# 9

# Euphoria Versus Dysphoria
## *Differential Cognitive Roles in Religion?*

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## INTRODUCTION

Religious believers experience a range of emotions in their religious lives (Kim-Prieto & Diener, 2009; Roberts, 2007; Whitehouse, 2004). Some religious practices create intense feelings of joy and love (Malinar & Basu, 2007; Martin & Runzo, 2007). Other religious practices cause fear and pain (Alcorta & Sosis, 2005; Jackson, 2007; Whitehouse, 2007). Why does religion inspire such a diversity of affect?

In this chapter, we propose a novel hypothesis. Perhaps the extremes of religious affect—euphoria and dysphoria—have a function. What do we mean by function? Niko Tinbergen, the eminent ethologist, pointed out that there are four types of questions that can be asked about any biological phenomenon (Tinbergen, 1963). These are questions about (1) *proximate mechanisms* (the cognitive, physiological, or anatomical mechanisms that support a trait); (2) *phylogenesis* (the historical sequence by which a trait evolved from an ancestral state); (3) *ontogenesis* (how it develops in childhood); and (4) *function* (how the trait allows an organism to maximize its fitness or other short-term goals).

Religion has been studied in all four ways (e.g., evolution: Bulbulia, 2007; development: Oser et al., 2006; psychological mechanisms: Argyle & Beit-Hallahmi, 1997; history: Eliade, 1985). In this chapter, we cite studies of *proximate* mechanism to make inferences about the *functions* of emotion in religion. Traditionally, the psychology of religion has focused on proximate mechanisms, particularly on the effect of religion on various aspects of human psychology (Emmons &

Paloutzian, 2003; Strunk, 1971). With regard to emotion, many researchers have approached this question from a therapeutic angle, investigating the (arguable) claim that religious beliefs are beneficial: They relieve anxiety and promote well-being (e.g., Cohen & Hall, 2009; Kim-Prieto & Diener, 2009; Oser et al., 2006, pp. 982–986; Ross, 1990; Shreve-Neiger & Edelstein, 2004; Urry & Poey, 2008). These studies typically focused on proximate emotion (in other words, how the person is experiencing feelings about which they are fully aware). However, these studies can also be construed from a *functional* perspective. For example, we can speculate that *if* religious belief generates happiness among believers, then perhaps religious beliefs have a function to make people happy (regardless of whether they know it).

In this chapter, we focus on euphoria and dysphoria. *Euphoria* refers to positive emotions, such as joy and elation. *Dysphoria* refers to negative emotion, such as anxiety, fear, and unhappiness. Figure 9.1 illustrates the "circumplex" model of affect (Russell, 1980; Russell et al., 1989). In this model, emotional intensity can be measured in two dimensions on a Cartesian plane. The $x$-axis (horizontal) is a scale of valence (pleasure-displeasure), and the $y$-axis (vertical) is a scale of arousal. Horizontally, the leftward areas represent displeasure; the rightward areas represent pleasure. Vertically, the uppermost areas represent high arousal, and the lowermost areas represent low arousal. In this chapter, we ignore the bottom two quadrants ("sleepiness," "depression," etc.). Instead, we focus on the upper left (displeasure + arousal) and the upper right (pleasure + arousal). These represent dysphoria and euphoria, respectively. Obviously, this is only part of the picture. Religions provoke the full range of human affect (e.g., see Alcorta & Sosis, 2005; Kim-Prieto & Diener, 2009; Martin & Runzo, 2007; Miller, 2007; Rubin, 2007), but "high-arousal" situations are particularly interesting because they conspicuously cause differences in cognition and memory.

We review the empirical evidence for these differential affects. Then, we propose that dysphoria is best suited for learning procedural tasks, whereas euphoria

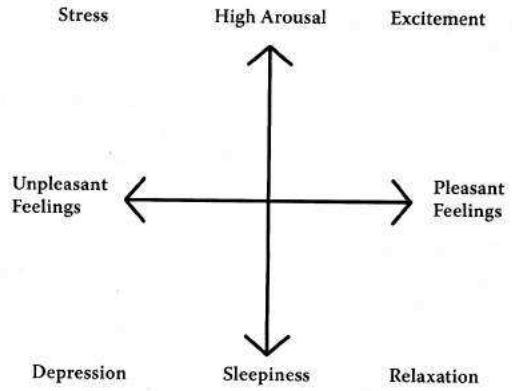


Figure 9.1 Circumplex model of affect.



is better suited for social bonding and creative thinking. First, however, consider some examples of euphoria and dysphoria as they occur in religion.

## HIGH AROUSAL AND RELIGIOUS EXPERIENCE

What makes "religious" experience distinct from other types of experience? Stark (1965) defined *religious experience* as those experiences in which the participants perceive themselves to be directly encountering a supernatural realm. There is general agreement about this definition among religious scholars (Wiebe, 2006). Davis (1989) partitioned religious experience into six categories (for a critique, see Wiebe, 2006; cf. Stark, 1965). They are *interpretive* (using a religious framework to interpret actual events); *quasi-sensory* (actual sensory experiences are interpreted as sources of religious information); *revelatory* (sudden changes in religious conviction); *regenerative* (restoration of faith, health, or well-being); *numinous* (awareness of personal limitation compared to eternal supernatural, and desire to connect with supernatural); and *mystical* (perceived comprehension with supernatural "reality," and a feeling of connection with the supernatural realm). In our analysis, we focus on the last two categories—the numinous and mystical—and how they interact with high arousal.

Euphoric arousal in religion occurs in both individual and group situations. Cases of individual arousal have often been cited in the context of *shamanic ecstasy* (Eliade, 1964): Individuals (with a special shamanic status) work themselves into a "trance" state (possibly enhanced by drugs) that involves a perceived journey into the supernatural world, usually for the purposes of truth-seeking, finding inspiration, or physically carrying out a particular task (e.g., healing, exorcism, etc; also see Malinar & Basu, 2007). This kind of shamanism, occurring with multiple variations around the world (see Eliade, 1964), involves interpretive, quasi-sensory, numinous, and mystical forms of experience (cf. Grim, 2006). However, these experiences, as described by Eliade (1964) and others, are not consistently euphoric. They involve a variety of rituals, goals, techniques, and experiences, some of which may be physically demanding (dancing to the point of exhaustion) or have unpleasant side effects (vomiting or, in the case of !Kung San trance dancing, bleeding from the nose). There are many other forms of individual ecstasy (e.g., meditation, see Malinar & Basu, 2007), but the more powerfully euphoric events are those that involve a large group.

One classic example of this is the trance dances of the !Kung San of Namibia and Botswana (Katz, 1982; Lewis-Williams, 2002). These dances (which are often explicitly used to repair community cohesion after relationships have become fractious) entail the men of the community dancing rhythmically in a circle, usually to the beat of clapping and singing by the women, until they collapse with exhaustion and enter a trance state. During the trance state, they experience travels in the spirit world, where they encounter various real and mythical animals or (less commonly) ancestors. On a more familiar everyday level, euphoria and ecstasy are associated with many charismatic sects within Christianity. Well-known examples include the Pentecostal churches (which typically involve a great deal of group singing associated with vigorous rhythmic upper-body movements and hand-clapping) as well as

such phenomena as the so-called Toronto blessing. More generally, mystical sects appear in all the main world religions. Among the Abrahamic religions, the various Gnostic sects (including the medieval Cathars) in Christianity, the Sufis in Islam, and the Kabbalah tradition in Judaism are all based on direct experience of God, often mediated through trance-like states. A specific example is provided by the Sufi Mevlevi order in Islam (colloquially known as the "whirling dervishes"), who use a twirling dance to induce a state of trance in adepts.

More extreme examples involve the use of flagellation and other forms of inflicting pain as a means to achieve ecstasy. Perhaps the best known of these are the medieval Christian flagellants, who toured Europe during the period of the Black Death (1347–1348), whipping themselves in public penance for the sins that they believed were responsible for the infliction of this terrible disease. In the Russian Orthodox tradition, the Khlysty ("flagellators") and the Skoptzy ("mutilators") sects aimed to achieve a state of religious ecstasy through self-imposed physical pain. The Khlysty movement had a particularly long history; having first emerged as early as the 1360s, they were still in existence as a semiheretical sect within the Orthodox Church at the end of the 19th century. In Islam, the annual Shia rituals in memory of the martyrdom of the Imam Husain and his family at Kerbala in AD 680 commonly involve individuals whipping or hitting themselves in massed processions.

In contrast, among many of the Eastern world religions (notably Buddhism and the yogic elements in Hinduism), meditation is used to achieve essentially the same ends. Focused attention, relaxation, controlled breathing exercises, and physically taxing positions (or in some forms of yoga, extreme exertion) allow the adept to slip into a trance state. Many Christian saints (e.g., St. Theresa of Avila, St. Francis of Assisi) were well known for their often seemingly spontaneous ecstatic trances. All these are associated to one degree or another with a sense of euphoria, even when pain is inflicted.

Consider now the opposite of euphoria. *Dysphoria* occurs in at least two major contexts. The first concerns ritual ordeals; individuals are subjected to terrifying and physically injurious rituals, often in the context of initiation ceremonies (Eliade, 1964). Whitehouse (2007, p. 260) noted that traumatic rituals occur in every world religion. Some examples that Whitehouse (2007) mentioned include the rituals of the penitents in New Mexico (and similar practices in Mexico and the Philippines); the Sufi performances of mortifications; Opus Dei flagellations; and monastic initiations in Buddhism (especially Zen). Whitehouse (2007) also noted many examples from local cult practices in small-scale traditional societies, which include grisly practices such as the practice of ritual circumcision (mutilation of genitals) among some Aborigine groups. Among the Aranda (central Australia), these ritual practices can be particularly severe, including "sadistic episodes of head-biting, evulsions of their fingernails, showering with red-hot coals, and other agonizing procedures" (Whitehouse, 2007, p. 260). Similar gruesome practices have been found in cult rituals all over the world (Whitehouse, 2007). Initiation ceremonies like these always occur in a particular context (Whitehouse, 2007), where the real-life activities are symbolic of an accompanying supernatural narrative (see numerous examples in Eliade, 1964). The terror described by Whitehouse (2007) is that which comes from firsthand exposure to painful situations.



There is also a second kind of terror in religious life that comes *indirectly*: stories about hell. For example, the Christian version of hell is described as a place of eternal torture (where death never comes). Hell is normally presented as a supernatural place where sinners are justly punished for misdeeds. These stories grew out of ancient writings about a hellish Apocalypse. Kyrtatas (2009) studied an early (proto-Christian) version of hell that comes from the *Oracula Sybillina* (written ca. AD 200–500). As Kyrtatas noted (2009, p. 290), this document tells the story of how a great wall of fire will consume every place at the end of time, wherein the souls of men will burn in the fire and gnash their teeth. Then, they will be resurrected with new souls and new bodies, and they will "pass through the burning river and unquenchable flame" (p. 290). Here, the righteous and good will be saved and the sinners severely punished with flaming whips and unbearable pain and thirst. Furthermore, they will be incapable of dying, forced to suffer the unbearable pain for all of eternity (p. 290).

Similarly gruesome punishments occur in the version of hell in other religions (e.g., see Thomasson, 2009, about Islamic *al-nār*). Followers of these religions learn about hell largely through testimony from their religious orators. For example, Whitehouse (1995) described this process in his ethnographic study of a small religion in Papua New Guinea (called the *Pomio Kivung*, a small modern group with a mix of local and Christian beliefs). Here, the "orators stir up a deep horror of the Devil" (p. 95) by telling of how the sinners are banished into the wilderness, where they will suffer hunger, thirst, loneliness, and fear. These orators speak loudly and with great emotion, speaking "in elaborate and grisly metaphors" (p. 95).

In contrast to ritual ordeals (which are often about surviving a journey), hell is about punishment and justice (Kvanvig, 2007). In some traditions, followers are subject to highly emotional demands to maintain behaviors that allow them to avoid hell (e.g., see Jackson, 2007, about the American hell house tradition). These exhortations are clearly designed to terrify the followers.

## THE ROLE OF EMOTION IN RELIGION

What is the relationship between emotion and religion? The question has a long intellectual history (Corrigan, 2007; Davis, 1989; Emmons & Paloutzian, 2003; Kim-Prieto & Diener, 2009; Malinar & Basu, 2007; Oviedo, 2009), but many issues have not yet been studied systematically (e.g., see discussions in Azari & Birnbacher, 2004; Emmons & Paloutzian, 2003). We now review three relevant areas of research for our "differential function" hypothesis. The first area concerns the relationship between emotion and the formation and maintenance of beliefs. The second area concerns the role of emotion in ritual acts. The third area concerns the "power of emotion to bind social collectives" (Corrigan, 2007, p. 7; also see Alcorta & Sosis, 2005; Hayden, 1987).

Consider first the research on beliefs. Azari and Birnbacher (2004) cited two distinct viewpoints about the nature of emotion—cognitive and noncognitive—and described how this influences your view on the relationship between emotion and religion (also see Davis, 1989; Taves, 2008). The *noncognitive* school (i.e., the "James-Lange" view) holds that emotional states are determined precognitively, and

that explicit cognition comes afterward (see citations therein). Azari and Birnbacher (2004) compared the different ways that the cognitive and noncognitive views might apply to religion. If we adopt the James-Lange (noncognitive) perspective, then we posit that religious emotions come *before* cognition (Azari & Birnbacher, 2004): They are separate from our thoughts and beliefs, emerging from an unknown source. In other words, the feeling comes first and feeds into our conscious reasoning about specific stimuli and situations. This kind of view is consistent with stories from some indigenous religious traditions in which "revealed knowledge" (spiritual in origin) is regarded as something that can be acquired from direct sensory experiences through "dreams, visions, and intuitions" (Grim, 2006, p. 99).

In contrast, the *cognitive* school (i.e., "attributional" view) holds that the content of an emotion is a cognitive decision in response to a physiological state (see references in Azari & Birnbacher, 2004). In this view, religious emotion comes *after* cognition (Azari & Birnbacher, 2004). Here, a specific stimulus is thought to elicit a causal belief (i.e., that something witnessed was caused by supernatural means), and this leads to religious emotion. Here, the emotion is a consequence of a specific situation. Many researchers appear to support a version of the cognitive view (e.g., Davis, 1989; Roberts, 2007; Taves, 2008). Azari and Birnbacher (2004, p. 902) stated that "emotion affords religious experience its distinctive content and quality." Pyysiäinen (2001, p. 71) wrote that a religious experience "can be understood quite simply as an emotional reaction to religious representations."

Boden and Berenbaum (2010), writing about emotions and belief *in general*, provided a more detailed account. Beliefs consist of two components: *content* (mental representation of a belief) and *conviction* (degree of intensity of that belief). They claimed that there is a bidirectional feedback loop between a person's emotion and the content and conviction of a person's beliefs. Moreover, these feedback loops comprise two separate paths. Belief conviction (how strongly you believe) is linked to emotional arousal (the vertical dimension in Figure 9.1), where belief content (the semantic content of what you believe) is linked to valence (the horizontal dimension in Figure 9.1). Their argument has three premises:

1. The individual has a dual need: to keep his or her emotions in a desirable state (mental distress is avoided) and to make sense of the world. Hence, people might change their beliefs "to regulate their emotions in valued directions" (p. 231).
2. Emotions influence beliefs. If there is increased emotional arousal, then people are motivated to explain to themselves why this arousal has occurred, and this motivation guides their interpretation of new stimuli. If there is a change of valence (pleasant/unpleasant), then this determines the actual content of a belief and which stimuli are considered.
3. Beliefs influence emotion. If there is change in belief conviction, then it links to emotional arousal. If there is a change in the content of a belief, then it links to emotional valence (pleasantness/unpleasantness).

In arguing for this dynamic feedback loop, Boden and Berenbaum (2010) provided a number of examples of empirical studies that supported their claims (see



TABLE 9.1 Six Categories of Ritual, Summarized From Bell (1997)

| Category of Ritual | Description |
|---|---|
| 1. Rites of passage | Ceremonies that mark a life transition (birth, coming of age, marriage, death, etc.) |
| 2. Calendrical rites | Ceremonies that mark the periodic renewal of a cycle (e.g., for Christmas, Easter, etc.) |
| 3. Rites of exchange and communion | Offers made to god(s) as a reciprocal exchange for services; Offers might be verbal, material, involve sacrifices, burning, etc. |
| 4. Rites of affliction | Actions to reduce the influence of spirits who might be causing misfortune for a person (e.g., protection, healing, exorcism, purification) |
| 5. Feasting, fasting, and festivals | Collective (simultaneous) performances by a large group of people, in accordance with religious traditions (e.g., dancing, feasting, ritual dramas, Ramadan, etc.) |
| 6. Political rites | Create/reinforce a social order that is congruent with a theological order (e.g., coronation of a divine king) |

references therein; for background on cognition and emotion, also see Levenson, 1999; Oser et al., 2006; Storbeck & Clore, 2007; Wyer et al., 1999). This feedback loop will surely function in religious experiences. Situations of high arousal will have an effect on the conviction in a person's religious beliefs (and a minimal level of conviction is required to acquire a belief in the first place). Negative or positive valence will determine how new religious beliefs are selected, existing beliefs are updated, or old beliefs are rejected.

The second relevant area of research concerns the relationship between emotion and religious ritual. Bell (1997) identified six broad categories of ritual. These are shown in Table 9.1. As shown, the definition of *ritual* is extraordinarily broad, denoting some form of action sequence in a variety of domains, both religious and nonreligious (Bell, 1997; Collins, 2009). Bell (1997) also provided six defining *characteristics* of ritual: (1) *formalism* (following rules of convention that preserve the existing social order); (2) *traditionalism* (keeping as closely as possible to traditional methods); (3) *invariance* (elements and ordering of the ritual must be adhered to closely, and innovation is not allowed); (4) *rule-governance* (actions are constrained by predetermined rules); (5) *sacral symbolism* (specific acts/displays that denote a supernatural significance); and (6) *performance* (a theatrical aspect). Many behaviors can be called *ritual-like* (because they have some of these characteristics), but a ritual can only be called *religious* if its actions are thought to have a supernatural significance (for discussion of the definition of religious ritual, see Alcorta & Sosis, 2005; Bell, 1997; Collins, 2009; Hinde, 2004; Klassen, 2007; Turner, 1966; Whitehouse, 2004; for numerous examples of rituals, see Eliade, 1964).

As illustrated, some rituals can impose extreme emotional arousal onto participants. However, this is not true for all rituals. Some rituals are utterly mundane and commonplace. Whitehouse's (2004) *Modes of Religiosity* hypothesis related the emotionality of rituals to the social dynamics of the religious groups (for a critique of this hypothesis, see Hinde, 2004, and Klassen, 2007). Evidently, religions usually occur in two characteristic forms. The *doctrinal* mode is found in the

larger institutions, with highly developed theological schemes, bureaucracy, holy writings, and social hierarchies. This category includes the major world religions. In doctrinal traditions, many kinds of rituals exist, but there tends to be heavy *routinization* (i.e., rituals become standardized and routinely encountered). These routinized rituals are "facilitating the storage of elaborate and conceptually complex religious teachings in semantic memory, but also activating implicit memory in the performance of most ritual procedures" (Whitehouse, 2004, pp. 65–66). Doctrinal religions have the characteristics that allow them to spread over wide populations. The most repetitive, commonly occurring rituals tend to be low in emotional arousal. Doctrinal religions *do* have emotional rituals, but these tend to be rarer. The *imagistic* mode of religiosity occurs in the smaller-scale religions, including "the most ancient forms of religious activity" (p. 70), but this form also occurs in modern-day splinter groups and cults (e.g., see Whitehouse, 1995). Here, the religious knowledge tends to be based on episodic memory rather than declarative memory. There is often a lack of holy books and writings, the social organization is minimal, and the groups are small and closely bonded. In imagistic traditions, the ritual procedures are more fluid and less standardized than in doctrinal religions and occur less often. Also—most importantly for our hypothesis—the rituals in imagistic religions tend to be highly emotional events. One of the main themes of *modes theory* is that religions (as individual traditions) tend to take two forms: *low-arousal doctrinal* or *high-arousal imagistic*. The other two possible forms (high-arousal doctrinal and low-arousal imagistic) tend to be unstable (i.e., they tend to change into a more stable form).

One of the predictions of modes theory is that there is an inverse relationship between level of arousal and frequency (Whitehouse, 2004). In other words, high-arousal rituals are far less frequent than low-arousal rituals. Atkinson and Whitehouse (2011) investigated this prediction (among others) by extracting information from the electronic Human Relations Area Files (eHRAF), a very large database of information gathered from ethnographic studies around the world (http://www.yale.edu/hraf/index.html). They analyzed 645 rituals from 74 cultures worldwide. Here, rituals were rated on a scale of 0 to 5 for emotional arousal (0 = no arousal; 5 = extreme arousal), and their frequency was recorded (every day, one day a month, every season, every year, less than every year, once per generation). As predicted, the analysis found a negative correlation between arousal and frequency: Less-arousing rituals happened more often, whereas more-arousing rituals happened less often. This was also true for duration. The longer the ritual, the more emotional it tended to be. When the frequency data were partitioned into *euphoria* and *dysphoria*, the results were interesting. The negative correlation held very strongly for the dysphoric arousal (i.e., the more dysphoric the ritual was and the less frequently it was performed). This was not true for euphoric arousal. Although the inverse correlation still held, the relationship was weaker because the data fit better a quadratic instead of linear pattern. Specifically, rituals that were rated middle-low in arousal (score 1–3) occurred more often than both the highly arousing rituals (score 4–5) and the minimally arousing rituals (score 0–1). Judging from these results, euphoria and dysphoria work in different ways.



The third relevant area of research concerns the relationship between social cohesion and emotion in religion. A century ago, Durkheim (1915) considered in some detail the role of ritual and religion in maintaining community cohesion in traditional societies. He was much struck by the rousing effect that mass religious rituals had in this context, a phenomenon he referred to as "effervescence." Durkheim's view was, in essence, that the rousing effects of dance and other coordinated activities in these contexts created a sense of euphoria that in turn played an important role in mediating community cohesion. Similar views were later developed by Turner (1966), who referred to it as *communitas*, in explicit allusion to the community-bonding processes involved. This seems to arise through an effect of exercise on mood: Harte et al. (1995) found that mood was elevated in both elite runners and experienced meditators, despite the metabolic differences between the two activities (see also Markoff et al., 1982).

In a seminal series of neuroimaging studies, Newberg et al. (2001) have shown that individuals who can achieve a heightened state of religious ecstasy (such as that achieved at the endpoint of meditation) exhibit very specific patterns of brain activation. They have a greatly reduced level of activity in an area in the posterior parietal lobe of the left hemisphere (the area mainly responsible for our sense of spatial self)—and, incidentally, a great deal of generalized activity in the right hemisphere. Based on this evidence, they have argued that carefully orchestrated mental practices (the techniques developed by mystics in all religions) allow adepts to disengage a bundle of neurons in the posterior part of the left parietal lobe of the brain, which, once disengaged from the control of the executive brain centers, release a series of impulses down through the limbic system to the hypothalamus, which then sets up a feedback loop between itself, the attention areas in the frontal cortex (which have been responsible for blocking off the parietal lobe neuron bundles), and the parietal lobe itself. As this cycle builds, it leads to the complete shutdown of the spatial awareness bundles, generating as it does so a burst of ecstatic liberation in which we seem to be united with the "Infinity of Being," often associated with a flash of blinding light.

Synchronized activity (dancing or other rituals) appears to play an important role in ramping up these effects. Simply doing an activity (singing, dancing, the rocking movements associated with pray in some religions) is enough to generate a euphoric effect. However, doing the activity in coordinated synchrony with others seems to massively ramp up this effect. In both cases, the euphoric effect appears to be mediated by the release of endorphins from the hypothalamus. These neuroendocrines are part of the pain control mechanism of the brain and are responsible for the analgesic effect (and hence the euphoria) associated with physical exercise (Belluzzi & Stein 1977; Blalock 1998; Bodnar & Klein, 2006; Boecker et al., 2008; Harbach et al., 2000; Hughes et al., 1975; Nelson & Panksepp 1998; Stephano et al., 2000). Cohen et al. (2009) have tested this synchrony effect using "sweep oar" rowing crews. By comparing endorphin release (assayed using change in before vs. after pain threshold) when individuals rowed alone and when rowing in coordinated synchrony in virtual boats (on ergometric rowing machines), they were able to demonstrate that there was a 100% increase in endorphin output when an activity was carried out in synchrony over and above that generated by

physical exercise when working out alone (Cohen et al., 2009). We do not know why this occurs, but it appears to be a direct consequence of behavioral synchrony.

Synchrony, in particular, has been shown to have a significant effect on individuals' willingness to act altruistically toward each other. In a simple experiment, Miles et al. (2009) found that individuals presented with visual or auditory cues of synchrony (and antisynchrony) in the footfalls of a pair of walking people rated the rapport between them as greater than when presented with cues from unsynchronized walkers. These effects appear to have knock-on consequences for prosociality and altruism: Wiltermuth and Heath (2009) were able to show that even simple levels of behavioral synchrony (synchronized vs. unsynchronized arm waving) increased cooperativeness and generosity in public good games.

## THE EFFECT OF MOOD ON COGNITIVE PROCESSING

Emotions are not independent from intellect. In fact, there is a large body of literature to show that emotions can influence cognitive processes substantially (Bless et al., 1996; Chepenik et al., 2007; Clore & Huntsinger, 2007; Dolan, 2002; Frederickson & Branigan, 2005; Isen, 1987; Levenson, 1999; Storbeck & Clore, 2007; Wyer et al., 1999). Psychologists divide emotional experience into two distinct states (Boden & Berenbaum, 2010, p. 228): (1) "emotion" and (2) "mood." Whereas an emotion is intense and brief, *mood* refers to a "background" emotional state that "rises and dissipates slowly" (Beedie et al., 2005, p. 871). In contrast to emotion, mood is generally more mild, unfocused, and stable (for discussion, see Beedie et al., 2005; Clore & Huntsinger, 2007; Storbeck & Clore, 2007; Wyer et al., 1999, pp. 5–7).

Mood matters when you process information. According to a burgeoning recent literature, people think differently in a euphoric versus a dysphoric mood (for a review, see Clore & Huntsinger, 2007). In a *euphoric* mood, people adopt a much more global, schematic view. In other words, people in a euphoric mood tend to look at the "big picture." In contrast, people in a *dysphoric* mood tend to be more nonschematic and detail oriented. For example, Bless et al. (1996) found that the participants with an induced positive mood were more likely to falsely recognize an item from a story (when the stimulus was conceptually similar but a different word) than those in a negative mood. Participants in a positive mood appeared to fall back on general semantic knowledge, whereas the ones in negative mood remembered the details better.

Similarly, Gasper and Clore (2002) asked their participants to draw/classify pictures they had seen before and found that participants with an induced positive mood focused on the global characteristics at the expense of the details, while those in a negative mood did the opposite. Beukeboom and Semin (2005) found the same results in a paradigm in which they asked participants to choose appropriate phrases to describe behaviors: those in a good mood thought more about "why" a behavior occurred, and those in a bad mood thought more about "how" a behavior occurred.

Frederickson and Branigan (2005) confirmed the broadening effect of positive mood in a study in which they asked participants to choose which image was



the most similar to a previous one. The two choices were appropriate for either a global view (overall shape) or a detailed view (component parts of the overall shape). Those in a good mood chose overall shape more often.

Inspired by this literature, one of our recent studies (Russell et al., submitted) made an attempt to apply these results to the topic of emotion and religion. This was a study of analogical transfer in a ritual-like task. The Tower of Hanoi (TOH) game was used as a proxy (see Simon, 1975) for a religious ritual. Although the TOH lacks many of the features of a real religious ritual, it does have *invariance* and *rule-governance*, which Bell (1997) had defined as two important aspects in the definition of ritual (see Table 9.1). Participants were divided into either a euphoric condition or a dysphoric condition (induced by viewing a humorous and unpleasant video clip, respectively). The same participants were further divided into *expert* and *nonexpert* conditions (creating four conditions: expert euphoric, expert dysphoric, nonexpert euphoric, nonexpert dysphoric). Individuals in the expert condition were first given the TOH game and asked to figure out how to solve the game. Then, they were shown a new game with a drastically different appearance called the Bear God (BG) task, but which was based on the exact same set of rules. Participants were not told that the rules were the same. They simply needed to figure it out for themselves. In the nonexpert condition, participants played a different game (Missionary Cannibal game), which had a different set of rules. In this case, participants played the BG task afterward without having been exposed to the isomorphic TOH task beforehand. This was predicted to be a disadvantage. The other prediction was that the euphoric individuals would be better able to transfer the rules from one game to another (even when they did not know that the rules were the same). This prediction was based on previous research (as cited) showing that euphoria promotes big picture thinking. This was predicted to enable better analogical reasoning, which would result in the euphoric individuals solving more TOH games than dysphoric individuals.

Unexpectedly, the results were opposite to this prediction. The dysphoric group significantly outperformed the euphoric group (measured by number of BG games solved). The other prediction—that the expert group would outperform the nonexpert group—was confirmed. This showed that *dysphoria*—not euphoria—appeared to be an advantage in analogical transfer, but only if there was some extent of background knowledge. In this case, the "background knowledge" consisted of previous exposure to the relevant rules of the game. This result led to rethinking the function of euphoria in religion. Perhaps euphoria is not useful for intense philosophical queries or precise implementation of rituals. Instead, perhaps euphoria is more valuable for motivating participation, stimulating social cohesion, and ensuring continued adherence to the faith.

Two recent studies have provided some insights that might be relevant here. First, Feldman and Kokinov (2009) conducted a study in which participants were asked to generate as many written analogies as possible (within 20 minutes) to support a political position they had just read about (concerning the issue of whether a particular region should be allowed to become an independent country). There were two conditions: *anxiety* and *control*. In the anxiety condition, participants were told that after finishing the analogies, they would be asked to

give an unpracticed oral presentation in front of a group of people. In truth, there was no public presentation planned at all. The expectation of public speaking was *itself* the mood induction technique used to create anxiety for the participant. In the *control* group, the participants were not told of any public speaking (hence the anxiety of needing to perform was missing). The results of this study were interesting. The first dependent measure was the number of analogies. Here, the participants in the anxiety condition did not generate significantly fewer analogies. However, in another dependent variable—thematic diversity of analogies—those in the anxiety condition were significantly less diverse. In other words, the participants in the anxiety conditions tended to produce analogies that were only slight variations of their previously produced analogies. In contrast, those in the control condition tended to produce larger variations of their previously produced analogies.

This study (Feldman & Kokinov, 2009) was inspired by an earlier study by Richert et al. (2005), which had a similar design but was designed specifically with a view to study religion. In their two experiments (pp. 133–143), they subjected their participants in low-arousal and high-arousal conditions (this arousal was not specifically negative or positive) to fake religious rituals. Then, they asked participants to generate as many explanations as possible for their experience. In both experiments, those in the high-arousal condition produced more diverse and fuller explanations than those in the low-arousal condition. Why does this appear to contradict the results of Feldman and Kokinov (2009)? The answer might lie in the fact that the Feldman and Kokinov (2009) study was about dysphoric arousal and the Richert et al. (2005) study was (apparently) about euphoric arousal.

Another study from Feldman and colleagues (2010) built on the results of their earlier work. Participants were put into the same anxiety and control conditions as in the previous study (i.e., the expectation of public speaking was used to induce anxiety). However, the task was different. Participants were asked to perform a matching-to-sample task. They would be shown a visual display (B) and then two other visual displays (T1 and T2), which consisted of different geometric shapes. The task was to indicate which of the later visual displays (T1 or T2) better matched the first one (B). In one example (see Figure 2 in Feldman et al., 2010, p. 1455), the first display (B) consisted of three isosceles triangles. The first triangle was on its side (long end pointing left), and the second and third triangles were pointing upward. The second display (T1) had the same three triangles, except that the middle one was on its side (long end pointing left), with the first and third triangles pointing upward. The second display (T2) had three isosceles trapezoids. Mirroring the arrangement of the first display, the first trapezoid was on its side (smaller base facing left), and the second and third trapezoids were right side up (smaller base facing upward). There were two ways to match the samples. In the *superficial* choice, the participant would match the first display (B) to the second display (T1) because both displays consisted of isosceles triangles. In the *relational* choice, the participant would match the first display (B) to the third display (T2) because both displays consisted of the same arrangement (i.e., the first one on its side and the other two upright). The relational choice showed a propensity to reason analogically.



The participants in the anxiety group made the *relational* choice significantly more than the participants in the control group. This mirrors the results from Russell et al. (submitted), for which the participants in the *dysphoric-expert* condition were apparently better at thinking analogically. At first, both of these studies would seem to contradict the body of literature about "narrowing" and "broadening" found in states of dysphoria and euphoria, respectively. However, it could be true that we were not interpreting this research correctly. Perhaps the detail-oriented outlook of a dysphoric individual is what enabled that individual to focus on the *relations* that characterized an analogy. In contrast, the broad outlook of the euphoric individual might be counterproductive for such intellectual demands. Although there might be more big picture thinking in the euphoric cognition, this may come as a sacrifice to the depth of processing.

## EUPHORIA VERSUS DYSPHORIA: DIFFERENT FUNCTIONS IN RELIGION?

As noted, euphoria has been described as having a "broadening effect" on cognition (Frederickson & Branigan, 2005) and dysphoria as having a "narrowing effect." In other words, euphoria opens up your attention to the wider array of stimuli, whereas dysphoria restricts one's attention to the most salient details (cf. Clore & Huntsinger, 2007). Does positive affect create a disadvantage? As Frederickson and Branigan (2005) wrote: If "positive emotions do not share with negative emotion this hallmark feature of promoting and supporting specific action, then what good are they?" (p. 314). The answer, they wrote, is that positive affect is probably useful, but for much different purposes than that of dysphoria (cf. Bless et al., 1996; Isen, 1987). Negative affect is useful for the "attack" and "flee" situations, whereas positive attack is about "play, explore, savor and integrate" (Frederickson & Branigan, 2005, p. 314).

Accordingly, it is best to regard euphoria and dysphoria as complementary processes with different purposes. Emotions are valuable because they constitute an "index [of] occurrences of value" (Dolan, 2002, p. 1192): People pay attention to the emotional and remember it better afterward. According to Levenson (1999), the human emotional system (consisting of automatic core processes partially subject to voluntary control) is extremely useful in that it "helps us to engage in adaptive voluntary behaviors" (p. 497; also see Bless et al., 1996; Wyer et al., 1999, §3). Levenson (1999) further claimed that negative emotions "are optimal for the short-term needs of actively dealing with threatening environmental challenges" (p. 492), whereas positive emotions have a "soothing function" (p. 494). Fiedler et al. (2003) concluded that positive moods facilitate "assimilative" tasks (for which you need to think top-down, be creative, and attend to a wide range of stimuli), while negative moods facilitate "accommodative" tasks (for which one needs to think bottom-up and attend closely to the most important stimuli for the task) (also see Spering et al., 2005).

Why is there a cognitive difference between positive and negative affect? According to Isen (1987), the difference might be motivational (people want to escape a sad mood but remain in a happy one) or else structural (happy memories

are better integrated than sad memories). A third view (Bless et al., 1996) is that negative mood is a signal of urgency to act in response to a problem, whereas positive mood is nonurgent (for relevant discussion, see Dolan, 2002; Levenson, 1999; Wyer et al., 1999, pp. 38–40).

How does all of this apply to religion? Returning to the topic of *functionality* (Tinbergen, 1963), we can ask: What are the functional consequences of affect in the context of religion? Before answering this question, we need to ask about what the function is *for*. Tinbergen (1963) was referring to function in an evolutionary context. We should note here that, in the cognitive science of religion, the word *evolution* is used in two different ways. The first and more familiar is the Darwinian meaning (Alcorta & Sosis, 2005; Bulbulia, 2007; Kydd, 2008; Rossano, 2006): Questions are asked about the role (if any) that religion may have played in biological evolution. The second and less-familiar meaning of religious *evolution* refers to cultural—not biological—evolution. This view (e.g., Whitehouse, 2004, 2008) pays attention to a different unit of replication. Biological evolution concerns the survivability of the individual organisms and species. In contrast, "religious cultural evolution" concerns the survivability of an individual *religion*. This view of cultural evolution has its intellectual roots in Sperber's "epidemiology of representations" approach (Sperber, 1985), and it is formulated with a recognition that, throughout the history of the human race, there have existed a multiplicity of religious faiths. Each of these religions has had various degrees of success. Many of them have died out, to be replaced by the more successful doctrinal religions that dominate the world today. Theorists such as Whitehouse (2004, 2008) have tried to identify the factors that make some religions successful and some religions not.

Of course, these two definitions of evolution are intertwined. Biological evolution should have produced the religion-seeking human. Cultural processes determine the exact type of religion to which an individual will adhere. An atheist from Sweden and an imam from Saudi Arabia are both human beings—with precisely the same phylogenetic background—but their culture, their locality, their language, and many other factors have caused them to manifest very different ways of looking at the world. When we are asking about the functional significance of mood and emotion in religion, we are asking two different questions. What roles do the emotional facets of religion play in biological evolution? What roles do they play in the successful spread of a religious tradition? These questions require more investigation before we can find definitive answers. In suggesting our differential function hypothesis, our line of reasoning goes this way:

1. Aspects of religion are presumed to have some functional significance.
2. Emotion plays a very important role in religious life.
3. Religious life encompasses a wide diversity of situations for which the emotional tone is on a continuum from extreme euphoria to extreme dysphoria.
4. Cognitive psychology has shown that cognitive processing is influenced by mood.
5. Euphoria is conducive to a broader frame of processing, allowing enhanced creativity and ability to see the big picture.
6. Euphoria plays a role in bonding large groups of individuals.
7. Dysphoria is conducive to a narrower frame of processing, allowing enhanced attention to detail, but with an inhibited ability to see the big picture.
8. We propose that the cognitive sequelae of different affective states have implications for the functional role of these affective states in religious situations.
9. We suggest that euphoria is highly functional for social bonding, which has many beneficial effects for the human species and their religious traditions.
10. We suggest that euphoric emotional arousal is also highly functional for situations involving creativity and lateral thinking in religious settings.
11. We suggest that dysphoria is highly functional for situations for which precision and analogical reasoning are needed in religious settings.



Hence, the typical emotions experienced in a religious setting—whether imagistic or doctrinal—have a meaning that goes beyond the immediate situation. The emotional situations might occur for a reason: They have a "function" that in some way has enhanced the survivability of either the religious tradition itself or the human species that participates in it. Given the staggering diversity of religious experience around the world (Bell, 1997; Davis, 1989; Stark, 1965), it is difficult to generalize. Nonetheless, the evidence is compelling that differential affective states cause differences in transient cognitive abilities (cf. Alcorta & Sosis, 2005, pp. 333–335). Because affect plays a prominent role in religious beliefs, religious ritual, group dynamics, and social bonding, it should also be cogent that different affective states have different functional consequences. This area of research has many questions yet to be answered.

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