

# THE EVOLUTION OF BELIEFS IN GOD, SPIRIT, AND THE PARANORMAL. I: TERROR MANAGEMENT AND RITUAL HEALING THEORIES

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**ABSTRACT:** It has been suggested that nearly universal beliefs in God, spirit, and paranormal phenomena evolved because such beliefs alleviate death anxiety. The terror management theory of religion is reviewed. Evidence for an association between lowered death anxiety and religious/paranormal beliefs is extensive, though perhaps somewhat inconsistent, and limited to particular facets of death anxiety, particular aspects of religiosity, and restricted ranges of belief conviction. There is no evidence to support the prediction that death anxiety should be associated with lowered fecundity. Paranormal beliefs are associated with religious beliefs, and the relationship between paranormal beliefs and death anxiety is similarly inconsistent. Ritual healing theory proposes that anomalous experiences occurring in the context of altered states of consciousness during shamanic rituals were the experiential source of beliefs in God, spirit, and the paranormal. Individuals high in hypnotizability were more susceptible to the beneficial health effects of shamanic healing rituals, resulting in selection for this heritable trait, facilitating the evolution of religious and paranormal experiences and beliefs.

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Belief in God (or a spiritual dimension to existence) is extremely widespread and persistent throughout human history (Armstrong, 1993; Comings, 2007; Jordon, 2002; Zuckerman, 2005). Beliefs in the paranormal and anomalous experiences such as apparitions, extrasensory perception, psychokinesis, synchronicities, out-of-body experiences, and near death experiences are also universal (e.g., McClenon, 1994, 2002a). According to experiential source theory, anomalous experiences are the source of beliefs in spirits, souls, life after death, and magical abilities (e.g., McClenon, 1994, 2002a). With the transition from hunter-gatherer to settled agrarian society, shamanistic ritual and belief systems evolved into highly elaborated religious myth and ritual, including theistic beliefs. It has been suggested that God beliefs and beliefs in the paranormal evolved because such beliefs reduce death anxiety (e.g., Persinger, 1987, 2009). Persinger's evolutionary account of the ubiquity of beliefs in God, the paranormal, and spiritual phenomena hinges on the assumptions that death anxiety is inversely related to religiosity and belief in the paranormal, and that death anxiety compromises fecundity or reproductive success. While there is empirical

support for the first of these assumptions, evidence concerning the second is lacking.

This article, the first in a series of three, will review the evidence concerning the terror management theory of religion, as well as an alternative evolutionary account, the ritual healing theory, which proposes that anomalous experiences occurring in the context of altered states of consciousness during shamanic rituals were the experiential source of beliefs in God, spirit, and the paranormal. Individuals high in hypnotizability were more susceptible to the beneficial health effects of shamanic healing rituals, resulting in selection for this heritable trait, facilitating the evolution of religious and paranormal experiences and beliefs. The second article in the series will review evidence that hypnotizability is one component of a superordinate trait dimension, transliminality, which is comprised of traits highly correlated with hypnotizability, including paranormal belief and experience, positive schizotypy, fantasy-proneness, and creativity. A revision of the ritual healing theory is proposed, replacing hypnotizability with transliminality as the mediating factor. The third article in the series reviews the genetic balanced polymorphism model, suggesting that the disadvantageous effects of psychosis on fertility are balanced by the advantageous effects of less extreme manifestations of the underlying trait dimension of schizotypy/transliminality. Paranormal beliefs are related to paranormal experiences as well as paranormal abilities, which, if veridical, would have direct adaptive advantage. Correlates of paranormal abilities overlap with component characteristics of transliminality. The direct benefits theory suggests that beliefs in spiritual and paranormal phenomena may have evolved simply because such beliefs are in some manner true, and the associated traits and abilities are highly adaptive.

#### RELIGIOSITY AND DEATH ANXIETY

Freud (1927/1961) suggested that religion serves as a coping mechanism against anxiety-related experiences (e.g., Pargament, 1990). Others have also suggested that religion addresses existential concerns inevitably arising from human awareness of mortality (Becker, 1973; Burkert, 1996). Terror management theory (reviews by Greenberg, Pyszczynski, & Solomon, 1986; Greenberg, Solomon, & Pyszczynski, 1997; Solomon, Greenberg, & Pyszczynski, 1991) posits that one of the primary functions of religious belief is to alleviate the potentially overwhelming terror or anxiety that results from awareness of death. There is considerable empirical support for the basic tenets of terror management theory (reviews by Greenberg, Solomon, & Arndt, 2008; Vail et al., 2010). Threats to self-esteem or one's worldview increase death thought accessibility, and enhancing self-esteem or faith in one's worldview decreases death thought accessibility and anxiety (e.g., Harmon-Jones et al., 1997; for a comprehensive review of

death thought accessibility research see Hayes, Schimel, Arndt, & Faucher, 2010). Reminders of death (increases in morality salience) increase confidence in belief in an afterlife (Osarchuk & Tatz, 1973; Schoenrade, 1989), and faith in supernatural agency (Norenzayan & Hansen, 2006). The effects of mortality salience on self-esteem and worldview defense are eliminated by presentation of ostensible scientific evidence for an afterlife (Dechesne et al., 2003). Mortality salience increases anxiety about using a religious symbol in a disrespectful way (Greenberg et al., 1995). Challenges to religious beliefs increase death anxiety but not other types of negative thoughts among religiously devout persons (Friedman & Rholes, 2007; Schimel, Hayes, Williams, & Jahrig, 2007). Death thought accessibility increases following exposure to creaturely aspects of human existence (Arndt, Cook, Goldenberg, & Cox., 2007; Cox, Goldenberg, J. L., Pyszczynski, T., & Weise, 2007). Some proponents of terror management theory acknowledge that religion serves other psychological functions, including providing understanding of the world, a sense of control, and enhanced social solidarity (e.g., Vail et al., 2010), but suggest that belief in an afterlife controlled by an all-powerful deity facilitates these other functions (Diamond, 1997). Reminders of death increase the pursuit of structure, meaning, certainty, and social support (review by Greenberg et al., 2008). Religious conflicts may be partly rooted in protection from death anxiety, as reminders of death lead people to prefer members of their own religious group more strongly, to more harshly evaluate adherents of other religions, and to advocate violence toward outgroup members (e.g., Greenberg et al., 1990; Pyszczynski, Greenberg, J., Solomon, S., & Maxfield, 2006), and the death of out-group members alleviates death anxiety and the defensive responses it generates (Hayes, Schimel, & Williams, 2008). The relationship between death anxiety and religious belief may also extend to secular cultural worldviews, as threats to a person's secular worldview increase death thought accessibility (Schimel et al., 2007), increasing mortality salience increases discomfort about using secular symbols (e.g., a national flag) in a disrespectful manner (Greenberg et al., 1995) and increases militaristic attitudes toward out-groups (Routledge & Arndt, 2008). Many studies have reported the predicted inverse relationship between death anxiety and religiosity or traditional religious beliefs in samples of American and European young adults (e.g., Aday, 1984–1985; Alvarado, Templer, Bresler, & Thomas-Dobson, 1995; Florian & Kravetz, 1983; Harding, Flannelly, Weaver, & Costa, 2005; Richardson, Berman, & Piwowski, 1983; Spilka, Stout, Minton, & Sizemore, 1977; Templer, 1970; Young & Daniels, 1980), Indians (Parsuram & Gandhi, 1994), Iranians (Roshdieh, Templer, Cannon, & Canfield, 1998–1999), Pakistani Muslims (Suhail & Akram, 2002), and Arabic students (Al-Sabwah & Abdel-Khalek, 2006). Low death anxiety is associated with greater strength of belief conviction (Alvarado et al., 1995), and individuals with more pronounced religious convictions are significantly more likely than average believers to

report low or no fear of death (Koenig, 1988; Kraft, Litwin, & Barber, 1987; Templer, 1970).

#### RELIGIOSITY AND MENTAL HEALTH

People committed to religious doctrines tend to live longer and are better adjusted psychologically (e.g., Pargament, 1997; Smith, McCullough, & Poll, 2003). There is considerable evidence that religion and religiosity are associated with a wide range of physical and mental health benefits (e.g., Koenig, 1998; Moreira-Almeida, Neto & Koenig, 2006), although this relationship depends on the nature of the spiritual/religious experience involved (Koenig, 2010). A significant inverse relationship was found between belief in life after death and severity of psychiatric symptoms in anxiety, depression, obsession-compulsion, paranoia, phobia, and somatization (Flannelly et al., 2006). It has yet to be demonstrated that these beneficial effects of religious belief are mediated by reduced death anxiety. Several studies have reported that subjects with fewer somatic symptoms had lower death anxiety (Abdel-Khalek & Lester, 2009b; Abdel-Khalek & El-Nayal, 2006; Lonetto & Templer, 1986). Others have found that greater religiosity is associated with more severe psychopathology. Extant research on the relationship between religiosity and mental health suffers from the near universal lack of atheist control samples (Hwang, Hammer, & Cragun, 2009), and although many studies include samples of individuals classified as “low spirituality” or as having no religious preference, these groups are heterogeneous and contain only a fraction of individuals who would be considered truly secular or atheist.

#### INCONSISTENT FINDINGS

Research concerning the association between religiosity and death anxiety is inconclusive (review by Fortner & Neimeyer, 1999). Some studies have found that there was no significant association between death anxiety and religiosity in young adults (Abdel-Khalek & Lester, 2009a; Donahue, 1985; Ens & Bond, 2007; Lester, 1967; Lester & Abdel-Khalek, 2008; Long & Elghanemi, 1987; Martin & Wrightsman, 1965; Templer & Dotson, 1970; Thorson, Powell, Abdel-Khalek, & Beshai, 1997). There was no significant association between religiosity and existential anxiety, of which death anxiety is one component (Westman, 1992). Others have found that high religiosity was associated with greater death anxiety (Beg & Zilli, 1982; Feifel & Branscomb, 1973; Swanson & Byrd, 1998; Templer, Cappelletty, & Kauffman, 1990–1991). Yet others have reported a curvilinear relationship with moderate religiosity associated with higher levels of death anxiety than low or high religiosity (Downey, 1984; McMordie, 1981; Neimeyer & Van Brunt, 1995). The inconsistency of findings concerning the relationship

between religiosity and death anxiety may be due to the treatment of both religiosity (e.g., Cicirelli, 2002; Williams, 1994) and death anxiety (e.g., Aday, 1984–1985) as unidimensional constructs (Vail et al., 2010; Wittkowski, 1988).

#### INTRINSIC VERSUS EXTRINSIC RELIGIOSITY

The Religious Orientation Scale (Allport & Ross, 1967) distinguishes between two religious orientations: extrinsic religiousness, engaging in religious activities as a means to ends such as desired social or emotional consequences, and intrinsic religiousness, which refers to engagement in religious activities as ends in themselves (using vs. living one's religion). Death anxiety was unrelated to intrinsic religiosity and was positively and significantly correlated with extrinsic religiousness across several studies (e.g., Cole, 1978–1979; Leming, 1979–1980; review by Donahue, 1985). Subsequent studies have found that extrinsic religiosity is positively related to death anxiety (Cohen et al., 2005; Maltby & Day, 2000; Swanson & Byrd, 1998). Swanson and Byrd (1998) found that death anxiety was significantly and positively correlated with extrinsic religiousness, fear of punishment, and separation-individuation conflict, all of which predicted death anxiety individually. These findings suggest that, far from protecting against death anxiety, extrinsic religiousness and belief in an afterlife in which one will be punished for transgressions exacerbate death anxiety. Several studies have found that subjects who were higher in intrinsic religiosity had significantly lower death anxiety (Clement, 1998; Hui & Feng, 2009; Roshdih et al., 1998–1999; Suhail & Akram, 2002). Mortality salience increased secular worldview defense for extrinsically religious subjects but not for those high in intrinsic religiousness who were allowed to affirm their religious beliefs (Jonas & Fischer, 2006), suggesting that intrinsic religiosity is more effective than extrinsic religiosity for terror management. Others have found that death anxiety was not associated with intrinsic religiosity (Abdel-Khalek & Lester, 2009a; Thorson & Powell, 1989, 1990).

#### MULTIDIMENSIONAL NATURE OF DEATH ANXIETY

Death anxiety is multifaceted. Deeken (2009) described nine types of fears and anxieties about death: fear of pain, fear of loneliness; fear of unpleasant experiences, fear of becoming a burden to the family and to society, anxiety towards the unknown, fear of death resulting from fear of life, fear of death as a feeling that one's life task is still incomplete, fear of death as fear of personal extinction, and fear of death as fear of judgment and punishment after death. Lester (1994) distinguished between fears of the death state and fears of the dying process, and between fears of one's own death and fears of the death of loved ones, suggesting four types of death anxiety: personal death anxiety, personal dying anxiety, anxiety

concerning the death of someone close, and anxiety concerning the dying of someone close. Hui and Feng (2009) found that all four types of death anxiety were significantly intercorrelated, and all four were inversely related to intrinsic religiosity. The association between intrinsic religiosity and anxiety toward one's own death were partially mediated by a sense of purpose in life afforded by intrinsic religiosity. Lithuanian participants who expressed higher levels of intrinsic religiosity also expressed less fear of the unknown, but no other independent, linear relationships existed among the various dimensions of religiosity and death anxiety (Roff, Butkeviciene, & Klemmack, 2002). Others have found positive correlations between religiosity and some components of death anxiety but not others (Hoelter & Eppley, 1979; Wittkowski, 1988), or with only the most fearful element of death (Diggory & Rothman, 1961).

#### TAOIST ORIENTATION

Scores on a measure of having a Taoist orientation were associated with less death anxiety and existential anxiety (Lester & Abdel-Khalek, 2007b; Park, Zeyrek, & Lester, 2007). Subjective life expectancy was associated with a Taoist orientation and existential anxiety in American students and with death anxiety in the Kuwaiti students (Lester & Abdel-Khalek, 2007a). Others have reported that there was no significant association between Taoist orientation and death anxiety in Southeast Asian students (McCollaun, Zeyrek, & Lester, 2006) or Turkish students (Zeyrek & Lester, 2009). Lower death anxiety was associated with a Taoist orientation in American but not Turkish students (Zeyrek, Lester, & Alpan, 2006).

#### PARANORMAL BELIEFS AND RELIGIOSITY

Traditional religious beliefs, such as the notion of a "heaven" and survival of bodily death, are associated with a belief in the paranormal (e.g., Thalbourne, 1995b). Paranormal beliefs may function as surrogate religious beliefs (Becker, 1973; Persinger & Makarec, 1990). Some studies suggest that there is an inverse relationship between traditional religious beliefs and paranormal beliefs, suggesting that paranormal belief may function as a substitute for traditional religious beliefs. Strong belief in and commitment to Christian doctrines (particularly Protestant) was found to be associated with less likelihood of endorsing beliefs in reincarnation, contact with the dead, UFOs, telepathy, prophecy, psychokinesis, or healing, compared to nonbelievers (Hillstrom & Strachan, 2000). Most studies have found negative relationships between paranormal beliefs and traditional Christian beliefs, with small to moderate effect sizes (Beck & Miller, 2001; Duncan, Donnelly, & Nicholson, 1992; Ellis, 1988; Emmons & Sobal, 1981; Persinger & Makarec, 1990; Skirda & Persinger, 1993; Tobacyk & Milford, 1983; Tobacyk & Wilkinson, 1990). The inverse relationship between paranormal

belief and traditional religious belief may be due to explicit rejection of at least some paranormal beliefs (e.g., precognition and superstition) by the Catholic church and many Protestant denominations (Goode, 2000; Sparks, 2001). Persinger and Makarec (1990) found that subjects who did not attend church endorsed more exotic beliefs (e.g., telepathy, reincarnation, UFOs) than traditional religious beliefs, whereas those who attend church endorse more religious than exotic beliefs, suggesting that exotic beliefs may substitute for religious beliefs. Immortality and a source of omnipotence, major themes of religious beliefs, are conceptually similar to reincarnation and superior alien intelligence. Religious subjects were skeptical of paranormal phenomena but were accepting of supernatural phenomena, and while increased reports of negative affect over the preceding year appeared to attenuate belief in the supernatural for religious subjects, for nonreligious subjects, increased belief in both the supernatural and paranormal was predicted by high negative affect (Beck & Miller, 2001).

In contrast to the inverse relationship between paranormal and traditional religious beliefs, some investigators have suggested that people who believe in angels and wondrous healings may also be more likely to believe in other paranormal phenomena such as ghosts, voodoo, and witchcraft (Irwin, 1993; Rice, 2003). Paranormal beliefs and religious beliefs share a common worldview involving belief in phenomena that cannot be explained by classical science (Zusne & Jones, 1989). A few studies have found positive relationships between traditional Christian beliefs and beliefs in the paranormal (Buhrmann & Zaugg, 1983; Goode, 2000; Haraldsson, 1981; Irwin, 1985; Rudski, 2003; Schumaker, 1987; Thalbourne, 1995a, 2003). Several studies have reported that paranormal belief has low but significant positive correlations with measures of religiosity, particularly intrinsic religiosity (Goode, 2000; Haraldsson, 1981; Hergovich, Schott, & Arendsay, 2005; Irwin, 1985; Thalbourne, 2003; Thalbourne & Hensley, 2001), although the nature of this relationship depends on the particular measurements employed (Thalbourne & O'Brien, 1999). In males, but not females, there was a significant association between preoccupation with religious beliefs and a measure of magical ideation (Diduca & Joseph, 1997). Functionally, both religious and exotic beliefs may serve to reduce death anxiety (Persinger, 1985). Thalbourne (2003) found positive correlations between paranormal belief and religiosity in seven out of nine studies, with correlation coefficients ranging from  $r = .20$  to  $r = .55$ . For example, Thalbourne and Houtkooper (2002) found a correlation of  $r = .55$  between the Australian Sheep-Goat Scale and religiosity in a German sample. Thalbourne and O'Brien (1999) found an almost significant negative correlation ( $r = -.17$ ) between the Australian Sheep-Goat Scale (Thalbourne & Delin, 1993) and the Religion-Puritanism Scale from the Wilson-Patterson Attitude Scale (Wilson, 1975), a correlation close to zero with the subscale traditional religiosity ( $r = .07$ ) from the Paranormal Belief Scale (PBS,

Tobacyk & Milford, 1983), and a significant and positive coefficient with the religiosity scale of Haraldsson (derived from Haraldsson, 1981), indicating that the relationship between paranormal belief and religiosity depends on the measure of religiosity used. Hergovich, Schott, and Arendsay (2005) found low but significant correlations between paranormal belief and religiosity. Intrinsic religiosity and self-reported religiosity were much more strongly related to paranormal belief than was extrinsic religiosity. For subjects without religious affiliation, the relationship between religiosity and paranormal belief was higher than for Catholics and Protestants, suggesting that paranormal belief can be, but is not necessarily, a substitute for traditional religion.

Thus, while paranormal beliefs and experiences may serve some of the same psychological needs as traditional religious beliefs, paranormal beliefs (e.g., witchcraft and UFOs) are differentiated from traditional religious beliefs with respect to the extent to which the belief conforms to the mainstream societal zeitgeist. Paranormal beliefs are more likely to be espoused by individuals belonging to groups that are politically or economically disenfranchised, marginalized, or oppressed (e.g., the young, females, minorities) than by those in the mainstream more likely to hold positions of power (e.g., older white males) (e.g., Fox, 1992; Greeley, 1975; Heintz & Baruss, 2001; MacDonald, 1992, 1995). These same cultural subgroups are also more likely to be characterized by a greater degree of right hemisphericity according to TenHouten's "neurosociological theory" (Kaplan & TenHouten, 1973; TenHouten, 1985). Pizzagalli, Lehmann, and Brugger (2001) found that believers in the paranormal showed stronger indirect semantic priming effects than disbelievers after left (but not right) visual field stimulation, indicating faster appreciation of distant semantic relations specifically by the right hemisphere. These findings suggest that disinhibition of right hemispheric semantic networks may underlie the formation of paranormal belief. Pizzagalli et al. (2000) suggested that "both schizotypal and paranormal ideation are based on an overreliance on the right hemisphere, whose coarse rather than focused semantic processing may favor the emergence of 'loose' and 'uncommon' associations." They reported that, compared to subjects who did not believe in the paranormal, believers showed more right-located sources of the beta2 frequency band (18.5–21 Hz) in the EEG.

Lange and Houran (1997) found a significant negative correlation between death anxiety, measured by Lester's (1991) Attitude Toward Death Scale, and paranormal beliefs measured by the Anomalous Experiences Inventory (Gallagher, Kumar, & Pekala, 1994), but this relationship obtained only at higher levels of conviction of belief in the paranormal. Thorson (1991) found that religiosity and death anxiety had a significant, negative correlation for subjects high in religiosity and those low in death anxiety, but there was no relationship for either those high in death anxiety or those low in religiosity. Houran (1997) reported that scores on the Death Anxiety Scale

were not significantly related to either Belief in the Paranormal or Paranormal Experiences. Thus evidence for an association between lowered death anxiety and beliefs in God, spiritual, and paranormal phenomena is somewhat inconsistent, and perhaps limited to particular facets of death anxiety, particular aspects of religiosity, and restricted ranges of belief conviction.

PARANORMAL BELIEFS AND REPRODUCTIVE CAPACITY:  
SEARCH FOR MEDIATING FACTORS

Critical assumptions for an evolutionary account of belief in religion, spirit, and the paranormal involve the influence of beliefs on reproductive success or fecundity, and mortality during the reproductive age span. Evolution involves the selection of certain traits and the genes associated with them, as a consequence of adaptive advantages conferred by the traits that enhance health, survival, and reproductive success (fertility or fecundity), leading to an increase over time of the frequency of those genes in the gene pool. Death anxiety should increase mortality during reproductive years, and believers should have lower mortality during reproductive years than atheists. Death anxiety should reduce fecundity, and believers should have greater fecundity than atheists. For example, Vail et al. (2010) suggested that the terror management function of religion mitigates existential distress, which is “beneficial for staying alive and reproducing,” although no evidence or arguments to support this key supposition were presented. This author is unaware of any empirical studies directly supporting an inverse association between death anxiety and fecundity. However, indirect evidence does suggest that belief in paranormal or spiritual phenomena (magical ideation) may be associated with greater fecundity. A positive association between belief in the spiritual or paranormal and reproductive success may be due to mediating factors other than reduced death anxiety, including enhanced translminality and closely associated traits such as hypnotizability, schizotypy, hypomania, and creativity. Other evolutionary and functional accounts of religion have emphasized the adaptive value of various aspects of religion, including fostering implicit self-regulation (Koole, McCullough, Kuhl, & Roelofsma, 2010), promoting socially desirable responding or “self-enhancement” (Sekkides & Gebauer, 2010), or binding individuals into a moral community (Graham & Haidt, 2010), promoting social identity (Ysseldyk, Matheson, & Anishman, 2010), compensation for feelings of lower personal control (Kay, Gaucher, McGregor, & Nash, 2010), reduction of feelings of self-uncertainty (Hogg, Adelman, & Blagg, 2010), explaining human suffering (Gray & Wegner, 2010), and enhancing coping with bereavement through continued attachment (Benore & Park, 2004; Granqvist & Hagekull, 2000; Granqvist, Mikulincer, & Shaver, 2010). Others consider religion to be the by-product of the evolution of ordinary cognitive capacities rather than an evolutionary adaptation in itself (Atran & Norenzayan, 2004).

## RITUAL HEALING THEORY

McClenon (1994, 1997, 2000a, 2000b) has argued for a “ritual healing theory” of religion which posits that anomalous experiences have a physiological basis, are universal, and give rise to beliefs that have shaped folk religions throughout the world and across history and prehistory. The practice of shamanic ritual over millennia of human evolution resulted in an increased frequency of such anomalous experiences and associated beliefs. Shamanic practices involving chanting, singing, drumming, dancing, and other repetitive behaviors produce altered states of consciousness, that is, trance states (Neher, 1962; Schumaker, 1995). Faith healing and institutionalized altered states of consciousness are universal (Bourguignon, 1973; Eliade, 1974; Murdock, 1945). Because shamanic practices coupling altered states of consciousness (ASCs) with suggestion were effective with some individuals, such rituals selected for genotypes associated with positive responses to the ritual healing practices. Genes underlying hypnotizability, suggestibility, and placebo effects allowed some individuals to benefit more from shamanic healing rituals, enhancing their health, survival, and fertility, thus becoming more prevalent over time. The combination of anomalous experiences facilitated by ASCs and hypnotic suggestibility allowed the development and acceptance of ideologies supporting shamanic and religious ritual (Schumaker, 1990, 1995). Shamanic practices and associated beliefs may represent the universal proto-religion from which more complex and elaborated religious traditions evolved (Winkelman, 1986, 1992). Elements of shamanic healing and mythology were “present in all regions of the world at some time in their hunting and gathering past” (Winkelman, 1992, p. 50). Religious altered states of consciousness continue to provide benefits, as health outcomes are highly correlated with spiritual experience (Kass et al., 1991). Meditation, a widespread and ancient religious practice, has a wide range of health benefits, and the therapeutic benefits appear to be greatest for highly hypnotizable individuals (Heide, Waddington, & Lundy, 1980). Meditative prayer (Poloma, 1993) and mystical experience (Greeley, 1975) are predictive of existential well-being. McClenon (1997) reviewed evidence supporting five testable features of the ritual healing theory: (1) shamanic/hypnotic rituals increase survival and fertility; (2) the efficacy of shamanic ritual is correlated with hypnotizability; (3) hypnotizability has a genetic component; (4) shamanic rituals were practiced for many tens of thousands of years, sufficient time to have a meaningful impact on gene frequencies; and (5) hypnotizability affects the frequency and characteristics of anomalous, paranormal, and religious experiences. The suggested connection to survival and fertility is a critical strength for an evolutionary theory. In the following review, an extension of McClenon’s theory will be suggested, replacing hypnotizability as the mediating psychological factor with the superordinate trait dimension of transliminality.

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#### ABSTRACTS IN OTHER LANGUAGES

##### German

##### DIE EVOLUTION DES GLAUBENS AN GOTT, GEIST UND DAS PARANORMALE, I: THEORIEN DER ANGSTBEWÄLTIGUNG UND RITUELLEN HEILUNG

ZUSAMMENFASSUNG: Es wurde die Vermutung geäußert, der beinahe universell verbreitete Glaube an Gott, Geist und paranormale Phänomene hätte sich entwickelt, weil ein solcher Glaube die Angst vor dem Tod verringern würde. Die Theorie von der Religion als Angstbewältigung wird dargestellt. Das Beweismaterial für den Zusammenhang zwischen verringerter Todesangst und religiös/paranormalen Einstellungen ist beträchtlich, wenn auch vielleicht etwas inkonsistent und auf vereinzelte Facetten der Todesangst, vereinzelte Aspekte der Religiosität und begrenzte Bereiche der Glaubensüberzeugung beschränkt. Es gibt keinen Hinweis, der die Vorhersage unterstützen würde, daß Todesangst mit verringerter Fruchtbarkeit einhergeht. Paranormale Einstellungen sind mit religiösen Einstellungen assoziiert, und der Zusammenhang zwischen paranormalen Einstellungen und Todesangst ist in ähnlicher Weise inkonsistent. Die Theorie der rituellen Heilung nimmt an, daß anomale Erfahrungen, die im Kontext veränderter Bewußtseinszustände während schamanistischer Rituale auftreten, die Erfahrungsquelle für den Glauben an Gott, Geist und das

Paranormale darstellen. Personen mit hoher Hypnotisierbarkeit sind mehr für die positiven Heileffekte schamanistischer Heilungsrituale empfänglich, was die Selektion für dieses vererbbares Merkmal begünstigt und die Evolution religiöser und paranormaler Erfahrungen und Einstellungen erleichtert.

### *French*

#### L'EVOLUTION DES CROYANCES EN DIEU, L'ESPRIT, ET LE PARANORMAL, I: THEORIES DE LA GESTION DE LA TERREUR ET DE LA GUÉRISON RITUELLE

RESUME : Il a été suggéré que presque toutes les croyances universelles en Dieu, l'esprit, et les phénomènes paranormaux ont évolué car de telles croyances apaisent l'angoisse de la mort. La théorie de religion comme gestion de la terreur est analysée. Les preuves pour une association entre une angoisse de la mort diminuée et des croyances religieuses / paranormales sont vastes, bien que quelque peu inconsistantes et limitées à des facettes particulières de l'angoisse de la mort, à des aspects particuliers de la religiosité, et à des zones restreintes de la conviction croyante. Il n'y a pas de preuves supportant la prédiction que l'angoisse de la mort devrait être associée avec une fécondité diminuée. Les croyances paranormales sont associées avec des croyances religieuses, et la relation entre les croyances paranormales et l'angoisse pour la mort est, de la même manière, inconsistante. La théorie de la guérison rituelle propose que les expériences anormales se produisant dans le contexte des états modifiés de conscience durant les rituels chamaniques étaient les sources expérientielles des théories de Dieu, de l'esprit et du paranormal. Les individus ayant une hypnotisabilité élevée étaient plus susceptibles de bénéficier des effets curatifs des rituels de guérison chamanique, ce qui résulta dans la sélection de ce trait héréditaire, facilitant l'évolution des expériences et croyances religieuses et paranormales.

### *Spanish*

#### LA EVOLUCIÓN DE CREENCIAS EN DIOS, EL ESPÍRITU, Y LO PARANORMAL, I: MANEJO DE TERROR Y TEORÍAS RITUALES DE CURACIÓN

RESUMEN: Se ha sugerido que las casi universales creencias en Dios, el espíritu, y fenómenos paranormales evolucionaron porque tales creencias calman la ansiedad a la muerte. La teoría de manejo del terror de la religión es discutida. Existe una extensa evidencia de una asociación entre baja ansiedad a la muerte y creencias religioso/paranormales, aunque quizás un poco inconsistente y limitada a aspectos específicos de la ansiedad a la muerte, aspectos particulares de religiosidad, y un rango limitado de convicción de creencias. No hay evidencia que apoye que la ansiedad a la muerte debe estar asociada con baja fecundidad. Las creencias paranormales están sociadas con creencias religiosas, y la relación

entre creencias paranormales y la ansiedad a la muerte también es inconsistente. La teoría ritual de la curación propone que las experiencias anómalas ocurren en el contexto de estados de conciencia alterada durante rituales chamánicos que son el origen experiencial de creencias en Dios, el espíritu y lo paranormal. Individuos que son altos en susceptibilidad hipnótica son más susceptibles a los beneficios de salud de los rituales chamánicos, lo cual resulta en la selección de este rasgo heredable, y facilita la evolución de experiencias y creencias religiosas y paranormales.