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THE ABDUCTION EXPERIENCE: A CRITICAL EVALUATION OF THEORY AND EVIDENCE

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ABSTRACT: Prevalent hypotheses regarding the etiology of the abduction experience are examined, especially in regard to the existing evidence. Deception, suggestibility (fantasy-proneness, hypnotizability, false-memory syndrome), personality, sleep phenomena, psychopathology, psychodynamics, environmental factors, and event-level alien encounters are each considered as origins of the abduction experience. The data are discussed in terms of what is and is not consistent with theory, the concept of parsimony, and the need for converging lines of evidence in establishing linkages between fact and theory. On the basis of this analysis, it is argued that no theory yet enjoys enough empirical support to be accepted as a general explanation for the abduction experience. The concept of the abduction experience as a multicausal phenomenon is discussed, and suggestions for future research are provided.

The "abduction experience"[2] is characterized by subjectively real memories of being taken secretly and/or against one's will by apparently nonhuman entities and subjected to complex physical and psychological procedures.[3] The number of such experiences has been estimated by Jacobs (1992) as 5–6% of the population, and by Hopkins, Jacobs, and Westrum (1992) as 2% of the population. More conservative estimates may be derived by counting the actual number of cases that have been reported by investigators. For example, Bullard's (1994) survey of 13 investigators yielded 1,700 cases. Whatever the number, few aspects of ufology have attracted as much attention. To those who dismiss the possibility that UFOs may be spacecraft, the notion of abductions by UFO occupants is seen as inherently implausible. For those who believe that UFOs are under the control of extraterrestrials, abduction experiences suggest both a rationale for surreptitious UFO activity and an opportunity to learn about the purpose underlying such activity. In essence, the abduction experience is seen as an answer to the proverbial question, "Why don't they land on the White House lawn?"

In addition to the extraterrestrial hypothesis, there are numerous alternative explanations for the abduction experience, many of which have been actively debated in the ufological literature. However, these debates have often shed much more heat than light. The purpose of this paper is to closely examine the proposed explanations (causes) for the abduction experience in terms of their theoretical strengths and weaknesses, and more importantly, in terms of what (if any) empirical evidence exists in their support. The review does not address subsidiary issues which presuppose a particular etiology. (For example, what planets do the abductors come from?)

Nor does it entertain the position advocated by some that an understanding of the abduction experience is not amenable to scientific analysis (a position with which I disagree; Appelle, 1994b).

The Rule of Parsimony and Theories of the Abduction Experience

The issue of evidence is particularly important in regard to the rule of parsimony (often referred to as Occam's razor). This maxim states that when interpreting a phenomenon, unnecessary assumptions should not be introduced. It is important to emphasize that parsimony is defined in terms of *unnecessary* assumptions, not in terms of unpopular assumptions, disturbing assumptions, or unconventional assumptions. As such, it can be assessed only in regard to empirical evidence, as the empirical evidence defines which assumptions are or are not necessary. A theory cannot continue to be defended on the grounds of parsimony if it has been disconfirmed through experiment, and in the absence of proper testing, parsimony by itself is of limited value in assessing a theory's validity.

An understanding of this is essential because parsimony is routinely used as the criterion against which theories of the abduction experience are compared. As these theories are examined, it should be kept in mind that parsimony is a rule by which evidence is to be evaluated. It should not be confused with evidence itself.

Hoaxes

The hoax explanation suggests that reports of alien abduction are not honest descriptions of experiences, but are stories made up to deliberately deceive. It is generally assumed that the motivation for such deception lies in the opportunity for monetary or psychosocial reward afforded by such stories. These opportunities certainly exist. Books recounting abduction experiences are widely sold, and there is an active lecture circuit for individuals who report such experiences. Moreover, support groups for abduction experiencers, talk shows, and conferences provide opportunities for social interaction and celebrity that would not otherwise be available to the experiencer.

However, to take advantage of such opportunities, the abduction experiencer must go public with the experience. In the vast majority of cases there is simply nothing in the reporter's behavior that would suggest such an intention. Abduction experiencers see mental health professionals for help in coping with the experience, or they see abduction investigators to obtain or share information about the experience. But beyond this limited contact, the experiencer who goes public is a rarity (even if based on the minimal number of known cases, such as Bullard's [1994] database of 1,700 cases; based on the number of estimated cases, such as Hopkins et al. [1992], the proportion of experiencers who have gone public is even more of a rarity). Much more commonly, the experiencer desires assurance of anonymity.

On the other hand, deliberate misrepresentation can occur in the absence of normal incentives for deception. According to the *Diagnostic and Statistical Manual*

of Mental Disorders: DSM IV (American Psychiatric Association, 1994), *factitious disorder* refers to individuals who feign physical or psychological illness where "the motivation for the behavior is to assume the sick role" (p. 474). That is, the psychological need to be a "patient" is itself symptomatic of a disorder. Where psychological symptoms predominate, the individual "may claim . . . memory loss . . . hallucinations . . . and dissociative symptoms. These individuals may be extremely suggestible and may endorse many of the symptoms brought up during a review of symptoms" (p. 472).

Despite some parallels with abduction accounts, there are a number of characteristics of factitious disorder that make it an unlikely source of abduction hoaxes. Sufferers are likely to have an extensive history of hospitalizations or treatment interventions, be extremely resistant to giving up the role as patient, and are reluctant, vague, and inconsistent when asked to provide information in detail. These and other differential diagnoses are not characteristic of the vast majority of abduction experiencers.

In any case, no one has seriously suggested that hoaxes account for any but a few of the thousands of abduction experience reports. The hoax hypothesis has been advanced (Klass, 1988) to account for the stories of specific abduction claimants, but the sincerity (albeit not the accuracy) of most abduction experiencers is generally acknowledged even by ardent skeptics.

Susceptibility to Suggestion

Suggestion is often proposed as the cause of the abduction experience. This hypothesis has taken a number of different forms. *Hypnotizability* refers to a talent for accepting suggestions offered during hypnosis. *Fantasy proneness* refers to a personality trait characterized by a predisposition to engage in compelling, imaginative experience. The *false-memory syndrome* refers to the influence of suggestion during the course of therapy. Central to each of these constructs is the notion that imagined events can be experienced as historical events.

(a) Hypnotic Memory and Hypnotizability

Hypnosis involves procedures designed to maximize a subject's ability to respond to suggestion. Hypnotic suggestions to go back in time and remember or relive past events have been widely used as a method for retrieving or enhancing memory. This notwithstanding, in controlled experiments hypnotically enhanced memory is at best only modestly demonstrated. Instead, an increase in pseudomemories (an effect that escalates with increased pressure to recall), increased confidence in the validity of one's pseudomemories, and increased susceptibility to suggestion or leading questions are more generally the rule. (See Farthing, 1992; Smith, 1983 for typical reviews of this literature.)

In theory, therefore, hypnosis should have a greater potential to *create* abduction experiences than to *retrieve* them. This is particularly troublesome given that many

more abduction reports have emerged in the course of hypnosis than through spontaneous recall (Bullard, 1987, 1994). As such, it is not surprising that critics of the abduction phenomenon cite the scientific literature on hypnosis as grounds for dismissing hypnotically retrieved accounts of alien abduction (e.g., Baker, 1990, 1992; Klass, 1988). An evaluation of this argument follows.

Applicability of hypnosis research to the abduction experience. If hypnotic memory in general is suspect, then hypnotically retrieved memory of abductions must be suspect as well. However, this assumption depends on the extent to which the experimental situation is comparable to that associated with the abduction experience (Appelle, 1994a).

Studies that are used to generalize to the abduction experience should involve source (retrieval) materials that are like the abduction experience in quality. Abduction memories are characterized by dynamic, emotionally charged events that instill trauma, fear, anxiety, confusion, and anger. Moreover, they are characterized by events so unusual as to be outside the range of normal human experience.

In contrast, the bulk of laboratory research has used static and neutral source material such as memorized lists of words. Some studies have used more relevant materials for retrieval such as stress-inducing stimuli (DePiano & Salzberg, 1981; Zelig & Beidleman, 1981), or simulations of emotionally charged events like accidents or crimes (Brigham, Maass, Snyder, & Spaulding, 1982; Malpass & Devine, 1980; Sanders & Warnick, 1981). The results of these studies are entirely consistent with those using more mundane materials. However, they still fail to reproduce the "strangeness" of abduction experiences, or the range and magnitude of emotional states associated with reported abductions.

Moreover, the efficacy of hypnosis in enhancing recall should be related not only to the kind of material to be retrieved, but also to the cause of forgetting (decay, interference, repression, psychological trauma, physical trauma, etc.). Surprisingly, there exists virtually no research on this issue. For example, there are no systematic investigations of the accuracy or efficacy of hypnotic recall in trauma-induced amnesia. This is unfortunate, because anecdotal reports and case studies regarding recall of traumatic events abound in both the forensic and clinical literature, and provide much of the basis for the belief in hypnotic hypermnesia.

Of course, we do not know if the abduction experience follows trauma-induced amnesia. First, this presupposes actual forgetting of some real event (as opposed to an hypnotically created pseudomemory). Second, it presupposes experienced trauma (either to an actual abduction or to some other event for which the recalled abduction is a screen memory). Third, as will be discussed later, the very concepts of repression and dissociative amnesia are controversial (Loftus, 1993; Ofshe & Singer, 1994).

There is an additional problem in regard to hypnosis and the mechanisms of forgetting. Real alien abductions might be forgotten because of yet unidentified processes (as suggested by the numerous reports by abduction experiencers of alien mind control). The applicability of hypnosis research to unknown mechanisms can-

not, of course, be evaluated.

General hypnotizability. To whatever extent hypnosis may cause false experiences of alien abduction, its potential to do so should increase as a subject's susceptibility to hypnotic suggestion increases.

Rodeghier, Goodpaster, and Blatterbauer (1991) assessed hypnotic responsiveness in a group of abduction experiencers with the Creative Imagination Scale (Wilson & Barber, 1978). This instrument evaluates subjects' ability to vividly imagine suggested scenes and situations. The authors found that, as a group, abduction experiencers were no more susceptible to hypnotic suggestion than the general population.

Spanos, Cross, Dickson, and Dubreuil (1993) used the Carleton University Responsiveness to Suggestion Scale (Spanos, Radtke, Hodgins, Stam, & Bertrand, 1983) to measure hypnotizability. This test measures three dimensions of hypnotizability: number of items to which an appropriate response is made, extent to which the subjective effects called for are experienced, and the degree to which subjects' responses are perceived as involuntary. The researchers found that their experiencer population was no different from the controls on any of these measures.

Specific hypnotizability. In a recent survey of investigators and mental health practitioners, Bullard (1994) found that "nine out of ten respondents stated that many or most of their [abduction experiencer] subjects are easy to hypnotize" (p. 575). Bullard's interpretation is that his "survey sample of abductees appears especially rich in people of high susceptibility to hypnosis" (p. 575).

As noted above, however, this position is not supported by formal tests of hypnotizability. These subjects may be highly hypnotizable in sessions dedicated to exploring their abduction experiences, but they are not highly hypnotizable per se. This may not be as paradoxical as it seems. Orne, Whitehouse, Orne, & Dinges (1996) have argued that the combined effects of relaxation, therapist-hypnotist validation, and repetitive probing create a situation in which "individuals can be considerably more affected by hypnotic procedures than their behaviorally anchored ratings of hypnotical ability would suggest" (p. 170).

Alternatively, the discrepancy between hypnosis scores and the ease in soliciting abduction accounts may mean that something about the abduction experience itself makes it particularly susceptible to hypnotic procedures. In fact, research has identified several factors that may contribute to this situation.

First, hypnotic recall improves when the material to be remembered is meaningful to the individual (Shields & Knox, 1986), when the emotional, physical, and cognitive conditions of the original experience are hypnotically reinstated (Anderson, 1990), and as context for the event is more highly integrated with the memory to be retrieved (Eich, 1985). These conditions are common to hypnotic regression for the abduction experience.

Second, research on state-dependent learning suggests that returning to the state of consciousness in which an experience originally occurred may improve recall. For example, returning to a state of alcohol (Goodwin, Powell, Bremmer, Hoine, &

Stern, 1969) or marijuana (Eich, Weingartner, Stillman, & Gillin, 1975) intoxication, or the influence of stimulants (Swanson & Kinsbourne, 1976) improves recall of events that originally occurred during those conditions. If hypnosis produces a mental state that in any way resembles the state during which an abduction is originally experienced, recall for that experience could be enhanced. Some abduction experiencers have described a mental state for the remembered event (e.g., Webb, 1994) that is not unlike that reported by other subjects for the experience of being hypnotized.

Finally, the literature on hypnosis has provided some evidence that information not previously available to consciousness can be retrieved hypnotically. For example, hypnotic recall has been reported for stimuli presented subliminally (Kunzendorf, Lacourse, & Lynch, 1987) or during general anesthesia (Cheek, 1959, 1964; Levinson, 1965). Although this research is itself controversial, it implies that information registered outside of normal conscious awareness may be accessed during hypnosis. Abduction experiencers often describe knowledge apparently acquired in this way.

These considerations suggest a basis for the specific hypnotizability obtained for abduction experiences. This should not, however, be confused with an argument for the veridicality of abduction experiences. The factors discussed certainly apply to real events, but they could also apply to experiences originating in the imagination or unconscious. This possibility must remain at the status of conjecture, however, because there can be no direct evidence that a conscious experience had heretofore resided in the unconscious.

Nevertheless, it may be useful to consider this possibility in regard to other anomalous experiences proposed to have imaginative or unconscious antecedents. Like abduction experiences, past-life identities (reincarnations) are also easily elicited through hypnosis from normal individuals (Kampman, 1976), are rich in detail, and are believed by the experiencer as veridical recall of actual past events (Spanos, Burgess, & Burgess, 1994). Spanos et al. argue that both hypnotic abduction experiences and past lives (as well as elicited memories of satanic ritual abuse and multiple personalities) are "social creations . . . determined by the understandings that subjects develop about such experiences from the information to which they are exposed" (p. 436). Whether or not this interpretation is correct, the role of hypnosis may be elucidated through a consideration of abduction experiences in relationship to other anomalous experiences routinely accessible to the hypnotized subject.

Simulations of the abduction experience. Lawson (1977) asked hypnotized subjects to describe events associated with a suggested close encounter with a UFO. He claimed considerable similarity between these reports and those from real abduction experiencers. This study has been widely cited by skeptics but widely criticized by ufologists (Bullard, 1989) for its methodology, conclusions, and generalizability. Whatever its validity, it remains the only direct test of the role of hypnosis in the abduction experience.[4]

Lynn and colleagues describe a related experiment (Lynn & Pezzo, 1994; Lynn & Kirsch, 1996). Testing the premise that similarities found across abduction experi-

ences can be accounted for by familiarity with these elements in our popular culture, they reasoned that encounter scenarios deliberately and consciously made up by non-abduction-experiencers should approximate those generated by actual abduction experiencers. To test this, volunteers were asked to simulate (role play) the behavior of an excellent hypnotic subject asked to recall events following the observation of a mysterious light in the sky. (The subjects were not actually hypnotized.) Like Lawson, these experimenters report certain (yet sketchy) similarities between their subjects' accounts and those typically found in the abduction experience literature.

On the other hand, Randles (1994a) noted a number of inconsistencies between the prototypical abduction experience and the stories of twenty British subjects asked to imagine a close encounter. These inconsistencies included more humanlike entities, almost no reports of "doorway amnesia" (failure to recall events associated with entry into the abductors' craft), not a single medical examination, and little resemblance of apparent alien motives to those indicated in the reports by actual abduction experiencers.

Although these results seem contradictory to those of Lawson and Lynn and Pezzo, it is interesting to note that compared to the stereotypical American abduction scenario, British abduction experiencers report humanlike entities about four times more often, and medical examinations about ⅓ as often (Randles, 1994b). Therefore, the results with British subjects who are asked to make up a close encounter are more consistent with the typical British abduction report than might otherwise be apparent.

Each of these studies could benefit from tighter methodology and closer examination of the content and frequency of the generated reports. In the meantime, however, they suggest that elements of the abduction experience are found in the imaginations of the nonexperiencer population, and that consistency in abduction accounts is becoming more difficult to justify as evidence of veridicality.

Influence of hypnosis and hypnotists. Abduction narratives can be compared to determine if they vary according to the particular theoretical inclinations of the investigator or therapist eliciting the account. Also, accounts which emerge during hypnosis can be compared with those stemming from conscious experience. Such analyses have been carried out by Bullard (1989, 1994). On the basis of his findings, Bullard (1989) concluded that "the form and content of abduction stories seems independent of hypnosis" (p. 3). In a more recent examination, Bullard (1994) concludes that hypnosis is a significant factor in regard to the quantity of material "recovered," but not in any direct way to the content.

(b) Fantasy Proneness

The concept of *fantasy proneness* developed out of a line of research designed to find personality traits that correlate with hypnotizability. Among highly hypnotizable subjects, Wilson and Barber (1981, 1983b) identified a group of individuals who could hallucinate voluntarily, have imaginary experiences that are subjectively

as real as nonfantasized events, and who occasionally had difficulty distinguishing memories of fantasized events from those which actually happened. Wilson and Barber called these subjects "fantasy prone."

Theoretical issues. Fantasy proneness is theoretically relevant to the abduction experience both as a source of imaginative experience, and because of similarities between the experiences of fantasy-prone persons and those of abduction experiencers. For example, the fantasy prone report a high incidence of false pregnancies, psychic and out-of-body experiences, apparitions, and vivid sleep imagery which feels "as if they are seeing something that really exists out there or that they are looking into another dimension" (Wilson & Barber, 1981, p. 365). These experiences have parallels with those reported by abduction experiencers (Bullard, 1987, 1994), suggesting that abduction experiencers and the fantasy prone may belong to the same population.

Moreover, the elicitation of imaginative abduction experiences might be exacerbated in situations where the emergence is hypnotically assisted. Wilson and Barber (1981) found that the fantasy prone represented 96% of their highly hypnotizable subjects, and described their response to hypnotic suggestions as "the kind of thing they can do independently . . . in their daily lives" (Wilson and Barber, 1983b, p. 377).

However, subsequent research has shown this finding to be misleading. Although a relationship between fantasy proneness and hypnotizability has generally been supported, the relationship appears to be much more modest than Wilson and Barber originally reported (Lynn & Rhue, 1988). For example, Lynn, Green, Rhue, Mare, and Williams (1990) found only 12.82%–16.6% of their highly hypnotizable subjects (depending on the measure of hypnotizability) were fantasy prone (in contrast to Wilson and Barber's 96%). This discrepancy is related to whether subjects are selected on the basis of their hypnotizability or on the basis of their fantasy proneness. Fantasy-prone individuals are likely to be highly hypnotizable (they carry their everyday talents into the hypnosis situation), but highly hypnotizable individuals are not generally fantasy prone. In fact, relationships between hypnotizability and any measure of imaginative traits are actually quite small (Kirsch & Council, 1992).

Studies of abduction experiencers. Ring and Rosing (1990) compared a group of abduction experiencers and others reporting UFO encounters with a group of subjects (controls) who expressed only an interest in UFOs. Using a battery of tests they found that experiencers are not fantasy prone in any general sense. However, the encounter subjects were significantly more likely to report childhood experiences of psychic phenomena, "non-physical beings," and to "see into other realities that others didn't seem to be aware of." Each of these characteristics is consistent with fantasy-prone characteristics originally reported by Wilson and Barber.

The authors interpreted their finding as "sensitiv[ity] to non-ordinary realities," but acknowledged that the role of such sensitivities—as causes, facilitators, or effects of encounter experiences—cannot be determined from their study. They also acknowledged that the validity of the assessment measures they used has been largely

untested, providing a further limitation on the generalizability of their findings.

In another study, Rodeghier et al. (1991) focused on subjects who met clearly defined criteria for an abduction experience. Fantasy proneness was assessed with the Inventory of Childhood Memories and Imaginings (ICMI) (Wilson & Barber, 1983a), an instrument adapted from that used by Wilson and Barber (1981) in their seminal study of the fantasy prone. The authors found no difference between ICMI scores for their abduction-experiencer group and that reported for a random sample of the population.

Bartholomew, Basterfield, and Howard (1991) examined over one hundred abduction experiencers and concluded that the vast majority (87%) had histories consistent with one or more of the major symptoms found in the fantasy-prone profile. However, the authors' assessed fantasy proneness by retrospective analysis of biographical data rather than an independent test for fantasy proneness; and of the reported fantasy-prone characteristics the authors examined, only the frequency of experienced psychic phenomena even approaches that found by Wilson and Barber (1981) in their fantasy-prone population.

Spanos et al. (1993) compared fantasy proneness for "intense" UFO experiencers (those reporting encounters with aliens), those reporting only observation of distant lights or objects which they interpreted as UFOs, and control subjects reporting no UFO experiences. The authors found no statistical difference across or between groups on fantasy proneness as measured by the ICMI.

They did, however, find a correlation between ICMI scores and an intensity-of-experience scale. UFO believers who were relatively fantasy prone tended to report more elaborate UFO experiences. However, this relationship must be viewed in perspective. As the authors point out, very few subjects reporting UFO-related experiences attained extreme scores on the ICMI. In fact, even for the intense-experiencer group the mean ICMI score was only 22.4, a score which is right at the midrange of that for the general population (Lynn & Rhue, 1988). Spanos et al. concluded that their "findings clearly contradict the hypotheses that UFO reports—even intense UFO reports characterized by such seemingly bizarre experiences as missing time and communication with aliens—occur primarily in individuals who are highly fantasy-prone" (p. 629).

As a final comment on the viability of the fantasy-prone hypothesis, an experiment testing Wilson and Barber's original description of fantasy-prone experiences as being "as real as real" is of relevance. Rhue and Lynn (1987) asked a large group of fantasy-prone subjects to hallucinate a Styrofoam cup. Although these subjects were quite successful at this task, few ascribed realistic properties to the hallucinated experience. If the fantasy prone can readily distinguish imagined stimuli from real ones, then even on theoretical grounds the fantasy-prone explanation of the abduction experience is significantly compromised.

(c) False-Memory Syndrome

The argument that therapy for real or imagined trauma may lead to "recollec-

tions" of events that never happened has been termed the "false-memory syndrome" (Goldstein, 1992).

Originally, the false-memory syndrome was developed to suggest an iatrogenic origin for accounts of childhood sexual abuse and satanic ritual abuse. However, the false-memory syndrome has also been offered (for a list of representative articles see Gotlib, 1993) as an explanation for abduction experiences. (It is not uncommon for abduction experiencers to see mental health professionals for symptoms associated with a believed or suspected abduction experience.) Although the spontaneous emergence during therapy of a completely unsuspected abduction experience is apparently quite rare (based on the general lack of references to such cases in the clinical literature; see, however, Gotlib, 1996), the false-memory syndrome could be a factor in enriching an existing abduction experience, creating whole new experiences beyond those for which the client initially presents, and for hardening conviction in regard to the validity of the experience.

Garry and Loftus (1994) review research using four different sources of suggestion to show that susceptibility to false memory is not an exclusive property of either hypnosis or special imaginative propensities. Rather, it reflects a responsiveness to suggestion that has been amply demonstrated for the general population, and may be occasioned by the particular dynamics that can exist in the therapeutic environment. Their review demonstrates the influence of (a) leading questions, (b) the suggested existence of items or events in a previously observed scene, (c) the transformation of a recollection through new information (inaccurate retrieval cues), and (d) acceptance of a complete memory for something that never happened to the subject.

The authors conclude that these converging experiments "provide compelling evidence that it is not hard at all to make people truly believe they have seen or experienced something they have not—without any hypnosis at all" (pp. 365–66). Indeed, by demonstrating memory creation for significant and traumatic situations, these studies refute the argument that memory alterations can occur only for trivial details and for nontraumatic events.

The concern about therapist influence on the beliefs and memories of clients is sufficiently great that a number of professional organizations in the mental health field (American Psychiatric Association Board of Trustees, 1993; American Psychological Association, 1994; American Society of Clinical Hypnosis, 1995) have formally cautioned their members against practices that might exacerbate the potential for false memories. An ethics committee in ufology (Abduction Study Conference Ethics Committee) has taken a similar position with regard to investigators and mental health professionals working with abduction experiencers (Gotlib, Appelle, Rodeghier, & Flamburis, 1994). The seriousness with which this admonition has been taken by ufologists is reflected in the fact that this Ethics Code has been endorsed by the three major ufological organizations (Center for UFO Studies, Fund for UFO Research, Mutual UFO Network).

In spite of such cautions, there still exist a number of mental health practitioners who continue to use aggressive techniques (e.g., frequent hypnosis sessions, sup-

port and discussion groups) to explore for abduction experiences, and to provide (in the absence of independent corroborating evidence) validation of the experience as indicative of an actual alien abduction. These practices are often rationalized in terms of the emotional sincerity of the client, or the apparent improvement in presenting symptoms that occurs during the course of treatment. However, as one therapist (Nash, 1994) noted in reviewing the literature on recovered memory and trauma:

> Clinical utility and historical veridicality are so confounded in psychoanalytical and other insight-oriented therapies. . . . Clinical utility may have little or nothing to do with uncovering the truth about the patient's past. We should stop claiming that it does. . . . What patients think they have found out about their past may be helpful, but that does not necessarily mean that it is accurate. [Nash, 1994, p. 351]

Personality Theories

Some theories suggest that special personality syndromes predispose individuals to incorporate information about alien abductions into their imaginative productions, and to accept these productions as experiences of historical events. Unlike the factors just discussed, these syndromes are not characterized by suggestibility per se. Rather, suggestion capitalizes on these personality traits to take the form of the abduction experience.

(a) The Boundary-Deficit Hypothesis

Hartmann (1984) studied individuals who suffer from nightmares. He found that this population shared a constellation of traits characterized by weak discrimination between basic cognitive categories such as self and nonself, fantasy and reality, dream and waking experiences, etc. These weak "boundaries" result in individuals who are sensitive, artistic, empathetic, vulnerable, imaginative, have a weak sense of sexual or personal identity, have difficulty distinguishing periods of time, and are perceived by others as different.

Kottmeyer (1988) has argued that this description of the *boundary-deficit personality* also describes the abduction experiencer, and that these characteristics provide a breeding ground for experiencing close encounters. According to Kottmeyer:

> To be considered a candidate for the hypothesis that one is a victim of alien abduction a person must present certain symptoms. Among the factors which are looked for are conscious memories of an abduction, revealing nightmares, missing time, forgotten scars, or dramatic reactions to seemingly trivial . . . lights. . . . The last four factors act as screening devices to yield a population of boundary-deficit individuals. This is blatant in the case of people whose candidacy [as an abduction experiencer] is based on nightmares of aliens. It is subtler in

> other symptoms. People who have thin boundaries in their time sense . . . will experience periods of missing time . . . [and] could easily lose track of the event that led to the creation of a scar. People with weak ego-id boundaries and a sense of powerlessness probably would over-react to distant inexplicable lights. . . . We would predict the final population of abduction claimants would be biased in favor of a high proportion of boundary-deficit personalities. [Kottmeyer, 1988, p. 5]

Kottmeyer goes on to argue that popular culture, the media, the activity of abduction investigators, and the use of hypnosis all create an "abduction myth [which] has opportunistic features wherein boundary-deficit traits act to justify id material . . . being considered real" (p. 7). He makes a more specific case for the availability of such material elsewhere (Kottmeyer, 1989).

Although Hartmann's boundary-deficit concept emerged from a careful study of nightmare sufferers, Kottmeyer's extension of this concept to abduction experiencers is based on anecdotal data (most notably the abduction accounts of Whitley Strieber) specifically selected in support of his contention. Kottmeyer is well aware that his observations are not based on any systematic study of abduction experiencers, and acknowledges that "it would obviously be child's play to pick and choose isolated bits of confirming or discordant biographical information from the abductee literature and argue about the fit of Hartmann's boundary-deficit profile to various individual cases" (Kottmeyer, 1988, p. 5). Accordingly, he notes a number of characteristics that the boundary-deficit hypothesis would predict. While there has not been a direct test of Kottmeyer's theory, data relevant to a number of his predictions are available.

In their systematic comparison of control and close-encounter subjects, Spanos et al. (1993) administered a number of scales[5] relevant to Kottmeyer's predictions. Compared to the scores for control subjects, Spanos et al.'s close encounter/UFO experiencer groups showed higher *Self-Esteem* (Kottmeyer predicts experiencers should "be more fragile and easily hurt" and "frequently rejected"), lower *Schizophrenia* (Kottmeyer describes schizophrenia as a consequence of "abnormally thin" boundaries), higher *Well-Being* (Kottmeyer describes a disproportionate number of boundary-deficit individuals as having "contemplated or attempted suicide"), lower *Perceptual Aberration* (boundary-deficit individuals should be "unusually alert to lights, sounds, and sensations"), lower perception of an *Unfriendly World* (boundary-deficit individuals are described as "victims of life's conflicts" who either "reject society or society rejects them"), lower *Aggression* (Kottmeyer predicts "a tendency to project hostility"), and no difference in *Social Potency* (Kottmeyer sees "emotions of powerlessness" as central to the boundary-deficit personality). Moreover, Spanos et al. found no difference between control and close-encounter subjects on *Absorption*, *Fantasy Proneness*, and three scales of *Imaginal Propensity*, all of which should be elevated according to the boundary-deficit hypothesis.

These findings are either inconsistent with, or clearly opposite to those that

Kottmeyer's boundary-deficit explanation would predict. However, other studies have found characteristics consistent with the predictions of a boundary-deficit personality. These include a weak sense of personal or sexual identity (Slater, 1985), schizoid tendencies (Parnell & Sprinkle, 1990), greater sensitivity to nonordinary realities (Ring & Rosing, 1990), and a high rate of reported suicide attempts (Stone-Carmen, 1994).

The equivocal nature of these findings may reflect the extreme variation across studies in assessment measures, diagnostic criteria, subject selection, data analyses, and the fact that none of these studies was designed as a direct test of the boundary-deficit hypothesis. A definitive appraisal of Kottmeyer's theory will require such tests using consistent methodology.

(b) Escape-From-Self and Masochistic Fantasies

Newman and Baumeister (1994; 1996) hypothesize that the abduction experience is a manifestation of fantasies designed to "escape the self." They argue that for some people, events that leave the individual feeling "stupid, clumsy, or unlovable," or just the burdens of having to maintain independence, responsibility, and a positive image, may lead to pressure to avoid meaningful thought. In this regard, they consider masochism[6] as one of the most effective ways to escape the self (it contains the features of pain, loss of control, and humiliation, each of which Newman and Baumeister argue are excellent strategies for escaping the self).

Newman and Baumeister suggest that the parallels between masochistic fantasy and abduction-experience narratives (especially those aspects of the abduction experience dealing with sexual or gynecological procedures) point to a common origin, namely the manifestation of escape-from-self fantasy. They suggest that among individuals for whom escape-from-self fantasy is a coping strategy, the influence of investigators, media, and popular culture creates the raw material for these fantasies to manifest as an abduction experience.

In support of their hypothesis, they analyzed the abduction accounts presented in Bullard's (1987) compendium of abduction-experience cases. They looked for specific references to humiliating displays (e.g., "being stretched out on a table naked with lots of people watching"), a feature of masochistic fantasy they find is described much more often by female than male masochistic fantasizers. Their analysis of the Bullard data showed that such features were present in the narratives of 50% of the males and 80% of the females, a statistically significant difference consistent with that found for masochists.

Beyond this, there are no direct tests of their hypothesis. Neither masochistic fantasy nor escape-from-self ideation has been specifically assessed among abduction experiencers. Indeed, in a focus issue of the journal *Psychological Inquiry* (Volume 7, No. 2), commentators asked to discuss this hypothesis criticized it on the grounds of being unparsimonious, unsupported by evidence, and perhaps unfalsifiable (Arndt & Greenberg, 1996; Banaji & Kihlstrom, 1996; Bowers & Eastwood, 1996; Hall, 1996; Hull, 1996).

(c) The Psychically Sensitive Personality

Although experiencers often regard themselves as having increased psychic abilities as an aftereffect of an abduction (Bullard, 1994; Ring, 1992), many report long histories of ostensibly paranormal events preceding their abduction experiences (Basterfield, 1994; Bullard, 1987; Randles, 1988; Ring, 1992). On several measures, abduction experiencers share personality characteristics with nonexperiencers who consider themselves to be psychically sensitive. For example, Ring (1990) found a constellation of traits in common between abduction experiencers and individuals who claim to be "electrically sensitive" (to have anomalous effects on electrical devices). Based on a comparison of the personality characteristics of twenty abduction experiencers and those of highly successful ESP subjects, Johnson (1994) found that at least some experiencers share traits with subjects who have performed well in "remote viewing" experiments.

A number of investigators have considered these psychic propensities as a possible cause of the abduction experience. Ring (1992) suggests a connection between psychically sensitive personality traits and his model of the "encounter-prone personality." Randles (1988) has described the psychic histories of abduction experiencers as "the key to the entire [abduction] mystery."

However, neither the experiencer's personality traits, the high incidence of reporting apparently paranormal phenomena, nor interpretations of their experiences, are objective evidence of either paranormal activity or an experiencer's psychic ability. None of the studies reporting the psychic histories of abduction experiencers have directly tested this, and investigators cannot equate experiencers' anecdotal reports with evidence of the paranormal. The data tell us only that individuals who report abductions tend to report paranormal experiences as well. This fact alone is worthy of further scrutiny, especially in light of the fact that abduction experiencers typically report psychic (telepathic) communication with their abductors (Bullard, 1994).

Sleep Anomalies

The subjective and physiological concomitants of sleep are often suggested as an explanation for the abduction experience (Spanos et. al., 1993; Baker, 1995). The reasons for this are numerous. Abduction experiences are commonly reported as having occurred at bedtime or during the course of sleep. They are frequently first remembered as the content of an apparent (albeit unusual) dream, or as otherwise having a dreamlike, subjective quality. And they are accompanied by the experience of paralysis, another condition associated with sleep.[7]

Sleep paralysis is characterized by an inability to move (except for the eyes), while seemingly awake. In addition to experience of the paralysis itself, the condition is often accompanied by feelings of anxiety, fear, or dread. During an attack of sleep paralysis, the individual typically is aware of his or her surroundings, but on other occasions the state of consciousness is less lucid or is accompanied by hypna-

gogic/hypnopompic hallucinations. (The former term refers to experiences which occur during the transition from waking to sleeping; the latter during the transition from sleeping to waking.)

Both sleep paralysis and hypnagogic/hypnopompic hallucinations occur in normal people (Fukada, 1994; Roth, 1978), but they may also be symptomatic (in some cases the only overt symptom; Roth, 1978) of a sleep disorder called narcolepsy. A narcoleptic attack can occur during normal daytime activities or even while driving. During a narcoleptic attack "a person may continue behavior associated with wakeful consciousness but later have no memory for what he did. The episodes can last hours" (Moorcroft, 1989, p. 262). This aspect of narcolepsy is reminiscent of missing time in abduction experiences.

(a) Commonalties Between Sleep Anomalies and Abduction Experiences

In addition to the high prevalence of nighttime occurrence, the unaccounted-for passages of time, and the experience of paralysis, both abduction experiences and sleep anomalies may be reported throughout the lifespan (abduction experiences have been reported by young children, adolescents, adults, and the elderly; the symptoms of sleep disorders may persist across the lifespan), and both may have a genetic or familial history (abduction experiences often occur within families and across generations; a similar relationship exists for victims of sleep disorders [Honda, Asaka, Tanimura, & Furusho, 1983]).

(b) Content of Abduction Experiences and Sleep Anomalies

The content of sleep and abduction experiences has also been compared. Baker (1990) characterizes the content of abduction experiences as "a classic, textbook description" of hypnagogic hallucination (p. 251). For Baker, this textbook description includes "ghosts, aliens, monsters, etc.," and for which "the hallucinator is unalterably convinced of the reality of the entire experience" (p. 250). However, except in cases of narcolepsy (where the sleeper goes from wakefulness directly into REM sleep—the stage of sleep most closely associated with dreaming), most hypnagogic and hypnopompic experiences involve static images or scenes (see Schacter, 1976, for a review). And even for the hallucinatory experiences in narcolepsy, "in the majority of cases, the [hallucinators] are aware of the unreality of their perceptions" (Roth, 1978, p. 34).

Moreover, there is no evidence that hypnagogic hallucination characteristically includes aliens. On the other hand, apparitional experiences per se are not uncommon. Hufford (1982) examined such experiences across a wide range of cultures. He calls these experiences the "Old Hag" phenomenon (in reference to the generic characteristics of the experience as found in Newfoundland tradition). These include:

> (1) awakening (or an experience immediately preceding sleep); (2) hearing and/or seeing something [e.g., the Old Hag or some other apparition] come into the room and approach the bed; (3) being pressed

> on the chest or strangled; (4) inability to move or cry out until either being brought out of the state by someone else or breaking through the feeling of paralysis on one's own. [Hufford, 1982, pp. 10–11]

Hufford questions whether this specificity of content across cultures can be understood simply in terms of sleep physiology. In this context, he cites an observation of Dement (a major figure in sleep research):

> Our understanding of hallucinations and dreams will be complete only when we can account for specific details, that is, when we know exactly why one particular dream or hallucinatory episode is experienced in preference to all other possibilities." [Dement et al., 1970; cited in Hufford, 1982, p. 170]

Hufford points out that "when the same proposition is applied to a particular kind of content repeated in the experiences of many independent subjects, both the need and the potential importance of such an accounting are greatly multiplied" (p. 170). Dement's observation was in reference to dreams in general, and Hufford's in reference to the Old Hag. But their comments are even more germane to the highly specific and consistent details of the abduction experience.

(c) Documenting a Relationship Between Sleep Anomalies and Abduction Experiences

Despite the appeals to parsimony and analogy, as yet there have been no direct tests of a linkage between sleep anomalies and abduction experiences. Rodeghier (1994) reports a somewhat greater incidence of hypnagogic imagery in a subset of abduction experiencers, but does not provide any evidence that the content of this imagery ever takes the form of an abduction experience. Gotlib (1996) provides a clinical case study suggesting a relationship between a sleep disorder and an abduction experience, but the overall prevalence of sleep disorders in the abduction-experiencer population is not known. Until such evidence is available, the sleep-anomalies explanation remains yet another interesting but undemonstrated hypothesis.

Psychopathology

Disorders that might account for false abduction experiences or their associated symptomatology include psychosis (hallucinations and delusions), folie à deux (shared psychotic symptoms brought about by a close relationship between the percipients), conversion reactions (physiological manifestations of a psychosomatic nature; for example, marks, blotches, and discolorations of the skin), dissociative disorders (amnesia, fugue, and other conditions resulting in time loss and distortion, disorientation, and unaccounted-for wanderings), multiple personality disor-

der (which in addition to missing time may be characterized by messages from and/or dual identities with specific "others"), and Munchausen syndrome (self-inflicted injury or false claims of physical symptomatology).

Psychopathology can be assessed according to a mental health practitioner's clinical impression (based on intake interview, clinical history, or diagnosis as evolved in the course of therapy), or on the basis of standardized tests. Both approaches have been used in evaluating abduction experiencers. Regardless of the method of assessment, it should be emphasized that abnormality must be established independent of abduction phenomenology itself. For example, Schnabel (1994) describes similarities between the purported experiences of an alleged abduction victim and the symptomatology of dissociative disorders. On the basis of these similarities the reader is asked to assume that the reported abduction experiences are caused by dissociative disorders. However, because the subject is never actually diagnosed as dissociative, Schnabel's argument is based not on a formal test for pathology, but on an appeal to parsimony.

Even when formal tests are used, their interpretation is compromised by the fact that they may fail to distinguish between dissociative *tendencies* and dissociative *effects*. For example, Powers (1994a) assessed a group of abduction experiencers on the Post-Traumatic Stress Disorder (PTSD) subscale of the MMPI, and on the Perceptual Alteration Scale (PAS). PTSD is correlated with dissociative tendencies. The PAS, another measure of dissociation, evaluates behavior in the domains of control, self-monitoring, concealment, consciousness, and sensory experience. Powers found a clear correlation between abduction experiences and elevated PTSD and PAS scores.

Although Powers was primarily concerned with the implications of these results for therapy, it is clear from her discussion that dissociative phenomenology was considered only as a possible *cause* of the abduction experience and not as a possible *effect*. But anyone experiencing an actual abduction by aliens might be expected to have elevated scores on the measures assessed. Indeed, in mundane cases of documented trauma (victims of rape, terrorism, witnessing an atrocity) elevated scores on the kind of measures used by Powers are both expected and obtained (Wilson, 1990).

(a) Assessments of Pathology

Clinical Impression. In some studies, diagnosis is not based on any standardized test for pathology, but on assessment interview, behavioral observation, and impression of the abduction experiencer's subjective account. For example, Mack (1994) studied 76 abduction experiencers, and provides case studies of 13. However, noting that "a full battery of psychometric tests is time consuming and expensive" (p. 17), Mack had only four of his 76 cases formally tested for psychiatric disorder (one had already been hospitalized for psychiatric reasons; the other three tested normal).

Other studies do employ psychological tests, but diagnosis is still largely subjective. For example, Bloecher, Clamar, and Hopkins (1985) discuss the findings of Slater (1985), a psychologist who did a blind evaluation of nine abduction ex-

periencers. Slater found no evidence by which the reported abduction experiences could be accounted for on the basis of a mental disorder. However, the tests used to evaluate pathology were projective tests (Rorschach, Thematic Apperception Test), the validity of which is particularly dependent "on the somewhat esoteric skills" (Carson & Butcher, 1992) of the individual administering them. Although there is no reason to question Slater's skills in this regard, the fact remains that the conclusions of this study are based on the interpretation of a single individual.

Jacobson and Bruno (1994) collected extensive narrative data on the personal histories and abduction experiences of twelve individuals. Based on clinical impression, they found that none of the narratives contained elements that would suggest "the phenomenology of any currently recognized psychiatric syndrome" (p. 306). Nevertheless, hospital records showed that two of their subjects had suffered from a major psychiatric illness around the time of their abduction experience. This illustrates the danger in using clinical impression by itself as the method of assessment.

Each of these studies provides suggestive data, but each is limited in terms of methodology. Regardless of the efficacy of these approaches for the clinic, their usefulness as research data is compromised by lack of repeatability (because of the lack of standardized measurement, or the dependence of diagnostic outcome on the person doing the diagnosis), the absence of control subjects, and/or the small sample sizes studied.

Standardized tests for pathology. More extensive studies using standardized instruments have been carried out by a number of investigators. Parnell and Sprinkle (1990) tested over 200 subjects reporting UFO experiences on the Minnesota Multiphasic Personality Inventory (MMPI), a psychometric instrument that is sensitive to psychopathology. Although the authors conclude that "no overt psychopathology was indicated" (p. 45), a closer examination of their data suggests that among those subjects who described communication with entities, some had scores on certain MMPI subscales (e.g., scale 8—the subscale assessing schizophrenic tendency) that could be considered in the abnormal range.

In a similar study, Rodeghier et al. (1992) used the MMPI II (revised version of the MMPI) to evaluate a group of abduction experiencers selected according to a much more strict definition of "experiencer" than that used by Parnell and Sprinkle. Again, no overt pathology was indicated for the group as a whole, but was suggestive for certain individuals in the sample.

Spanos et al. (1993) compared a group of control subjects to 49 individuals who had reported UFO-related experiences. The UFO reporters were divided into subjects who merely saw unidentified lights and those who had more elaborate close encounters. To assess psychological health, a battery of tests was administered (the schizophrenia subscale of the MMPI, Rosenberg's Self-Esteem Scale, the Magical Ideation Scale, the Perceptual Aberration Scale, Tellegen's Differential Personality Questionnaire). The authors found that their encounter subjects scored no lower on any measure of psychological health than the controls, and had higher psychological health scores than the controls on many of the measurements. They conclude

that "these findings provide no support whatsoever for the hypothesis that UFO reporters are psychologically disturbed" (p. 628), and "the onus is on those who favor the psychopathology hypothesis to provide support for it" (p. 629).

Clinical and statistical "normality." Despite these findings, the implication of general normality can be quite misleading. "Normal" can be understood in the clinical sense as "not pathological," or in the statistical sense as "not significantly different from average." From a clinical perspective, the data so far are unambiguous. Most abduction experiences cannot be accounted for in terms of known psychological disorder as measured on standardized psychometric tests.

This notwithstanding, a number of studies have shown that abduction experiencers are not representative of the general population. For example, Parnell and Sprinkle (1990) found that subjects claiming communication with aliens had a propensity for unusual feelings, thoughts, and attitudes; were suspicious, distrustful, imaginative; and had schizoid tendencies. Ring and Rosing (1990) found that their subjects reported more sensitivity to nonordinary realities as children. Rodeghier et al. (1991) found more loneliness, less happiness, and poorer sleep. Mack (1994) reports being "struck by how many abductees came from broken homes or had one or more alcoholic parents" (p. 17). Perhaps most troubling, Stone-Carmen (1994) found that 57% of her subjects reported suicide attempts earlier in life (compared with 1.28% in the general population).

Psychodynamic Theories

It has been suggested (Sagan, 1996; Vallee, 1969) that similar themes appearing in both historical folklore (e.g., encounters with fairies, elves, angels) and contemporary abduction accounts indicate a common origin in the human psyche. (For a discussion of the folkloric dimensions of the abduction experience, see Bullard, 1991.) A number of psychodynamic theories[9] have been proposed to explain the manifestation of these processes as the abduction experience. Common to these theories is the notion that abduction experiences are a product of the unconscious mind. The theories differ, however, in regard to their description of these unconscious processes or in regard to the situations deemed responsible for their activation.

(a) Screen Memories for Childhood Abuse

A correlation between reported abduction experiences and reported childhood abuse experiences has been consistently found by researchers and clinicians (Laibow, 1989; Powers, 1994a, 1994b; Ring & Rosing, 1990; Rodeghier et al., 1992). An obvious (although not necessarily correct) interpretation of this correlation is that actual occurrences of childhood abuse manifest as false memories of alien abduction.

For example, Powers (1994a) suggests that the abduction experience serves as a screen memory for childhood sexual abuse because abduction by aliens "is less stressful than confronting the trauma of childhood abuse perpetrated by relatives or family friends" (p. 49), and "recasting the experience [of early childhood abuse] as

a selection with such a grand purpose [i.e., for the aliens' cosmic objectives] might restore meaning to lives threatened by traumatic memories" (Powers, 1994b, p. 46).

In support of this contention, Powers (1994a) argues that elevated PTSD and PAS scores found in both abduction experiencers and victims of childhood abuse imply that abduction experiencers are victims of childhood abuse. This she assumes because elevated scores on these scales are known to be a consequence of trauma. But why should they be regarded as any better evidence for the trauma of child abuse than the trauma of alien abduction? The answer, of course, appeals to parsimony, not evidence.

Nevertheless, a correlation between childhood abuse and the abduction experience is a persistent finding, and the implication that childhood abuse causes the abduction experience deserves careful examination. The argument's appeal to parsimony especially deserves scrutiny.

Consider the following psychodynamic assumptions that must underlie this interpretation:

(a) Alien abduction and examination procedures are inherently less traumatic than childhood abuse, and may even be conceptualized as benign;
(b) Among all possible forms that screen memories for child abuse might take, this particular motif is a reasonable and likely candidate;
(c) As screen memories of abuse, abduction experiences "work" (i.e., they are a successful psychodynamic strategy for protecting the victim from trauma); and
(d) Total blocking of traumatic memory is an established phenomenon.

Each of these assumptions is questionable. In regard to the first assumption, it is not at all apparent that abuse by aliens is less traumatic than abuse by humans. In fact, abduction experiences are almost universally reported as traumatic (at least initially). And as Wilson (1990) has pointed out, the denial of alien abductions by society is an additional stressor for those who would accept their experiences as veridical.

In regard to the second assumption (and given that abduction experiences are indeed traumatic), what psychodynamic mechanism predicts the substitution of one traumatic event as a screen memory for another? What psychodynamic mechanism accounts for the choice of such an implausible event for the screen memory?

In regard to the third assumption, not the least of the difficulties with the screen memory interpretation is that as a screen memory, the abduction experience doesn't work, at least not very well or very consistently. PTSD symptoms are common in the abduction experiencer population. Why are abduction experiences so specifically and consistently chosen by the unconscious to serve as screen memories when they are so ineffective in protecting the experiencer from stress?

Finally, the kind of powerful blocking of traumatic memory hypothesized to be operating in abuse cases (what Ofshe and Singer, 1994, call "robust repression")

has been seriously questioned. Although it has been argued that a "tremendous volume of data available clearly support the existence of traumatic amnesia or robust repression" (American Society of Clinical Hypnosis, 1995, p. 8), Ofshe and Singer (1994) contend that in contrast to the traditional concept of repression as described in mainstream clinical theory, the mental mechanism for forgetting major, repeated, and complex life events has developed from neither analytic tradition nor empirical research. According to their review of the literature, despite the popularity of the concept:

> A citation search of the clinical literature failed to turn up any proposal that this sort of powerful mental mechanism might exist for theoretical reasons nor did it reveal reports of empirical research demonstrating the mechanism's existence . . . The speculation [about the existence of robust repression] and its rapid acceptance are linked to social change rather than to scientific progress. [Ofshe & Singer, 1994, pp. 396–97]

There are other problems for the screen-memory hypothesis. If the abduction experience is a screen memory, it must be explained why this memory itself remains repressed. It could be argued that it is called into play as a defense mechanism only when the memory of actual childhood abuse—through hypnosis, therapy, or serendipity—starts to become unrepressed. But this requires yet additional untested assumptions about the psychodynamics of repression. In other cases, memories of childhood abuse coexist with abduction memories (Laibow, 1989), presenting a similar difficulty for the screen-memory hypothesis.

Given these issues, the serious investigator must consider whether the requirements of the screen-memory interpretation indeed represent a parsimonious explanation for the abduction experience. (On the other hand, the above discussion should give no comfort to those who would argue, conversely, that childhood abuse is a screen memory for actual alien abductions; the identical problems in psychodynamic theory and logical argument apply.)

Ultimately, the relationship between reported experiences of childhood abuse and alien abductions may need to be explained in terms other than those of repression and screen memory. For example, several studies (Mukerjee, 1995) have shown that individuals subjected to childhood abuse have a smaller hippocampus than that of control subjects, and that a smaller hippocampus is correlated with more pronounced symptoms of PTSD and dissociation. The hippocampus is a part of the brain that deals with short-term memory and may be involved with storage and retrieval of long-term memories. Moreover, this part of the brain is strongly affected by cortisol, a hormone linked with emotional affect and disturbing memories. It is possible, therefore, that childhood abuse alters the brain in a way that predisposes the individual to dissociation and alterations in memory production and recall. Whether or not this underlies the link between childhood abuse and abduction experiences is yet to be studied.

(b) Birth Memories

Lawson (1984, 1985) argues that the abduction experience is the unconscious' representation of the birth experience. His theory stems from the psychodynamic speculations of Grof (1976), who noted perinatal imagery in subjects experiencing LSD hallucinations. Lawson sees perinatal imagery in abduction experiencers' descriptions of aliens (they are fetal in appearance), hallways and columns of light (which are considered symbolic of transport down the birth canal), the shape of the UFO or its rooms (these are womb-like), doors and other openings (cervix-like), and any alien equipment that is elongated, tubular, or flat-ended (which Lawson characterizes as umbilical or placental). Lawson (1985) even suggests that the reported experiences of missing time are memories of the effects of oxytocin, a hormone that initiates contractions and has been shown to produce apparent memory loss in laboratory animals. That is, according to Lawson, abduction amnesia is the "memory" of fetal "forgetting."

For those who might regard such analogies as strained, Lawson (1984) claims experimental support. He asked hypnotized subjects to imagine an alien abduction. The stories of eight subjects born by Cesarean section were compared with those of two subjects who were products of vaginal delivery. Nearly all the Cesarean subjects produced abduction accounts devoid of tunnel-like imagery.

Lawson regards this finding as consistent with his theory, but the strength of this conclusion is questionable. First, the analysis suffers from an inadequate sample size, a failure to independently verify the subjects' reported method of birth, a very limited criterion of birth-imagery, and a *post hoc* interpretation of narrative symbolism without any protocol for symbol-item selection or validation of interpreter reliability. In addition, like the Cesarean subjects, one of the two vaginally delivered subjects also reported no tunnellike imagery.

Second, much of the imagery referred to in Lawson's analysis is related to UFO *entry*, that is, subjects describing "being sucked up into the UFO as if through an extended tunnel" (p. 217). Thus, Lawson's analysis not only requires accepting the birth-memory construct per se, but also that the unconscious reverse the order in which the birth events occurred.

Finally, there is no compelling evidence that a physiological or cognitive substrate for birth memory even exists in the fetus or newborn. Although Lawson (1984) contends that "the factual accuracy of birth memories [is] . . . sufficiently reliable" (p. 213), Grof himself acknowledged that "a causal nexus between the actual biological birth and the unconscious matrixes for these experiences remains to be established" (p.98).

(c) Abortion Anxiety

Stacy (1992) opines that the abduction experience, at least the commonly reported aspect (Jacobs, 1992) of the experience dealing with genetic breeding and hybrid babies, "is in fact a reliving of the abortion experience, whether the latter is

actually real or 'merely' imaginary" (p. 4). More specifically, he regards it as:

> an attempt to expatiate any lingering guilt associated with the [abortion]. The hybrid baby, in other words, is nothing less (or more) than the aborted fetus brought to life. The "missing" fetus is no longer dead, then, but lives on in a "heaven" (outer space) from which it can never physically return, perhaps even aboard a 'Mother' ship. . . . In a metaphorical sense the Grays are avenging angels. Allegorically, they represent the souls of all departed, or aborted, fetuses. And the fact that the Grays are now responsible for the "missing" fetus . . . absolves the aborter of . . . guilt. . . . The abduction experience, then, serves a fundamental purpose, namely, the reduction of psychological tension occasioned by guilt. [Stacy, 1992, p. 4]

Stacy argues that this theory makes sense even where the abduction experience continues to be a source of stress, because stress may be less aversive than guilt. He also argues that the "archetypal architecture" of his abduction/abortion scenario applies not only to women who have experienced abortion, but to women who have never experienced an abortion (they are still members of a society conflicted by abortion's moral implications) and to men (who may share with women the psychological conflict associated with the abortion issue). And since the theory suggests unconscious processes, the abduction experiencer need not ever be aware of abortion anxiety.

Stacy's theory casts a wide net, but this is both a strength and a weakness. While it can account for diversity within the abduction experiencer population, it is difficult to imagine anyone who could not be a candidate for Stacy's hypothesized abortion anxiety (except perhaps very young children). In any case, systematic tests of this hypothesis are yet to be carried out.

(d) The Collective Unconscious, the Imaginal Realm, and Human Evolution

Psychoanalyst Carl Jung developed a theory of the unconscious mind which he felt had relevance to the UFO phenomenon. As described by Jung:

> In addition to our immediate consciousness, which is of a thoroughly personal nature . . . there exists a second psychic system of a collective, universal, and impersonal nature which is identical in all individuals. This collective unconscious does not develop individually but is inherited. It consists of pre-existent forms, the archetypes, which can only become conscious secondarily and which give definite form to certain psychic contents. [Jung, 1936, p. 60]

Jung (1959) suggested that some "flying saucer" sightings might be a manifestation of *archetypal imagery* associated with this *collective unconscious.* (He ac-

knowledged there may be a physical basis to some reports as well.) Grosso (1985) has argued that the abduction experience itself is a product of the collective unconscious.

Specifically, Grosso regards abduction experiences as the collective unconscious' symbolic (archetypal) response to environmental imperatives. (That is, human exploitation and irresponsibility in regard to an endangered planet take on symbolic form as unsympathetic aliens determined to exploit us in order to revitalize their own dying species.) In turn, he sees these experiences as a driving force behind evolution of the human psyche.

Ring (1992) finds Grosso's ideas highly relevant to his own study of close-encounter experiences. Like Grosso, Ring regards such experiences as evidence for the evolution of consciousness. More specifically, he sees them as "helping to develop our latent capacities for imaginal perception" (p. 240). Ring's use of the term *imaginal* should not be confused with *imaginary.* The distinction between the terms stems from the work of Corbin (1972) who hypothesized the existence of an alternate reality accessed by visionaries and mystics during altered states of consciousness. Corbin describes this world as ontologically real, that is, as real or more real than that experienced during everyday consciousness. Ring argues that abduction experiences come from contact with this imaginal realm, and that "it can be expected that over time the evolutionary momentum [associated with these experiences] will establish and stabilize these imaginal domains as our shared reality." (p. 240)

Ring and Grosso are not the only students of ufology to argue for a connection between UFO phenomena, other realities, and evolutionary forces. Thompson (1991) sees archetypal imagery in UFO encounters. McKenna (1987) suggests that "the extraterrestrial is the human oversoul in its general and particular expression on the planet" (p.17). Strieber (in Dabb & Langevin, 1990), considers the aliens as "midwifing our birth into the nonphysical world—which is their origin," and representative of "an evolutionary step beyond ours which has emerged into our world as a result of actions on the non-physical plane" (p.41). Vallee (1990) suggests that "in a Jungian interpretation . . . the human unconscious could be projecting ahead of itself the imagery which is necessary for our own long-term survival beyond the unprecedented crises of the 20th century" (p. 116). Mack (1994) concludes that "the abduction phenomenon, it seems clear, is about what is yet to come. It presents, quite literally, visions of alternative futures" (p. 422). And physicist Wolf (1994) takes the position that:

> UFO experiences are from the imaginal realm and therefore have a different but "real" feeling to them as compared to ordinary experiences. . . . They are not the same as so called solid-reality experiences that we commonly experience in everyday life. I am also not saying they are fantasies or hallucinations. [Wolf, 1994, p. 371]

Rather, Wolf regards this manifestation of the imaginal realm as related to the quantum-mechanical nature of reality, in which the interplay of consciousness and

the physical world is theoretically codependent.

Despite the obvious appeal these Jungian and quantum-mechanical concepts have for those who feel uncomfortable with both the physical and the imaginary interpretations of the abduction experience, it must be kept in mind that these notions are abstract theoretical models, not descriptions of existing experimental data. In point of fact, the ideas of a collective unconscious (especially a rapidly or intragenerationally evolving one), the imaginal realm, and the extrapolation of quantum-mechanical theory to events beyond the subatomic world (i.e., their intrusion into everyday conscious experience) are themselves highly speculative. Certainly, their application to the abduction phenomenon is also highly speculative.

(e) Altered States of Consciousness

Evans (1989) has suggested that various altered states of consciousness (highway hypnosis, out-of-body experiences, etc.) may account for UFO abduction experiences. This scenario accounts for the emergence of unconscious material into consciousness as a function of the unique characteristics of the altered state. Bullard (1987) describes eleven cases (out of the 270 he evaluated) in which the abduction experience begins without any apparent intervention by UFOs or entities and which may be characterized as primarily or entirely mental. For example, in one case (case #209) the experiencer reported physical interaction and communication with an alien abductor for a period of time during which the experiencer remained in the presence of fully conscious investigators (who observed no attempted abduction in progress). Bullard refers to such cases as "psychic abductions" during which the altered state:

> may trigger awareness of . . . ferment underway in the unconscious. These conditions weaken conscious self-control and preoccupation with external events so a witness takes notice of his inner self and the world of mysterious contents awaiting him there. The witness slips into this [altered state] . . . unprepared to believe that [this is] responsible for the vivid, weird pseudo-reality of the experience. [Bullard, 1987, p. 361]

However valid the altered-state explanation may be for some abduction experiences, Bullard's cases represent just 4% of his sample. It is unlikely that altered states account for a significant proportion of abduction reports.

Environmental Theories

(a) Tectonic Stress and "Earth Lights"

Devereux (1989) and Persinger (1990) have argued that "anomalous luminous phenomena" (ALP) are propagated by stresses and strains within the earth's crust, and that these products of tectonic stress are often reported as UFOs. Persinger (1990) has related this theory of tectonic stress to a theory of neurophysiological

susceptibility to electromagnetic fields. According to this theory, electromagnetic fields are capable of affecting human brain activity, particularly in the temporal lobes. Because of this, any event or condition that induces stimulation of the temporal lobes (including ALP and other electromagnetic phenomena) may lead to anomalous experiences and memory, especially in individuals who display characteristics of enhanced temporal-lobe lability. Persinger suggests that this relationship can not only explain UFO sightings, but abduction experiences as well:

> Anomalous experiences that comprise contactee and abduction reports are correlated with enhanced activity within the temporal lobes of the human brain. . . . The personalities of normal people who display enhanced temporal lobe activity are dominated by. . . . a rich fantasy or subjective world. . . . more frequent experiences of a sense of presence . . . [and] exotic beliefs. . . . Because ALP generated by tectonic strain could affect the brain of the nearby observer, some abduction and contactee experiences might be attributable to this source." [Persinger, 1990, pp. 129–131).

In support of his theory, Persinger has attempted to simulate the effects of temporal-lobe excitation by inducing magnetic fields applied directly to a subject's head. One description of the results of such a procedure has been presented by research psychologist Blackmore (1994) who served as a subject in Persinger's laboratory. Blackmore experienced unusual physical sensations (such as being yanked up by the shoulders or having limbs pulled), emotional states (anger, fear), and alterations in consciousness (disorientation). Although these experiences do not have the specific structure and organization of an abduction experience, both Blackmore and Persinger would argue they provide the raw material from which (embellished through various cognitive processes) classic abduction experiences might be created.

This hypothesized relationship between abduction experiences and electromagnetic fields is intriguing, but several factors greatly reduce its status as a potential explanation. First, the merits of the tectonic stress theory have been widely questioned (e.g., Grosso, 1990; Jacobs, 1990; Long, 1990; Rutkowski, 1984, 1990, 1994), both in regard to the interpretation of evidence claimed to support it, and in regard to the theoretical bases for the hypothesis itself.

Second, because the energy characteristics of ALP (especially their energy properties at a distance) are largely unknown, it is not known whether the hypothesized relationship between ALP and human brain activity is even *possible*. Persinger (1990) notes:

> The experimental procedure that evokes experiences most similar to the more extreme UFO encounters is the electrical stimulation associated with neurosurgery. It involves very focal current induction (about 1 cc) within the brain. These similarities suggest that the magnetic

> fields associated with ALP involve highly localized, fluxline-like distributions of energy. [Persinger, 1990, p. 131]

Persinger's guess about ALP notwithstanding, until the energy characteristics of ALP have actually been determined, their potential for inducing abduction experiences cannot be ascertained.

Finally, the hypothesized correlation between abduction experiencers and temporal-lobe lability has not been confirmed. Spanos et al. (1993) assessed temporal lobe lability with the 52-item temporal-lobe subscale of the Personal Philosophy Inventory, an assessment instrument designed by Persinger and Makarec (1987) specifically to measure traits associated with temporal-lobe lability. Using Persinger and Makerec's own measure of this variable, Spanos et al. found no differences between control subjects and experiencers. This finding bears not only on the ALP hypothesis. It is also contrary to any suggestion that temporal-lobe lability, by virtue of its own spontaneous activity, may be a significant cause of abduction experiences.

(b) Allergic Reactions

Budden (1994) argues for a much wider contribution of electromagnetic events than that hypothesized by Devereux and Persinger:

> The experiences of visitation by a variety of other worldly beings . . . are the mental and physiological products of a range of environmental illnesses. . . . Individuals whose bodily systems are severely affected are given spontaneous warnings that their health is at risk, or even better, are cured at a stroke and transformed by events which overtake them. These are called close encounter experiences. [Budden, 1994, p. 1]

Budden's hypothesis is based on several premises:

(a) The environment (or more specifically, "electronic and electrical pollution") is a significant health hazard;
(b) This health hazard creates allergic sensitivities to nutritional and biochemical substances;
(c) Electronic pollution causes widespread hallucinatory experience (Budden estimates 20% of the population may be susceptible); and
(d) These hallucinations manifest in consciousness as symbolic representations of the health hazards being encountered.

However, Budden fails to provide a body of evidence in support of these basic premises. Instead, he presents a series of case studies in which individuals who live near apparent EM sources have had apparently hallucinatory experiences. Otherwise, he takes declarative positions without documentation. Consider the following:

> [A] commonplace way [for an individual] to acquire allergies is to be in an electrical or electromagnetic field . . . and during this time eat or drink something or be exposed to a common substance that they are already allergic to. . . . The body then 'remembers' the frequency of the field . . . and when they are exposed to the same frequency again . . . they react allergically. . . . We have therefore, a peculiar situation where there is an interchangability between food, chemical substance and electronic signal. [Budden, 1994, pp. 5–6]

> For an individual whose body has had to cope with a number of nutritional, chemical, and electromagnetical assaults upon it there comes a point . . . where their body will begin to give them messages. . . . These may begin as weird dreams that have a super-real quality to them, and develop into fully formed figures seen when the person is awake. These commonly appear beside the bed at night. . . . This is in fact a method by which the mind is trying to calm the allergic individual's system in a very fundamental way, thereby reducing the stress upon their body." [Budden, 1994, p. 7]

These and other assertions are presented as fact. Of course, none actually enjoys widespread acceptance or empirical support, and Budden does not help the situation by failing to provide citations for his claims. (He does provide a reference list but the specific relation between reference and claim is unclear.)

The Extraterrestrial (ET) Hypothesis

Perhaps the most provocative explanation for abduction experiences is that they are essentially veridical reports of actual abductions by apparently extraterrestrial (ET) entities.[8] Because more attention has been directed toward this hypothesis than any other, the perspectives of both advocates and detractors will be examined in detail.

(a) Arguments Against the ET Hypothesis

Many critics of the ET hypothesis argue that in the absence of tangible proof, parsimony requires that the ET hypothesis be dismissed. The relationship between parsimony and evidence has been discussed already and will not be reiterated here. Other a priori arguments for dismissal are discussed below.

UFO sightings are not caused by spacecraft, so abduction experiences are not caused by aliens. It would be difficult to take the ET explanation for abduction experiences seriously without also taking the ET explanation for UFOs seriously. Therefore, dismissal of the latter has been used as a basis for dismissal of the former.

This approach maintains that the UFO evidence fails to support anything other than prosaic explanations. It is based on the observation that most sightings are at

least potentially explainable as mundane phenomena (hoaxes, misperceptions of natural events, misidentification of conventional objects, secret military devices, etc.). However, this only demonstrates that no *single* explanation provides a satisfying account of the sighting literature, not that prosaic explanations can explain all sightings.

In fact, global analyses of various UFO databases consistently produce a percentage of sighting reports that do not yield to any prosaic explanation (e.g., about ⅓ of all cases examined in the Air Force-commissioned Condon report, 1969). Rather than requiring dismissal of the ET hypothesis, these data require that it continue to be considered.

ETs do not exist. Although no one has proven the existence of ETs, there have been attempts to demonstrate the probability of advanced ET civilizations based on various astronomical and sociological assumptions. These efforts (Drake, 1976; Shklovskii & Sagan, 1966) generally estimate the potential number of advanced civilizations on the order of millions, if not billions. The existence of ETs is so statistically probable that their absence would be a far greater anomaly than their existence.

ETs would not be humanoid. The probability that alien beings would bear any resemblance to ourselves is seen by some observers (e.g., Dobzhansky, 1972) as exceedingly remote because evolution seems so dependent on both the specific demands of the environment and on the opportunistic characteristics of the evolutionary process. Accordingly, the humanoid description of alien abductors is considered enough in itself to disqualify abduction experiences as veridical. However, there are reasons why intelligent ETs might be expected to resemble human beings.

To begin with, the issue here is not life per se, but intelligent life that could master its environment and develop the kind of technology that would be necessary for space travel. Such beings would require personal characteristics that allow them to manipulate their environment, and an environment conducive to technological development. Swords (1989, 1995) has made a persuasive case that such an environment would necessarily be similar to our own, and that evolutionary pressures in such an environment would produce beings not dissimilar from ourselves. That is, humanoid ETs are not inconsistent with conventional theory and reports of such beings cannot be legitimately dismissed as inherently implausible.

ETs cannot get here from there. Another argument against the ET hypothesis is that interstellar distances are so formidable that the time and energy necessary to traverse them makes interstellar travel (and therefore visiting ETs) extremely unlikely (Horowitz, 1994). However, these problems may not be the unavoidable obstacles they appear to be.

For example, physicist Alcubierre (1994) has "shown how, within the framework of general relativity and without the introduction of wormholes, it is possible to modify a spacetime in a way that allows a spaceship to travel . . . faster than the speed of light as seen by observers outside the disturbed region" (p. L73). That is, by reducing the distance to be covered rather than increasing acceleration the prob-

lem of distance is obviated without violating any laws of nature as we currently understand them; and because light would be traveling in space-time along with the traveler, no time dilation would be experienced. In addition, Szpir (1994) has elaborated on the possibility of circumventing the energy requirements associated with such an effort. Of course, the technological problems necessary to implement this scheme may prove insurmountable. But it seems premature to discount the feasibility of space travel within the constructs of accepted physical theory.

ETs would establish overt contact. The fact that abduction reports describe covert rather than overt contact is seen by some (e.g., Baker, 1989) as evidence against the veridicality of these reports. In prototypical form, the question raised is "Why don't they land on the White House lawn?" (This question implicitly assumes that if they did, the White House would tell us about it.)

But by what standards should we predict alien agendas? The "anthropomorphic fallacy" (the *assumption* that we can attribute the behavior of other animals to human motives and feelings) is well known among behavioral psychologists as an error in reasoning. Certainly, the same caution should apply to speculation about alien behaviors. That notwithstanding, there are reasons consistent with human behavior as to why an alien civilization might not want overt contact. (To name just two: We may be subjects of a research protocol that overt contact would violate; they may be up to no good and don't want us to know about it.) The argument that abduction reports must be dismissed because the reputed behavior is not overt is based on fallacious reasoning or, at best, limited imagination.

Moreover, it by no means represents a consensus of contemporary thought. Rodeghier (1996) surveyed over 500 scientists (members of professional organizations in astronomy, evolution science, geology, psychology, and zoology) and found that about 38% regarded the probability "that an extraterrestrial civilization successful at interstellar space travel, having discovered Earth, will refrain from overt contact with humans" as at least .50. That is, they regard it at least as likely that aliens would refrain from overt contact than engage in it.

(b) Arguments in Support of the ET Explanation

Proponents of the ET hypothesis take the position that a veridical interpretation of the abduction experience is, at least, not inconsistent with the reported characteristics of the phenomenon, and that in the absence of empirical support for more parsimonious theories, its consideration is not inappropriate. Furthermore, they point to a number of features of the abduction experience as supporting the ET hypothesis. These features are discussed below.

Abduction accounts are consistent. Those who argue for the veridicality of abduction experiences cite the consistency of the accounts, down to very specific details. For example, Jacobs (1992) regards "the strongest evidence presented [to be] . . . the congruence of narrative and the richness of exact detail" (p. 239). While individual investigators such as Jacobs have documented this detail in regard to their own cases, Bullard (1987, 1994) has compared cases from a wide range of

investigators. Based on his exhaustive analysis of abduction experience content, Bullard (1987) concluded:

> The list of resemblances and recurrences goes on and on to build an impressive case for the one point this study proves beyond a reasonable doubt—abduction reports tell a consistent story. No accident, random hoax or purely personal fantasy could reasonably explain so much consistency throughout this sizable body of reports. [Bullard, 1987, p. 353]

In a more recent analysis, Bullard (1994) notes that both prominent aspects and obscure elements of the abduction experience recur across investigators: "The range of differences among major features and main patterns is quite narrow. . . . Abduction reports seem to converge toward a unity of content irrespective of the investigator" (p. 615).

Although consistency is well documented, the source of this consistency is a subject of debate. Critics of the ET hypothesis are quick to point out that the abduction experience has had so much media exposure, and fictional depictions of aliens are so rife in our culture, that the raw material for fantasy production is readily available. For example, Kottmeyer (1989) describes numerous instances in which fictional material is consistent with reported abduction experiences, including UFO characteristics, alien descriptions, genetic experimentation, implants, and alien motivations.

Notwithstanding, the argument that this material is the source of fantasy production requires that fantasy is itself a reasonable explanation for the abduction experience. As discussed previously, the data do not support this contention.

Regardless, it is not consistency per se that has grabbed the attention of researchers, but the implicit notion that this consistency is much greater than would be expected by chance. For example, Mack (1994) refers to "the high degree of consistency of detailed abduction accounts" (p. 43). But "high" relative to what? Jacobs (1992) refers to "the extraordinary convergence of the abductee narratives" (p. 302). But by what yardstick is this convergence extraordinary?

Certainly the standard of measure cannot be subjective impression. That measure of chance is notoriously inconsistent with empirical reality. Rather, chance must be determined by statistical tests of probability. To determine chance in regard to abduction content, one need only compare formal abduction accounts with those solicited from a random sample of the population (a control group). The Lawson (1977), Randles (1994a) and Lynn and Pezzo (1994) experiments discussed earlier are attempts at this. As previously mentioned, none represents a definitive analysis of relative consistency, and their results demonstrate consistencies and inconsistencies alike. Nevertheless, their findings at least suggest caution in using content consistency as a criterion for abduction-experience veridicality.

One argument that has been raised in response to this plea for caution is that very

specific content—not well known outside the investigator community—also appears in a frequency that could not be expected by chance. For instance, Jacobs (1992) refers to "many other abduction procedures [which] have never been publicized or written about even in the most esoteric UFO literature, yet virtually all abductees describe them" (p. 302). Of course, it is precisely this absence of reference in the literature that makes an evaluation of such content impossible.

Perhaps one example of this seemingly unique content is revealed in Bullard's (1994) survey, which indicates that several investigators have obtained reports of specific alien insignia (for example, a phoenix or winged serpent). But since no one has asked a population of control subjects to suggest (imagine) a motif for such insignia, nor tabulated the precise proportion of abduction experiencers who report this motif (relative to those who report insignia of any kind), it is not known if the probability of such specific content is indeed beyond chance expectation. Until such tests are carried out, the significance of abduction-report consistency will remain a matter of subjective impression.

Physical symptoms are indicative of actual abductions. Abduction experiencers often report marks on the body, or other physical symptoms they suspect may be associated with an actual abduction event. Not uncommonly, these are (at least apparently) mundane conditions such as blemishes, bruises, nosebleeds, and familiar discomforts. In other cases, more serious or unusual skin rashes or other markings are reported. And in still other cases, serious scars of unknown (unremembered) origin are present.

These conditions have been considered by some as evidence of alien abduction procedures. Mack (1994) regards "the physical changes and lesions affecting the bodies of experiencers" as a critical factor in understanding the abduction experience. Hopkins et al. (1992) regard the existence of "puzzling scars on [the] body without remembering how or where they were acquired" as a "key indicator" of the "event-level reality of UFO abductions." Jacobs (1992) criticizes alternative explanations of the abduction experience as failing to "explain the unusual physical effects apparently derived from the abduction event" (p. 302).

Rightly or wrongly, most of these "symptoms" can be easily dismissed as having a mundane origin. It is more difficult to dismiss serious scars in this way. Given the sometimes inaccessible locations for these scars, their stereotypical appearance as "scoop-marks," and their initial discovery early in childhood, such mundane explanations may not suffice. One critical issue is the extent to which serious scars may exist without recollection of their origin. According to a Roper survey (Hopkins et al., 1992), 8% of the general population report such scars. According to Bullard's investigator survey (1994), at least 25% of the experiencer population report such a condition. It is not clear how accurate Bullard's investigators' estimates may be (or even if the investigators independently verified their experiencers' claims). But if the estimates are correct, this does indeed represent a much greater prevalence of forgotten scars in the experiencer population than in the general population.

Abduction experiencers show signs of PTSD. Although PTSD is understood as a

response to stressful life experiences, it may be impossible to determine whether such experiences are objectively real or imaginary (Laibow and Laue, 1993; Wilson, 1990), or whether the precipitating stressor is itself veridically recalled. Accordingly, the presence of PTSD symptomatology is not evidence that abduction experiences are veridical.

The abduction experience explains the covert nature of UFO activity. As mentioned before, it is hard to imagine acceptance of abduction reports as veridical without concomitant acceptance of UFOs as spacecraft. And certainly, a secret alien agenda provides a rationale for ET visitation without overt contact. Essentially, the reasoning here is that abduction experiences must be real because UFOs are real, and UFOs must be real because abductions are. However, this argument uses each proposition as both premise and conclusion. As such it must be rejected on logical grounds.

Abduction experiences are subjectively valid and emotionally compelling. As emotionally compelling as an abduction experience may be (to both the experiencer and the investigator or therapist listening to the experiencer's account) it has been well documented that emotional validity is not an accurate criterion of objective validity (see earlier discussion).

Abduction experiences are shared within families and across generations. Although experiencers often report that family members have had abduction or UFO-related experiences, there are two reasons why this fact cannot be regarded as evidence of the veridicality of such experiences. First, the reliability of such correlations have been difficult to establish (Haines, 1994b). Second, although a familial linkage could be consistent with real abductions, familial linkage exists for personality, psychopathology, sleep disorders, and environments. Each of these has also been suggested as a cause of the abduction experience. Therefore, even when properly documented, such relationships cannot distinguish among these alternatives.

Abduction experiences are not random. They occur to the same individuals repeatedly. The nonrandom nature of the phenomenon must certainly be a clue to the cause of the abduction experience. However, personality, psychopathology, sleep disorders, environments, and other suggested causes of the abduction experience could also lead to multiple experiences for the same individual. The nonrandom nature of the experience is no more consistent with the veridicality of the reports than with these alternative explanations.

Children's abduction experiences suggest veridicality. Abduction experiences have been reported by very young children. Kerth and Haines (1992) have shown that the content of these reports differs from the imaginative productions solicited from nonexperiencer children. It has been argued that this is particularly difficult to explain in prosaic terms.

For example, Mack (1994) cites "the reports of abductions by children as young as two or three years of age" (p. 43) as one of the five critical aspects of the abduction experience in need of explanation. Hopkins (1994) has devised a picture-recognition test (comprised of a stereotypical alien face and character depictions from

popular culture) to "serve as an aid in confirming or disconfirming" (p. 131) abduction experiences.

However, children's reports may not be the challenge to conventional theory that some believe. Ceci and colleagues have carried out a program of research which "suggests that source misattribution could be a mechanism underlying children's false beliefs about having experienced fictitious events" (Ceci, Loftus, Leichtman, & Bruck, 1994, p. 304). *Source misattribution* refers to the conviction or claim of remembering something which in reality was only thought about, or suggested by others. Ceci et al. cite a body of evidence which shows that "all children are susceptible to making source misattributions, [but] very young children may be disproportionately vulnerable" (p. 304). This susceptibility exists "even when the topic involves reporting specific and personal things . . . such as alleged genital touching" (p. 305).

Moreover, in studies using videotapes of both real and fictitious (misattributed) accounts, professional researchers and clinicians performed no better than chance at distinguishing among the children's narratives. Indeed, these professionals "found it difficult to imagine such plausible, internally coherent narratives being fabricated" (p. 316). Ceci et al. conclude:

> These findings suggest that it is possible to mislead preschoolers into believing that they experienced fictional events, and to do so with increasing conviction and vividness over time. An examination of the children's videotaped statements reveals internally coherent, detailed, yet false, narratives. Adults who were naive to the validity of the children's claims about fictional events often professed confidence in their accuracy. Thus it is not only possible to mislead children, but also to fool adults who are unaware of their experimental history. [Ceci et al., 1994, p. 315]

Clearly then, a researcher's or clinician's intuitive sense about a child's testimony (let alone the intuitive sense of the child's parents) says nothing about the validity of that testimony. And the testimony's detail, coherence, or consistency with adult testimony, is of significance only in regard to the child's opportunity for misattribution. As difficult as it may be to document such influence, a child's exposure to books, movies, television, the media, and the casual conversations of parents, peers, teachers, and the occasional stranger, provide more than ample opportunity for misattribution to occur. Parental assurance that their child had no opportunity for exposure to such influences is naive, or at best unfalsifiable. In addition, a perhaps counterintuitive finding from recent research (Brainerd, Reyna, & Brandse, 1995) suggests that false memories acquired by children may even be more persistent (retained over time) than true memories. In any case, the argument that children's abduction testimony is somehow less assailable than that of adults does not seem to be defensible on scientific grounds.

Multiple-witness cases indicate a real event. Numerous reports exist in the literature where an abduction experience has been shared by two or more individuals. Some of these cases are celebrated as abduction "classics," such as the Betty and Barney Hill case (Fuller, 1966). Others, while not having achieved such status, are extremely well documented (e.g., the Buff Ledge incident investigated by Webb, 1994; the Allagash incident investigated by Fowler, 1993). Carpenter (1991) and Haines (1994) have provided content analyses of other multiple abduction reports.

In some cases (e.g., Betty and Barney Hill), the individuals involved were family members or very close friends. Such relationships could allow for Shared Psychotic Disorder, a psychiatric condition described in the DSM IV (American Psychiatric Association, 1994) as the adoption of the delusional (psychotic) beliefs of one individual by another individual with whom a close relationship exists. Typically, such relationships are characterized as long-standing and involving individuals who have lived together for a long time—perhaps in social isolation—and where the individual with the initial psychosis is the dominant partner in the relationship.

Although this may seem to be a plausible explanation for shared abduction experiences, the disorder is quite rare and must involve not just one, but two or more individuals who have acquired a psychotic disorder. Given the normality of the experiencer population in general, the likelihood of mental disorder accounting for the abduction experience should decrease as the number of individuals sharing the experience increases. Furthermore, in most shared abduction experience cases, the relationship of the individuals involved simply does not fit the profile associated with the disorder.

For example, in the Buff Ledge case (Webb, 1994) the two primary experiencers (as well as a number of subsidiary witnesses) were acquaintances at a summer camp, shared little detail regarding their conscious experiences with each other or anyone else, became aware of their own participation in an apparent abduction only many years later during hypnosis, were unaware of the specific events described by their counterparts, had not been in contact with each other for years or even decades, and have remained anonymous making no attempt whatever to capitalize on their reported experiences.

Such experiences cannot readily be attributed to hoax, susceptibility to suggestion, or psychopathology. These cases may provide the greatest challenge to prosaic explanations of the abduction experience.

Summary and Conclusions

1. Hoaxes. Because independent evidence of an abduction is usually unavailable, the establishment of a hoax often depends on evaluation of the credibility of the claimant. Given the large number of abduction experiences that have been reported, it would be unreasonable to expect that in no case was a hoax perpetrated. On the other hand, in very few cases does the behavior of the reporter suggest

motivation for such an act. Deliberate hoaxing is not a likely source for the vast majority of abduction accounts.

2. Hypnosis. Experiments demonstrate convincingly that hypnotically retrieved memory is often unreliable. However, the degree to which this research can be generalized to the kind of experience reported for abductions is not completely known, and some experimental evidence may actually be consistent with enhanced memory retrieval for this kind of experience. By no means does this imply that investigators or mental health professionals can be cavalier about the use of hypnosis, or that hypnosis can be exonerated as a causal factor in abduction experiences. But it is premature to claim that research already requires the dismissal of hypnotically retrieved abduction accounts.

3. Fantasy Proneness. Several studies have failed to provide experimental support for the fantasy-prone hypothesis. The data do not rule out the possibility that fantasy proneness may account for a small number of abduction experiences, but they do indicate that fantasy proneness cannot serve as a general explanation.

4. The false-memory syndrome. Clearly, no responsible therapist should ignore the implications of the false-memory syndrome. But what is its scientific status in regard to the abduction experience? Nash (1994) has cautioned therapists to be aware of both false positives (incorrectly accepting) and false negatives (incorrectly rejecting) when dealing with recovered memories of abuse. Although the abuse literature provides some evidence for both, in most cases accusations of abuse can neither be proved nor disproved, and the prevalence of false positives and false negatives remains largely unestablished. Certainly this is the case in regard to the abduction experience. In the absence of independent documentation, and given the limitations of clinical impression as a standard by which to test the validity of abduction accounts, the extent of clinically induced false memory for abductions will remain unknown.

5. Personality. Numerous personality measures have demonstrated that as a group the experiencer population is clinically normal, but atypical in a variety of ways. Some of these characteristics may be consistent with personality traits associated with suspect syndromes such as fantasy proneness or boundary deficit. However, specific tests for these conditions have been disconfirmatory, equivocal, or undone.

6. Sleep anomalies. The relationship between abduction experiences and sleep anomalies (e.g., narcolepsy, sleep paralysis, hypnagogic hallucinations) has, by various theorists, been claimed, assumed, or (conversely) dismissed. However, the relationship has not been adequately tested.

7. Psychopathology. Perhaps more than any other variable, the presence of psychopathology in the experiencer population has been systematically studied. The results indicate that formally recognized psychopathology does not exist to any greater degree in the experiencer population than it does in the general population.

8. Psychodynamic theories. Abduction experiences have been explained as the unconscious' response to childhood abuse, birth memory, abortion anxiety, environmental crises, unique characteristics of altered states, and the unconscious' own

evolutionary development. Although abduction experiences do contain elements that are consistent with psychodynamic symbolism, the ability of psychodynamic theory to account for a given mental experience in such a wide variety of ways requires that it be evaluated in terms of empirical tests, not appeals to analogy. The suggested applications of psychodynamic mechanisms to the abduction experience are as yet untested, or ultimately untestable.

9. Environmental theories. Experiments which directly establish a relationship between environmental conditions (e.g., electromagnetic allergens, tectonic stress) and abduction experiences have not been carried out. And although debated by their advocates, most researchers concur that the plausibility of the assumptions underlying these hypotheses is yet to be demonstrated.

10. ET hypothesis. Arguments for dismissing the veridicality of abduction reports on a priori grounds are logically flawed. On the other hand, ET advocates' strongest challenges to alternative theory are not crucial tests of veridicality.

Discussion

Facts acquire significance only when related to theory, and theory remains empty in the absence of supporting fact. For fact and theory to be of any relevance, a relationship between them must be established. This is especially important, and especially difficult, when dealing with a phenomenon such as the abduction experience. As Morrison (1972) has stated:

> If we are to believe any hypothesis, however plausible or implausible, concerning new events—particularly those that do not satisfy the easy quality of being reproducible at will by those who undertake to set up a laboratory for the purpose—then we must find . . . multiple, independent chains of evidence satisfying a link-by-link test. [p. 280]

Mindful of this, what can be said of the various factors hypothesized to be causes of the abduction experience? Many theories that seem both parsimonious and reasonable have been advanced to explain the abduction experience. But these theories have received little empirical support, or are yet to be adequately studied.

It may be argued that any single explanation of the abduction experience will necessarily be inadequate because the phenomenon is multicausal, and that the abduction experience as a whole can be explained only by considering all the prosaic explanations in their entirety. For example, if (as the data suggest) at least some abduction reports are hoaxes, and at least some the result of pathology, fantasy, sleep anomalies, etc., perhaps in total this can constitute a complete explanation (in statistical terms, can account for all of the variance in the data). However, the data (at least as currently available) suggest that each explanation can account for only a small proportion of all cases, and that even in the aggregate they fall short as a complete explanation.

The notion that the abduction experience is multicausal can lead to an alternative argument; namely, that it requires a constellation of factors to be present in an individual (for example, that a person must be both fantasy prone and suffer from a sleep disorder). The research so far has tried to isolate specific causative factors rather than look for their co-occurrence, but it is not likely that such an effort could provide a solution. This is because of the "conjunction rule" (Matlin, 1994). As applied to the abduction experience, it states that the proportion of experiencers with two or more coexisting conditions can never be greater than (i.e., is limited by) the proportion of experiencers with the least common constituent condition.[10] Accordingly, the likelihood of explaining the abduction experience through coexisting causes is even less than for explaining it in terms of cumulative causes.

If the evidence offered so far cannot completely explain the abduction experience in prosaic terms, other explanations are required. The most prominent alternative is the ET hypothesis. But here again, there is as yet no evidence that requires this explanation. And in the absence of such evidence, the argument that abduction experiences are veridical strains credulity on many fronts.

For example, it has been suggested that we cannot remember abductions because alien procedures cause forgetting; that although hypnosis produces unreliable memory in all other cases, it produces reliable recall of alien abductions; that we cannot see the abductors' craft because they can be made invisible; that we cannot secure an alien implant or artifact because they are made to self-destruct upon intrusion; that aliens can be constrained by no barrier because they can pass through solid matter; that space flight is no obstacle because the prohibition against faster-than-light travel can be circumvented.

All this and more asks much of the ET advocate. So much so, that an appeal to open-mindedness may be necessary for the hypothesis even to be considered. I have argued elsewhere that despite these demands on credulity such a case can fairly and legitimately be made (Appelle, 1995).

First, our knowledge base about memory encoding and retrieval does not preclude the possibility that recovered abduction memories may be veridical. Second, phenomena that seem impossible may be only a matter of technological development rather than a violation of accepted physical law. Third, it may be foolhardy to assume that our understanding of physical law is a complete and satisfactory description of nature. Relativity and quantum theory were developed less than one potential human lifetime ago, and Newtonian physics less than three.[11] Given this short span of time, is it more likely that we have already achieved an essentially correct description of the universe—or that we have not?

The more prosaic explanations make fewer demands on credulity, but so far they have provided no more in the way of empirical support. Looking back on the wise instruction of Morrison, it must be concluded that the condition he describes has not yet been met. The chains of evidence linking fact and theory are still largely unestablished. But this is not, as some would have it, a reflection on the limitations of science. Pronouncements that the abduction experience is beyond contemporary

science are probably wrong and certainly premature; and those who are disappointed in what science has yet established should demand more of science, not less—this means additional research focusing on those theories and evidential variables that are most amenable to empirical validation and disconfirmation. Hypotheses that have been advanced but not tested should be tested; and theories that have already been studied can benefit from additional research. A "top ten" list of such efforts might address the following:

1. A relationship between sleep anomalies and the abduction experience seems to make sense on theoretical grounds (and in terms of the extent of sleep anomalies in the general population) but is yet to be directly evaluated.
2. The consistency across abduction narratives is obvious, but its statistical deviation from chance (as determined by narrative production for the general population) has not been assessed. In fact, despite the existence of some frequency distribution tables for abduction experience characteristics and content (e.g., Bullard, 1994), statistical analyses of these data have not been done. Also, a much closer examination of cultural variations in the abduction experience needs to be done.
3. The occurrence of certain stigmata (e.g., scoop marks) have been described as suspicious, but no systematic pathological studies of their characteristics have been reported.
4. It has been found that abduction experiencers are not generally more hypnotizable than others, but specific hypnotizability for the abduction experience has not been studied in the general population. (That is, in response to hypnotic suggestion, what proportion of the general population will produce abduction experiences they regard as subjectively compelling and valid? How does this compare to the proportion of individuals who seek hypnosis to recover suspected memories of an abduction?) The studies by Lawson (1977) and Lynn and Pezzo (1994) are a start, but more careful studies with better controls and larger subject populations are needed.
5. The relationship between abduction experiences and childhood-abuse experiences deserves much closer attention. The new data on childhood abuse and alterations in brain structure should be considered in regard to dual victims of abuse and experienced abduction.
6. The extent of the abduction phenomenon should be better assessed, using new sampling instruments designed to address the objections (Donderi, 1994; Hall, Rodeghier, & Johnson, 1992) to the Roper survey of abduction experience prevalence (Hopkins et al., 1992).
7. Since an actual abduction requires (by definition) the removal of the abductee from his/her surroundings, a change in the abductee's immediate environment would also be required. Yet except for crude (and

unsuccessful) attempts to videotape an abduction in progress, there have been virtually no efforts to monitor the environments of those reporting abductions. Electromagnetic and other sophisticated remote-sensing devices could be employed (especially with experiencers who report high-frequency abductions) on a long-term basis to determine what, if any, kinds of disturbances occur in the experiencer's environment before, during, or after reported abduction experiences. Similar methodology could also monitor the location of the experiencer. The outcome of such studies might not prove or disconfirm alien intervention, but it could provide evidence that would bear on the validity of the hypothesis.

8. Evidence from the clinic can also help advance science. Case studies of intervention strategies and outcomes (e.g., Mack, 1994; Gotlib, 1996) can provide insights into etiology or suggest avenues of research that may be productive. Mental health professionals should be encouraged to publish case studies, making the details of treatment histories available to the research community.
9. Investigators have cited psychic ability as cause or effect of the abduction experience. The psychic performance of experiencers should be subjected to direct experimental test.
10. Multiple-witness/experiencer cases provide the greatest challenge to conventional explanations. These cases should be a priority for both supporters and detractors of such explanations.

Research is more difficult than armchair speculation, and also more expensive, time consuming, and dependent on the cooperation of others (i.e., a subject population). But these are problems of resource and motivation, not defects in the scientific method. The abduction experience continues to be a phenomenon in need of an explanation (Appelle, 1989). For the sake of science—and for the sake of the experiencers—a continuing effort to establish an explanation is both necessary and appropriate.

Notes

[1] Requests for reprints or correspondence should be addressed to the author at the Department of Psychology, S.U.N.Y. College at Brockport, Brockport, NY 14420.

[2] The following is reprinted from the Ethics Code for Abduction Experience Investigation and Treatment (Gotlib et al., 1994).

> The definition of "abduction experience," and even the choice of this term, concerns the investigator as a matter of science (it should correctly describe the phenomenon under study), concerns the MHP (mental health professional) as a matter of diagnosis (it should correctly

> describe the event apparently responsible for the presenting symptoms), and concerns the individual reporting the experience as a matter of identity and self-image (it should correctly describe the characteristics of the experience as understood by the experiencer). However, the literature reflects a lack of consensus among MHPs, investigators, or experiencers regarding which contextual, emotional, or situational elements must be present to qualify as the target experience. . . . [A]t this stage of empirical and theoretical development it is inappropriate to define or label the experiences under study in a way that assumes any particular conceptualization. . . . The use of "abduction experiencer". . . is intended to avoid injustice to any particular theory of causality." (p. 64)

[3] Various investigators have tried to characterize the abduction experience. According to Gotlib et al. (1994):

> Although there is not yet consensus regarding what contextual or experiential elements are necessary or sufficient to define the abduction experience, the literature suggests certain elements as most characteristic. These include (but are not limited to):
>
> - recall of an abduction or encounter with apparently nonhuman entities;
> - missing time related to recall of unidentified lights, objects, or apparently nonhuman entities;
> - unusually realistic and emotionally intense dreams or dream-like experiences of UFOs or apparently nonhuman entities. [p. 60]

Bullard (1987) described abduction accounts as including the following elements: *capture* (being caught and taken aboard a UFO); *examination* (being subjected by the UFO abductors to physical, mental, and/or spiritual examinations); *conference* (communication with the abductors); *tour* (a guided examination of various parts of the UFO); *otherworldly journey* (transport to some other place on earth or an unearthly environment); *theophany* (receipt of religious or spiritual messages); *return* (egress from UFO and return to earth); *aftermath* (postabduction experience effects).

Jacobs (1992) has categorized abduction experiences into primary, secondary, and ancillary events involving physical activities (the taking of tissue samples and the insertion of implants), mental activities (telepathic manipulations, psychological testing procedures, information exchange), and reproductive procedures (egg/sperm collection, embryo implantation, removal of fetus, actual or simulated sexual activity).

Rodeghier et al. (1991) defined an abductee as someone who was:

> *taken* against his or her will from normal, terrestrial surroundings by non-human beings . . . to another enclosed place that is not terrestrial in appearance and is assumed or known by the witness to be a spacecraft . . . subjected to various procedures that appear to be examinations

> of some type, [and] engage in communication (verbal or telepathic) with the beings . . . [p. 64]

Moreover, Rodeghier et al. required that the experiences "be remembered consciously or through various means of focused concentration, such as hypnosis," and that "the witness must *believe* these things to be true and find the experience disturbing."

Alternatively, Hopkins, Jacobs, and Westrum (1992) describe the following five factors as "indicator experiences" for unrecalled (preconscious) occurrence of an abduction: waking up paralyzed with a sense of a strange figure or figures present; missing time; the feeling of actually flying; seeing balls of light in one's room; the presence of puzzling scars on the body.

[4] Baker (1992) reports "a small replication with a few student volunteers [which resulted in] elaborate accounts of bug-eyed, hairless aliens with ESP and levitation powers" (p. 323). However, the study is not published and his reference to it provides no details regarding methodology or analysis.

[5] Rosenberg's Self-Esteem Scale, MMPI, Magical Ideation Scale, Perceptual Aberration Scale, Differential Personality Questionnaire.

[6] Although sexual masochism is treated as a paraphiliac disorder according to the DSM IV (American Psychiatric Association, 1994), the hypothesis advanced by Newman and Baumeister discusses this not as a disorder per se, but as one manifestation of the escape-from-self personality syndrome. Accordingly, I discuss their hypothesis here rather than in the psychopathology section.

[7] Interestingly though, Hopkins et al. (1992) interpret the prevalence of sleep-paralysislike experiences as a key indicator of *actual* alien abductions.

[8] The ET characterization of reported entities is based on experiencers' descriptions of entity appearance, behavior, and technologies, and is most commonly understood in reference to beings originating elsewhere in the known universe. However, alternative interpretations of entity origin have included spiritual realms, different dimensions, or different times (i.e., the future).

[9] The term "psychodynamic" applies to concepts originating in Freudian psychoanalytic theory and later modified by others. These concepts refer to the forces and processes of the unconscious mind and their effect on conscious experience and behavior (Carson & Butcher, 1992).

[10] For example, if one-tenth of all abduction experiencers are fantasy prone and one-fifth suffer from a sleep disorder, no more than one-tenth of the experiencer population can have both conditions.

[11] Newton's *Principia* was published in 1687. Quantum theory became established early this century (the famous Copenhagen interpretation of quantum mechanics came out of a meeting in 1927). The maximum (recorded) human lifespan is usually given as 120 years.

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