quarter of inexperienced participants are expected to have intense spontaneous mystical experiences during their first trip (Wulff, 2000). Yet, very few of the studies reviewed here (only Bierman, 1998; Masters & Houston, 1966; Wezelman & Bierman, 1997) specifically reported the use of participants experienced with these psychedelics, although it is worth noting that those that did were relatively more successful than those that used inexperienced participants.

As regards the duration of the psi-task, rather than the extended test periods favored by some researchers (e.g., Asperen de Boer et al.,

1964; Tinoco, 1995), Osis (1961) suggested 20 min should be the maximum for optimum performance. Some consideration has also been given to the optimal substance, and LSD was considered to be stronger, longer lasting, and more difficult to work with than psilocybin by those who worked with both substances. Furthermore, since the era when most of this research was conducted, there has been an increasing number of ethnobotanical substances discovered that have traditionally been used for psychic purposes, which have not yet been thoroughly tested or even tested at all (e.g., *Salvia divinorum*). Tart (1993) further suggested that marijuana was an ideal substance for psi experimentation because of its wide familiarity within the public, its mild psychedelic qualities, and its reputed ability to induce psi, experientially at least. Puharich's (1962) apparent repeated success with *Amanita muscaria* also needs replicating. In addition, nonpsychedelic drug psi research, such as Pablos's (2002) unsuccessful first-person precognitive-dream study with the pharmaceutical substance Rivastigmine could also be replicated with the use of psychedelic substances that have actually been reported to induce psi in dreams by both traditional users and modern consciousness researchers, such as C*alea zacatechichi* (Devereux, 1997; Díaz, 1979), and tree datura (*Brugmansia*) (Metzner, 1992).

It is additionally advised that experienced participants control their own dosage (Tart, 1977), as in the experiment by Wezelman and Bierman (1997). However, some researchers (e.g., Parker, 1975; Tart, 1968, 1977) have noted that the issue of dosage is largely irrelevant in comparison to the influence of the psychological factors of set and setting, as originally noted by Leary, Litwin, and Metzner (1963), and Vayne (2001) has suggested that the drug is best thought of primarily as an experience, composed of set, setting, *and* substance. For this reason it would prove fruitful to assess the degree of alteration to the experient's state using a scale like the Phenomenon of Consciousness Inventory (Pekala, Steinberg, & Kumar, 1986), so that any aspects of the altered state relevant to ESP can emerge as correlates of ESP performance.

Tart (1968) has also criticized previous research for assuming that psychedelic states automatically induce psi, because in traditional scenarios the shamans who use these substances usually have extensive training and experience. It is further suggested that the experimental task be shaped to the state of the participant, not vice versa (Tart, 1977), and utilize the strong motivation, directed awareness, and complex ritual that is found in shamanism (Copley, 1962; Grof, 1980; Tart, 1968). Grob and Harman (1995) have also urged the integration of aspects from shamanic practices into scientific procedure so that there is attentiveness to factors of set and setting, such as intention, expectation, preparation, group identification, and formalized structure, as well as the integration of the experience in the following months.

General Summary and Conclusions

Even though the subjective paranormal experiences, clinical observations, and anthropological reports are subject to all the usual criticisms and rebuttals that apply to nonexperimental cases of psi (e.g., see Stokes, 1997) there is a growing body of reports, rooted in thousands of years of traditional psychedelic use, that encourages the further scientific investigation of these phenomena. Nevertheless, as evidence this data is not scientifically rigorous, yet it has great value in mapping the phenomenological terrain of paranormal experiences with psychedelics. This body of reports is further supported by correlations from surveys linking psychedelic use with the increased reporting of paranormal experiences and belief in the paranormal, although again, self-reports have more phenomenological merit than evidential value. Furthermore, even though it can be considered little more than exploratory at this stage, the experimental evidence is more positive than not and proves promising so far, illuminating both methodological pitfalls and possibilities.

It is apparent that parapsychopharmacology is a multidisciplinary field pooling expertise from anthropology, ethnobotany, phytochemistry, neurochemistry, pharmacology, psychiatry, psychotherapy, and indeed parapsychology. It also owes much to the nonacademic explorers of consciousness, be they shamans, occultists, or psychonauts. This is a branch of research that is still very much in its infancy yet it may expect to see a rekindled interest following the reemergence of psychedelic research during the last decade (see Grob & Harman, 1995). Nevertheless, further experimental laboratory research continues to need strict ethical and often governmental approval before it can proceed, requiring lengthy applications (see Strassman, 2001). Tart (1977) once suggested bypassing these difficulties by casually enrolling participants who were already using psychedelics rather than administering them directly. An example of this involved several thousand Grateful Dead fans, renowned for their psychedelic consumption, who acted as senders in a series of dream telepathy experiments, with some success (Krippner, Honorton, & Ullman, 1973).

However, now resumed, direct parapsychological research with psychedelics needs expanding beyond the Netherlands and Brazil. Nevertheless, it should be noted that psychedelics are considered as sacramentals by the spiritual and religious groups that use them, and they should be treated with respect. It is also clear that besides trying to replicate the promising free-response studies, further experimental research should utilize protocols that maximize psi effects, and, simultaneously, this should enhance future psi research methodology by indicating optimal test conditions through the magnifying psychological effects of these substances. For instance, Bierman's (1998) psychedelic psi research may have revealed a psychic blocking effect for negative images. Furthermore, special attention

should be paid to the study protocol so as to avoid the use of boring and trite test procedures, and participants should be experienced with psychedelics generally or, ideally, with the substance under investigation. It would also help in the development of theory building to ask what, exactly, is it about the psychedelic experience that seemingly facilitates psi—whether it is purely neurochemical, due to changes in the state of consciousness, or due to changes in belief or other factors, and whether these factors interact. If ESP and other paranormal phenomena can be genuinely induced by such a wide range of neurochemical agents as have been investigated in this paper, then this would seem to suggest that the state-induced rather then the neurochemical action has to be considered in some sense as primary. However, much more parapsychopharmacological research is required to establish this, and much more needs to be known about human neurochemistry before any firm conclusions can be made.

Additionally, following in the footsteps of William James's bioassay approach, Pablos (2002) has developed a viable protocol for testing one's own precognitive dreaming abilities with drugs via self-experimentation. In the future, parapsychologists might also ask their participants about their drug use, and researchers investigating the use of psychedelics might once more include questions relating to paranormal experiences in their work, as in the design of a recent EEG study with ayahuasca (Echenhofer, 2005). Furthermore, with an ever-growing number of substances being discovered and a large natural data pool of psychedelic users, there is a need for more thorough and focused phenomenological research that identifies the type of paranormal experiences that occur specifically through the use of each of these diverse psychedelic substances (Luke, 2004; Luke & Kittenis, 2005).

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Abstracts in Other Languages

Spanish

SUBSTANCIAS PSICODÉLICAS Y FENÓMENOS PARANORMALES: UNA REVISIÓN DE LA INVESTIGACION

RESUMEN: Este artículo presenta una revisión de la investigación sobre substancias psicodélicas en relación a los llamados fenómenos paranormales tales como telepatía, clarividencia, y precognición (esto es, percepción extrasensorial, PES) al igual que experiencias fuera del cuerpo y experiencias cercanas a la muerte. Se menciona el uso antiguo de estas substancias por chamanes para inducir estas experiencias, e informes contemporáneos provenientes de la literatura académica y de psicoterapia con ejemplos de estos fenómenos. Sin embargo, la revisión enfatiza principalmente la descripción y la evaluación crítica de experimentos controlados que han intentado inducir la PES usando drogas psicodélicas, y de encuestas que han investigado la creencia o la experiencia paranormal directamente o indirectamente en relación a el uso de estas substancias. También se presenta una critica metodológica de la investigación experimental y sugerencias para el desarrollo de la investigación en este campo.

German

PSYCHEDELISCHE SUBSTANZEN UND PARANORMALE PHÄNOMENE: EINE FORSCHUNGSÜBERSICHT

ZUSAMMENFASSUNG: Dieser Artikel bietet eine Übersicht über Forschungen zu psychedelischen Substanzen in Bezug auf sogenannte paranormale Phänomene, wie z. B. Telepathie, Hellsehen und Präkognition (d. h. ASW) wie auch auf Ausserkörperliche Erfahrungen (AKEn) und Nahtoderfahrungen (NTEn). Es

wird Bezug genommen auf alte schamanistische Verfahren zur spezifischen Herbeiführung solcher Erfahrungen wie auch auf zeitgenössische Berichte im akademischen Rahmen und in der Psychotherapie, die solche Phänomene belegen. Die Übersicht beschränkt sich jedoch in erster Linie auf die Beschreibung und kritische Bewertung des Beitrags kontrollierter Experimente, bei denen versucht wurde, ASW-Effekte durch Psychedelika herbeizuführen, sowie auf Umfragen, die entweder direkt oder indirekt den Glauben an das Paranormale oder Erfahrungen damit in Bezug auf die Verwendung solcher Substanzen erfasst haben. Ferner wird eine methodologische Kritik des experimentellen Zugangs zusammen mit Empfehlungen für eine weitere Forschung auf diesem Gebiet formuliert.

French

LES SUBSTANCES PSYCHADELIQUES ET PHENOMENES PARANORMAUX : UNE REVUE DE LA RECHERCHE

SOMMAIRE : Ce papier représente un revue sur la recherche concernant la relation entre des substances psychédéliques et les soit-dits phénomènes paranormaux, comme la télépathie, la clairvoyance, et la précognition (i.e., ESP), aussi bien que hors du corps (OBEs) et les expériences pre-mortem (NDEs). Les références qui suivent sont par rapport aux anciens Shamans qui utilisaient ces substances pour intentionnellement provoquer ces expériences et plus récemment des rapports venants des cercles académiques et la parapsychologie de leur témoignages de tels phénomènes. Cependant, la revue se concentre sur la description et l'évaluation critique des expériences contrôlées dans l'intention de provoquer ESP utilisant des substances psychédéliques et des études qui ont soit directement, soit indirectement investigué la croyance en l'existence et les expériences du paranormal en relation avec ces substances. En outre, une critique méthodique de la recherche expérimentale est offerte avec quelques recommandations pour poursuivre des recherches dans ce domaine.