

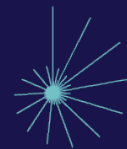
# *The Science of Prayer: Opportunities and Limits*

---

April 2021

---

Professor Kevin L. Ladd  
Department of Psychology  
Indiana University South Bend



**JOHN TEMPLETON**  
FOUNDATION

---

## **Table of Contents**

<b>I. INTRODUCTION .....</b>	<b>3</b>
<b>II. THE NATURE OF PRAYER.....</b>	<b>3</b>
<b>III. THE CONTEXT OF INTIMATE RELATIONSHIPS.....</b>	<b>7</b>
<b>IV. PRAYER AS A SPIRITUAL DISCIPLINE AND SCIENTIFIC VARIABLE.....</b>	<b>9</b>
<b>V. MEASURING THE EFFECTS OF PRAYING FOR ONE’S PARTNER .....</b>	<b>14</b>
<b>VI. RESEARCH LIMITATIONS.....</b>	<b>16</b>
<b>VII. RESEARCH OPPORTUNITIES .....</b>	<b>20</b>
<b>VIII. RESEARCH PRIORITIES .....</b>	<b>25</b>
<b>IX. REFERENCES.....</b>	<b>26</b>

---

## I. INTRODUCTION

Am I alone? Can anyone hear me? Whether expressed in words or sensed emotionally, it is possible to imagine these questions as the beginnings of the first prayer. Likewise, it is easy to imagine that, once begun, the ways of praying quickly multiplied to include discrete thoughts, behaviors, and emotions, accompanied by physical objects, employed in specific locations, both built and naturally occurring. These experiential and physical developments accompanying the act of prayer, it turns out, are comparatively easy to measure and, in some cases, predict.

More challenging is the effort to discern the origins and function of prayer. Some will argue that the impetus to pray comes from outside the person who prays; a divine or “cosmic” force inspires the act. Others will contend that the impulse arises purely from within the individual; it is fundamentally a form of self-talk. The stance adopted establishes the terms of investigation to be conducted and places limits around possible conclusions. This initial ambiguity is not resolvable by scientific researchers because their intellectual tools and conceptual language do not function effectively in this philosophical domain. Nonetheless, to sidestep these questions entirely is to miss the opportunity to systematically explore how these perspectives in and of themselves are amenable to scientific study.

So, from the point of origin forward, the psychology of prayer is more complex than often anticipated. This is precisely what makes it so interesting. Prayer is distinct from other variables within the scope of religion and spirituality because it invokes the notion of entering a liminal space. When practitioners engage in the act of praying, the central premise is that the physical is engaged intimately with the supraphysical; the corporeal is actively connected to the incorporeal. Hence, to pray is to experience the closest possible interaction between human and divine. This is why prayer is widely described as the heart of religion. It is also why scientists wishing to tap into the core of the discipline face a significant challenge.

Given how many different forms and contexts of prayer there are, most of which have not been rigorously studied by social scientists, this review will pay particular attention to one domain—prayer between intimate partners. This is an attractive area for multiple reasons. First, there is already a great deal of interest in and study of marriages, especially in the realm of counseling and interventions. Second, when spouses pray for each other, psychologists can study both the person who is praying and the one who is being prayed for. While one might want to ultimately understand the supernatural dimensions of prayer, empirical research is more insightful in areas where it can get the most traction.

[Back to Table of Contents](#)

## II. THE NATURE OF PRAYER

In a quick internet search, nonscientific conversations (25.3 million) concerning prayer and intimate relationships vastly outnumber scientific ones (273,000). This is not surprising because scientific

---

conversations will also be a smaller subset of nearly all conversations. Nonetheless, this rough evaluation establishes the topic as one of interest both outside and inside the academy.

Given the comparatively recent establishment of modern research universities, it stands to reason that many of the conversations concerning prayer and relationships are far older. Indeed, ancient and contemporary Hindu prayers focus on the entire gamut of relational concerns: restoring lost love, finding a mate, repairing problems among couples, and avoiding divorce. In many instances, these prayers are addressed to Shiva and Parvati (as described in the Puranas) in the context of fasting and meditation. The emphasis within Buddhism on universal love (Sutta Nipāta 1.8) also speaks directly to the nature of intimate relationships on the broadest possible scale.

A key element of these traditions is the expectation that the individual praying is not in direct control of the outcome, but only in control of the act of praying. Buddhism's First Noble Truth explicates this position well by describing the inherent lack of satisfaction in sensory experiences (hence, relationships), then addressing how to live in spite of the presence of suffering. In other words, successful relationships are believed to depend partly on the individual's efforts and partly on the participation of a greater power.

This theme of dual effort is familiar in monotheistic religions as well. Spanning multiple centuries, prayers highlight that discernment prior to entering relationships, blessings on unions, as well as petitions for reconciliation and healing are prominent in the texts and practices of Judaism, Islam, and Christianity. These traditions share the common element noted above: the practice of praying, in general, and with regard to specific situations such as relationships, is believed by practitioners to involve the action and interaction of human and divine forces. Depending on the nuances of the tradition, these forces involved in praying may be conceptualized as form of an intentional agent or as an impersonal energy.

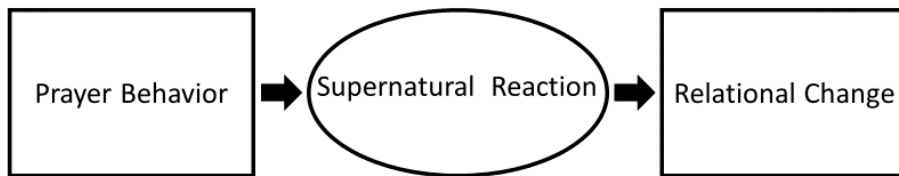
At its core, the practice of prayer, as it has existed for millennia, contains two elements: human and nonhuman. As noted earlier, this basic duality poses a dilemma for scientific researchers. There is tangible access to the human side of prayer, as pointed out by Brown (1994), but the nonhuman facet is beyond the realm of scientific inquiry. A clear demonstration of this boundary quandary for science is evident in the claim by Ulanov and Ulanov (1982) that everyone prays, even if unaware of their behavior. They also presuppose the existence of a God who is attentive to these prayers. By declaring that prayer is a universal practice and that prayers share a similar nonhuman, but intentional and responsive target, the task of defining prayer is considerably simplified. The difficulty, obviously, is that there is a profound lack of consensus within and across world religions regarding the nature of prayer. And science? Unable to endorse or effectively evaluate unfalsifiable premises in the discipline of prayer, a strictly scientific approach cannot resolve disputes. The essence of this challenge is apparent in the models below.

The first model identifies how the theologian and practitioner conceptualize the spiritual *practice* of prayer. The second model reflects a scientific orientation to the *question* of prayer. The inherent tension

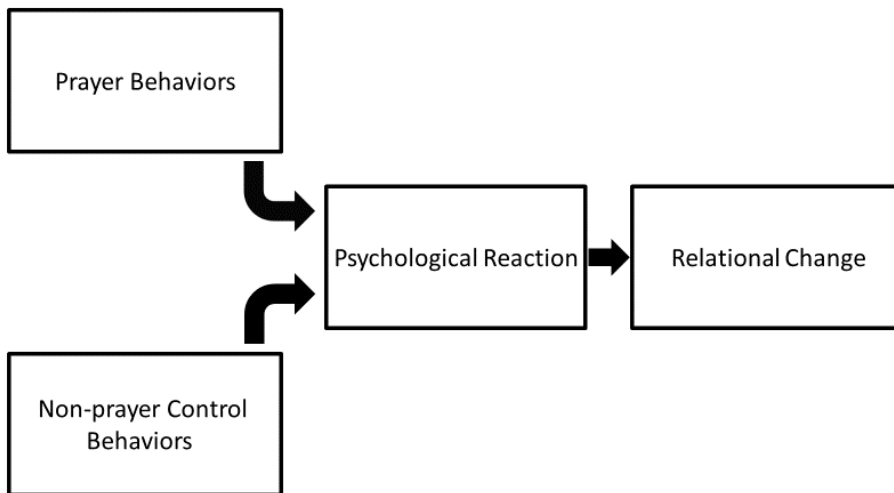
---

between the models is largely based on a matter of perspective. For theologians and practitioners, prayer is a devotional act that seeks to link human and supernatural experiences. For scientists, prayer is a human behavior to be understood in light of its effects on the subjects and their surroundings. Neither perspective can be completely absorbed into the other because they have different reasons for their interest in the topic, different tools to explore it, and different standards of evidence concerning outcomes.

**Model 1.** *Theological and Practitioner Conceptualization as “Practice”*



**Model 2.** *Scientific Conceptualization as “Question”*



Failing to appreciate these different models and the fact that people who actually pray maintain a distinction (whether intuitive or intentional) between the human and nonhuman facets of prayer creates a variety of intellectual challenges. Some researchers address this problem by summarily rejecting the very possibility of nonhuman factors and proceed accordingly. This position has the advantage of a clear, strong focus on human action. However, such a rejection oversteps the principles of science since it is not logically feasible to pronounce the absolute absence of nonhuman forces. There is no way to verify the nonexistence of something that is not measurable. This being the case, it is more logically consistent with scientific principles to remain neutral concerning whether there *is* a nonhuman aspect of prayer. In short, science cannot reasonably adopt a position that is hostile toward

---

such thinking. The domain of science is more properly restricted to evaluating psychological characteristics and outcomes resulting from different belief systems, rather than evaluating nonempirical truth claims about those systems.

It is also possible, in a manner that dovetails with some versions of both Eastern and Western prayer traditions, to interpret the nonhuman element as a form of energy that is physical, though not presently measurable (Levin, 1996). It is important to note that Levin (1996) does not present this idea as a mere metaphysical musing, but focuses squarely on the scientific question of whether what is commonly referred to as “prayer” potentially is an active physical force that literally attracts and repels according to principles of energy transfer operating on a micro level. It is possible to dismiss this idea as improbable, but it remains a reasonably proposed empirical hypothesis, notwithstanding the fact that there are no tools currently available to conduct the necessary tests. This presents a form of an intellectual promissory note, offering a potential future variable as an explanation for present effects.

The challenge of accounting for immaterial agents may initially seem bound to the topic of prayer, but it actually pervades all areas of science. Consider the experience of my colleague with a PhD candidate. Upon completion of the PhD project, all results displayed null findings. In a somewhat surprising dissertation defense session, the candidate declared that full support for the various hypotheses had been suppressed due to the negative attitude (and energy field) of my colleague while supervising the research. Such a situation demonstrates how intractable problems can arise when investigators do not restrict themselves to boundaries of scientific inquiry.

While such arguments can be advanced for any given discipline, they are more likely to occur in studies associated with the psychology of religion, particularly prayer. Because nonhuman elements are so deeply infused, there is a strong skepticism with regard to psychological studies of the phenomena. For practitioners, prayer is a metaphysical act that has physical features and behaviors. Scientists must acknowledge that the closest to “prayer” they can come is to measure the latter, but not the former. This situation is identical to the long-term studies of mysticism conducted by Hood (2001, p. i) who notes “...the simple caveat that the Mysticism Scale measures *reports* of mystical experience, and *not the experience itself...*” [italics added].

Such is the situation with regard to prayer and health studies (Ladd & Spilka, 2014). Among the obstacles to drawing robust conclusions, the “file drawer effect” obscures the extent of null findings due to the well-known publishing bias in favor of outcomes demonstrating statistical significance. Given that phenomenon, simply counting the number of published studies pro and con with regard to an effect has no real meaning (Meehl, 1978, 1990).

Many religious traditions articulate the role of prayer in the formation, maintenance, and restoration of social relationships, although there are also examples in the same texts of conditions under which maintaining relationships is not desirable. There are even extreme examples of imprecatory prayers explicitly calling for the death of one’s enemies (McAlister, 2016). In popular culture, a simple YouTube search results in a plethora of prayers and/or spells to both entice lovers and to render

---

unfaithful partners impotent; these practices are often associated with traditions outside the major world religions, but not always. (I was not able to locate any scientifically controlled studies of these activities.)

A pernicious difficulty with prayer and relationship studies centers on the phenomenon of “blaming the victim.” If prayer *per se* is argued to be beneficial, even just “on average,” for relationships, what does this mean with regard to the prayers offered for relationships that ultimately fail? The breakdown could be interpreted purely as a result of nonhuman factors, but it could be interpreted with equal likelihood as a failure to pray “correctly” or with sufficient piety. “Correct” and “pious” prayer are the subject of much debate in and of themselves. Essentially, that debate can be summarized as attempts to establish rules for praying. These rules, according to Heiler (1932), represent a departure from the most fundamental form of prayer; the rules are introduced in an attempt to replicate positive and avoid negative experiences. Full consideration of “correct” and “pious” praying obviously is of paramount importance because it establishes the essence of prayer; this deeper question is outside the scope of this review. At the present, it must suffice to observe that parameters established for what constitutes proper prayer can be used either to encourage or to denigrate practitioners, to propose a means of enhancing prayer’s perceived efficacy or to justify a lack of observed efficacy (Faber, 2002; Sloan, 2006; Spilka & Ladd, 2013).

When investigating prayer, one has to be careful about abstracting it to such a degree that it no longer resembles prayer in its historical and customary practice. If prayer is advanced purely as a tool or a technique, the emphasis often falls squarely on prayer as human-centered activity and disregards the metaphysical component that makes it so distinct from other human behaviors.

[Back to Table of Contents](#)

### **III. THE CONTEXT OF INTIMATE RELATIONSHIPS**

The domain of intimate relationships is well established in mainstream psychological literature, and we will highlight some of its features before considering the role(s) of prayer in the context of these relationships. For a far more robust treatment, Finkel, Simpson, and Eastwick (2017) consider the mélange of relationship theories and extract 14 core principles that address the nature and operation of relationships with regard to individual and contextual contributions to relationships thriving and floundering.

The preponderance of the research related to intimate relationships occurs in the context of married couples, so that frame of reference must be kept in mind. The extent to which these findings apply to other forms of intimate relationships remains under investigation.

#### *Primary facilitating factors*

The overview from Finkel and colleagues (2017) lays out the basic framework for healthy relationships: trust, respect, clear communication, empathy, and the ability to compromise with integrity. In a more



---

fine-grained analysis, a Pew report (Pew Research Center, Oct. 26, 2016) observed that among married Americans the following concrete variables were identified as “very important for a successful marriage” to more than 50 percent of those sampled: shared interests, satisfying sexual relationship, sharing household chores. These findings were stable regardless of religious affiliation of the respondents.

### *Secondary facilitating factors*

An adequate income, shared religious beliefs, and having children were the next highest scoring “very important for a successful marriage” items on the Pew report (op. cit.), all coming in at or above 40 percent. In this secondary grouping, shared religious beliefs is distinctive because of the distribution of responses. It received the second highest of any rating (64% vs 65% for shared interests), but only among individuals affiliated with the same religion. Endorsement by other groups (e.g., different religious affiliations, one spouse affiliated, both unaffiliated) was among the lowest reported (24%, 17%, 16%, respectively). It is further reported that only 27 percent indicated that a spouse’s religion was very important in the decision to marry; 51 percent responded that this consideration was “not too/not at all important.”

### *Inhibitory factors*

Many of the above factors share an element of stress, and that stress can be both beneficial (eustress) and detrimental (distress) to individuals and relationships (Selye, 1975). It is no simple task to create an atmosphere of trust and open communication; it requires effort. This means that while we acknowledge the positive effects of stress, even “good” stress can take a toll on relationships. Consider empathy. The willingness to enter into the difficult experience of another person reflects a willingness to encounter pain and turmoil. Some of this experience is helpful, but too much can lead to problems. Likewise, an emphasis on change can help build relationships when dealt with constructively; it can move the relationship toward a position of more open communication. There are many ways, however, in which this sort of effort can work against healthy relationships (Hira and Overall, 2010).

Other forms of stress, however, are uniformly problematic. Among the most damaging components of the relationship between intimate partners and religion is violence, whether generalized or specifically to control one’s partner (Johnson, 1995). The links between intimate partner violence and religion are varied and complex. There is no question that research is desperately needed to address ways in which religious practices such as prayer function to either sustain or diffuse violence in intimate partner settings.

One takeaway from the Pew summary is that work in the area of intimate relationships and prayer would benefit from explicitly considering expressions of prayer that cross traditional affiliation boundaries. A worthwhile expansion of that domain would include partnerships involving no particular faith traditions. In each of these situations, there will be resources at the disposal of the partners. Notions concerning the authoritative status of these resources (divinely inspired or metaphorical) and their perceived importance to each person in the relationship will all be critical variables to consider.



---

It is also intriguing to note that the same Pew report provided data about parents praying with their children, but not parents praying with each other (or children praying with each other). It is likely that the presence or absence of children in a relationship may in some manner influence the prayer behavior of the parents. The extent of this variability—the age and sex of the children and whether they are living in the home or elsewhere (i.e., joint custody, adult children)—is a possible longitudinal question of interest, as is the topic of blended families and how they approach the act of praying.

The primary elements of strong relationships are clearly consistent with values espoused by the world's largest religious groups. It is also readily apparent that these elements are not inextricably linked to the theological or philosophical positions of any of those groups. Individuals can pursue all manner of successful social relationships, including intimate relationships, without ascribing to any religious traditions. By extension, the practice of prayer is not a necessary condition for experiencing a strong, healthy relationship. This brings us to the key question of whether the act of praying enhances relationships in some unique way.

[Back to Table of Contents](#)

#### **IV. PRAYER AS A SPIRITUAL DISCIPLINE AND SCIENTIFIC VARIABLE**

The human–nonhuman characteristic of prayer does not easily lend itself to analogies with other practices. Some have advocated for the equating of prayer with human–human conversations, however, that proposition is problematic on several levels, including the obvious power differential that exists in prayer (Ladd, et al., 2012; Stump, 1979). Other critical differences include the absence of any potential for behavioral mimicry, physical proximity, and social reciprocity. The language may *sound* the same, but the principles at stake are considerably different: A “Father” in heaven engaged in prayer is a fully idealized human that in many theologies transcends any anthropomorphic characteristics. A deity addressed during prayer is decidedly distinct from humans in form, substance, and function, making an analogy fairly tenuous.

To provide some sense of how to evaluate prayer, our research team has employed a conception of prayer as a typically (but not exclusively) intentional attempt to establish or maintain a sense of connectivity with the self, others, and the supra-physical in the context of self-relinquishment (Ladd and Spilka, 2002, 2006). Intentionally crafted to speak across the major world religion descriptions of this spiritual discipline, this definition captures three distinct “movements” of prayer that resonate with both psychological and theological explications of prayer.

The pragmatic reason for identifying these movements is that it allows for the implementation of a common language. It is possible to break these categories down into more fine-grained domains, however, for most purposes, these higher-level constructs serve as useful pedagogical devices. It must be noted that in “real-life” people display a clear tendency to mix-and-match the movements, rarely moving consistently in one direction, but rather heading in multiple directions simultaneously.

---

Tracking these movements among intimate partners could provide interesting information about leader/follower status as well as potential conflicts of the actual and desired roles in the relationship. Alternative ways of conceptualizing prayer are certainly possible and potentially even more comprehensive. The following notion, borrowing loosely from Otto (1937), is among the most systematically considered as a theoretical framework. To the best of our knowledge, this construct has not been empirically tested in the context of intimate relationships, however, the possibilities for exploration are considerable.

- ***Mysterium* (other, silence; upward)**

One facet concerns a movement upward (though the directionality is simply a pragmatic expression) signifying a desire to connect with something greater than what is known. A lack of words and a sense of peaceful awe are portions of this experience.

- ***Tremendum* (terror, fear; outward)**

A more tangible facet of prayer is the movement outward that reflects the intention to connect with other people and tangible portions of existence (e.g., environmental stimuli, infrahumans, etc.). While sought after, this form of movement can also be significantly intimidating because the immediate and physical results of failure are typically plainly evident.

- ***Fascinans* (mercy, grace; inward)**

Prayer can also serve to move a person inward for the purpose of self-examination. Reflecting on one's own spiritual condition not only allows for personal clarification, it also provides a sound basis for connecting in the other directions. The experiences of mercy and grace are part of this experience, in addition to the possibilities of guilt and condemnation.

### *Social context*

While each prayer occurs in a highly personal, internal context, it simultaneously is embedded in an external context. A primary distinction along these latter lines is whether the prayer is occurring in a public or private setting. As much as this is true and influential for the individual, the condition is augmented when the praying behavior involves intimate partners. This dyadic situation ramps up the extent of disclosure from personal to interpersonal; if the context is public (e.g., a couple praying in front of other couples or a congregation), the anxiety about either revealing more than desired is increased because you cannot control what the other person might choose to say or how that person might say it. (For example, "Please heal my cheating spouse.") This concern is somewhat ameliorated when the couples are given standardized prayers to engage, however, ad-libbing and "Freudian slips" remain potential concerns. Social psychological principles of group dynamics and the power of statements made in public forums are applicable in this instance.

An interesting, but virtually unstudied, aspect of this contextual variable is that the religious traditions detailing prayer practice commonly remind practitioners that when they engage in prayer, they are inherently invoking the company of all believers, past and present, physically dead and alive; in essence

---

this means there is no truly, fully private prayer because the act is observed and joined by unseen others.

There is experimentally derived evidence that affixing images of eyes to the wall of a research cubicle can increase some pro-social behaviors and some social norm conformity (Fathi, Bateson, & Nettle, 2014). Tong and associates (2020) also reported an increase in pro-green behavior when eyes appeared on packaging. It could also be the case that since the eye-contact can promote intimacy (Croes, Antheunis, Schouten, & Kraemer, 2020; though see Mann et al., 2012, where lying increases deliberate eye-contact), the gaze of an intimate partner may serve as a physical reminder of the watchful eyes of God and the wider community of believers. The notion that the divine resides within each person (the interpretation of this principle varies widely) and serves to intimately connect people is a key element of many traditions. One very explicit form occurs in Buddhism where it often is reflected in the classic “Namaste” greeting: The God in me, greets the God in you.

Cognitive primes of God concepts may have similarly pro-social effects (Shariff & Norenzayan, 2007), although this finding did not replicate in a Japanese sample (Miyatake & Higuchi, 2017). Much earlier thinking along these lines includes Mead’s (1934) notion that internalized representations of others shapes a person’s identity and behavior.

The “presence” of others in the relationship context can be both literal and metaphorical to a greater or lesser extent. For instance, a strict dyadic definition of an intimate relationship is arguably more applicable in the West than in other cultural settings where extended families play significant roles in many decision-making activities (Weatherhead & Daiches, 2015). This means the boundaries of a “couple” are potentially more malleable than they are often represented. This definitional expansion offers the opportunity to develop a better understanding of cultural differences and how they affect the functioning of intimate relational prayer.

Together, these works suggest the relevance of a social context including the “eyes of the ancestors” and other believers as somehow perceptually present during prayer (e.g., via artwork, icons, or cognitive primes). The extent to which this portion of theological teaching is evident in the prayers of intimate partners has links to other mental facets of prayer addressed below.

### *Space and place*

Prayer occurs not only in the presence or absence of (tangible and intangible) others, but also in a specific space. It is notable that some spaces and places carry the distinction of being holy as opposed to neutral or unholy. Association with these locations is rife with the possibilities for the arousal of psychological expectations of either positive or negative effects. Consider, for instance, the powerful draw of pilgrimage sites. There are countless stories and academic accounts of such journeys made either as solo travelers or in the company of family members, including attendant prayers along the way (Goldingay, Dieppe, & Farias, 2014). In a secular context, the familiar trope of the “road trip,” often to one of the character’s place of origin, reflects a ritual of clarification and mutual discovery for intimate partners; the trip either solidifies or dissolves the relationship.

---

A special issue of the journal *The Archive for the Psychology of Religion* (Ladd, 2019) devoted to this topic included perspectives related to attachment theory, trauma, and imagination drawing on Christian, Hindu, and Muslim traditions. Unifying the contributions was a common agreement that the nature of religious and spiritual experiences is deeply influenced by the sort of spaces in which the individual was located. Counted and Watts (2019) followed up on many of these ideas in their book. Barrie, Bermudez, and Tabb (2015), working from the perspective of architecture, come to a similar conclusion as they consider how phenomenology, history, symbolism, landscapes, and the practice of built and natural design all coalesce to enhance or detract from spiritual experiences. These works leave little doubt about the potential role of place in the development of spiritual practices such as prayer within intimate relationships.

### *Tools of prayer*

Clearly both people and places are part of the spiritual practice of prayer and relevant for how intimate relationships engage or avoid praying. A third broad influence on the practice of prayer is that of physical objects. Though not often examined in psychological discussions of prayer practices, many examples come quickly to mind such as prayer wheels, beads, feathers, incense, cards, musical instruments, icons, and bones. One excellent treatment of this topic, framed primarily by ethnographic and sociological theories, is found in Blanton's (2015) book concerning the use of prayer cloths in the U.S. region of Appalachia. From the creation to the blessing to the distribution of small pieces of cloth used as a faith-inspiring point of contact among people, Blanton recounts how these physical artifacts serve to unite people in prayer. While many of the connections identified are not the sort of long-term relationships targeted in this paper, the contacts are certainly very intimate in the sense of being deeply meaningful and intensely personal. The central ideas of touch conveyed by inanimate objects across long distances raises fascinating questions about the extent to which intimate relationships involving prayer persist or falter when the partners are somehow physically separated.

### *Scientific Assumptions and Limitations*

As a scientist, one approaches questions within a very particular framework. In the case of prayer research, one must consider the attitude of the practitioner with regard to the human–nonhuman characteristic of the prayer. When a person uses the typical language of prayer, it can sound as though the person is invoking direct (primary) control of an event or making a specific demand. The (frequently unspoken) subtext, however, is that the act of praying as described in the various world religions involves a relinquishment of self that is psychologically distinct from an attempt to exert control (Phillips, 1966). This relinquishment is exemplified in Christian traditions by the phrase from the Lord's Prayer, "...Thy will be done..." and in the Muslim practice of speaking of future events as transpiring, "inshallah" or "if God wills." In instances where this relinquishment is not present, considerable debate arises concerning the nature and relation of prayer and magic on conceptual and practical grounds (Asirvatham et al., 2001; Sørensen, 2008; Tambiah, 1990). Delving into this debate is outside the scope of this paper. For this review, our working definition of prayer encompasses the notion of relinquishment to some higher metaphysical authority.

---

Recognizing this perspective in the attitude and belief of the practitioner requires the researcher to evaluate how prayer is treated as a variable. The typical assumption within quantitative, experimental methods is that it is feasible to create a situation in which something happens (prayer) or does not happen (no prayer). This is referred to as an independent variable and it is critical to the process because it establishes the basic test conditions. This is clearly not possible with prayer. One cannot randomly assign some people to sincerely pray (something) and others to engage in faux prayers or not to pray at all (nothing). Aside from the fact that praying on demand, often in a lab setting, is highly atypical, it is not possible to prevent some prayer from occurring whether by the participant or by someone on behalf of the participant (Ladd et al., 2015). Likewise, prayer cannot be administered to one group and withheld from another because it is not possible to guarantee that *no one* is praying for the second group. A further problem is that a basic premise of prayer is that *any amount* can be effective, so a single prayer from a single person is believed (theologically) to be as valuable as many prayers from many people. Whether or not the experimenter ascribes to the theological principles does not matter; it is not possible to rule out the possibility that the theological claim of divine intervention has merit. These challenges confront and fundamentally call into question all prayer research that claims in some way to test the actual efficacy of prayer as the practice is commonly identified (Ladd & Spilka, 2014).

Less problematic is the conceptualization of prayer as something that people do in response to some situation; this is known as a dependent or outcome variable. This is because it shifts the focus from manipulating prayer and its practice and instead emphasizes how prayer occurs as a response. From this approach, it is possible to obtain information about the affective, cognitive, and behavioral shifts in how people engage their spiritual discipline.

Another class of investigation is known as quasi-experimental. Researchers using this methodology may watch for situations that vary naturally (naturalistic experiments). For instance, if information exists about how people pray before a disaster occurs, it is sometimes possible to then evaluate how people pray following that disaster and compare those situations. One substantial drawback to this kind of research is that the questions asked are typically developed post-hoc and are therefore susceptible to a wide range of biases. Another issue is that since people are not intentionally assigned to disasters, attempts at understanding causality are less robust.

Nonexperimental evaluations of prayer (e.g., correlations, most forms of regressions) provide a comparatively low level of quantitative information. The variables involved (e.g., frequency of prayer and quality of health) typically are not under the control of the investigator at any time, so it is not possible to draw strong causal conclusions such as are available at the conclusion of true experiments.

There is certainly a wide array of statistical methods that have been developed to address some of the above concerns, however, the wisdom widely attributed to Ernest Rutherford remains intact: If your experiment needs statistics, you ought to have done a better experiment. There are no statistical procedures that can clarify operationalizations or adjust for logical or design flaws. Likewise,

---

irrationally exuberant interpretations can impede real development in any given field, and the psychology of religion is no exception.

[Back to Table of Contents](#)

## **V. MEASURING THE EFFECTS OF PRAYING FOR ONE'S PARTNER**

A perennially challenging situation within psychology, and no less within the psychology of religion, is the one-off nature of much of the research. This disperses relevant information across a wide spectrum of outlets, without a large degree of interaction among the authors. It also impedes theoretical development due to the lack of certainty that can be provided via replications in independent labs. In the present case, we are fortunate to have a set of works conducted by a relatively consistent set of researchers, with Professor Frank Fincham as a key figure in this effort.

Frank Fincham and colleagues represent a cluster of researchers who have spent roughly two decades systematically exploring the relations among religious and spiritual practices and dyadic relationships. Some of these efforts focus on how constellations of these variables, especially forgiveness, may have links to relationship quality (Fincham, Ajayi, & Beach, 2011; Rivera & Fincham, 2015) and cardiac performance (Fincham, May, & Sanchez-Gonzalez, 2015; May et al., 2014; Sanchez et al., 2015). The primary mechanism suggested is that forgiveness facilitates stress reduction, which can broadly be said to apply to most prayers.

Other works (Fincham & Beach, 1999; Fincham, 2014; Fincham & Beach, 2013, 2014) aim to summarize the expanding literature. A common thread among these is the use of a goal-directed model to describe how prayer functions (Beach et al., 2008). The essence is that engaging in prayer influences an individual's choices of goals worthy of attention. Choosing specific goals results in modification of intentions and an increased willingness to engage in behaviors necessary to bring the pursuit of those goals to a satisfactory conclusion. When the goals include positive adjustments to relational characteristics, such as the adoption of cooperative attitudes, this may increase relational satisfaction.

There is another thread of the Fincham team's work that presents data-driven explorations of links between intimate relationships and prayer (almost exclusively petitionary forms of prayer). Most adopt the helpful approach of consistently using either a self-reporting process that allows individuals to indicate how often they typically pray for their intimate partner and/or a standard protocol wherein participants are asked to pray for good things to come to their romantic partners. The use of these common constructs across multiple studies is rare in the field of the psychology of religion. It should be commended because it alleviates many intellectual challenges when it comes to identifying key findings across multiple studies.

One of the earlier works (Lambert et al., 2010) offered two studies exploring the role of prayer with regard to relationship partners and forgiveness. In the first study, those who prayed for the well-being of a romantic partner were more willing to forgive that partner than were those who merely thought

---

about their partner. In a second study, praying for a friend evoked increased forgiveness for the friend than did praying about an unassigned topic, or thinking positive thoughts about a friend. It seems that being tasked with praying for an intimate partner or even a friend may have some effect on the process of forgiveness. The extent to which this may be driven by factors such as social desirability is not discussed.

In comparing prayer behavior to other activities, Lambert et al. (2013) asked participants in different studies to think positive thoughts about their partner or consider whether God makes or breaks rules. They also adjusted for baseline relationship satisfaction, amount of prayer, and similar potentially relevant variables. In a series of five studies, the researchers provided evidence that a) partner-focused prayer reduced vengefulness, b) the prayed-for partners independently recognized this shift in the one who did the praying, c) partners who prayed after being hurt by a partner demonstrated increased cooperative behaviors, and d) specifically praying for a partner enhanced both cooperation and forgiveness in the one who prayed.

In another variation of the investigations concerning the effect of partner-focused praying, Lambert, Fincham, and Stanley (2012) incorporated a comparison condition that involved thinking of a friend primed by having the participant draw a picture of themselves with their friend and an active discussion of a disagreement. The outcomes of their three studies included support for the idea that praying for one's partner helped to solidify the couple's identity and goals in addition to increasing levels of satisfaction with sacrifices made in the relationship.

Lambert et al. (2012) not only asked about praying for a partner, they also had people actually either pray with their partner or conduct a positive discussion with their partner. Across three studies, they reported that both praying for and praying with partners increased levels of trust and perceived unity. Fincham and Beach (2014) continued in a similar vein, comparing the influence of praying for a partner as opposed to praying for one's self. Their target variable of interest was relationship satisfaction, a variable that increased more significantly when praying for the partner than for the self. Both findings dovetail with the report from three longitudinal studies that praying for a partner decreases infidelity (Fincham, Lambert, & Beach, 2010).

While most of the above work adopted a goal-orientation theory of prayer behavior, Pereira et al. (2014) employed attachment theory. Their specific task was to evaluate praying for one's partner with regard to different styles of attachment and how they were linked to the experience of loneliness. Prayer did not, in fact, mediate the attachment–loneliness relationship. The authors did observe, however, that high avoidant attachment was related to less praying for the partner, while more praying for the partner directly linked to less loneliness. It is unfortunate that secure attachment was not represented in this project in order to provide a more balanced portrayal of the attachment paradigm.

[Back to Table of Contents](#)



---

## VI. RESEARCH LIMITATIONS

The theoretically oriented articles above present a wide array of possible influences on dyadic relationship quality. This background work, however, does not include a strong rationale concerning what prayer might add to the situations that is unique. How would things be different if prayer were not included as a variable of interest? Is prayer just one of many variables that might have similar effects? Why do some people engage in prayer rather than alternative practices, whether spiritual or secular?

The general observation that prayer can serve to re-orient goals and enhance cooperative concerns is noncontroversial. Care must be taken, however, to avoid limiting the scope of prayer to the language and function of goal-orientation because this can make prayer seem overly utilitarian and pragmatic. For practitioners of the discipline, the act of praying is not restricted to an active pursuit of goals. There are, for instance, clear elements of creative and artistic impulses associated with prayer as with religion and spirituality more generally (Brown, 2014; Sternberg & Lubart, 1998).

In essence, in the collection of studies, prayer is shown to be a relevant strategy within those substantial segments of the population where it is already accepted in some sense. Within those settings, it may be useful to encourage people to engage some forms of prayer as coping tools should prevention or intervention be deemed necessary. Among the caveats presented, it is rightfully noted that, as with any practice, there are potential “dark sides” that could also emerge. For instance, prayer could be employed to justify a variety of relational inequities. The authors appropriately acknowledge that “inequities” are fraught with cultural elements that to date are thoroughly unexplored by their own, or others’ work.

From a methodological perspective, the empirical works outlined above share the previously detailed problems related to a) dose effect assumptions (more is better), b) performing “strong” tests (pinpoint vs more general hypotheses), and c) finding a reasonable control group for the precise act of praying (thus far not specified in the literature). There is also a preponderance of correlational work demonstrating relations between self-reported prayer behavior and other variable(s). Some of the studies report using statistical techniques to account for the variability associated with potentially confounding elements (sex, church attendance, etc.) and that is helpful to an extent. These challenges make it difficult to clearly understand causal mechanisms.

The larger question remains: “Is prayer any more associated in a causal fashion with these other variables than are a host of other constructs?” This question can be somewhat addressed via convergent and divergent discriminate validation procedures, which help to demonstrate how other constructs are either more or less related to outcomes than is prayer. For instance, prayer certainly shares a considerable amount of influence with many forms of mediation and intentional self-evaluation, but probably has far less in common with daydreaming or thinking about the lives of fictional characters. If prayer is somehow uniquely more powerful (or more damaging) than these other

---

types of variables, then that suggests that prayer must be engaged with differential sensitivity in practice; if it is one among many alternatives, its application principles are less scientifically critical.

It is also the case that by frequently presenting prayer in the correlation matrix, the risk is that the interpretation of “prayer is correlated with X” becomes highly ambiguous. In fact, the practice of prayer as a theological concept involving metaphysical assumptions is not being measured, instead the measurement concerns factors surrounding the practice of prayer. This is always very hard to convey with consistency. For instance, the measurement often is of the frequency of a related behavior. Here, there is a distinct problem between the understanding of a scientist and a practitioner with regard to the nature of prayer. The scientist is treating prayer as a type of dose-relevant construct where “more” or “less” matters. This does not align with the viewpoint of practitioners. The practitioner (and/or theologian), typically holds the viewpoint that a single prayer can be perfectly, fully efficacious because the *effect* of the prayer *per se* is not dependent on the individual uttering the prayer. In other words, “more” is not necessarily “more” in this sense. “More” can indicate a greater number of behaviors, but the relation of a mass of behaviors to the spiritual significance of prayer is not a constant in the sense that a scientist would prefer. In this instance, the “more” may be linked to notions such as social support or the motivationally driven concept of effort justification. (I did a lot of praying, so I better see/make some results.) These outcomes are commentaries on human behaviors, not commentaries on the theological ramifications of praying.

“Strong tests” that make pinpoint predictions as opposed to estimating wide ranges of outcomes are the subject of Meehl (1967, 1978, 1990, 1997), who argues that psychology rarely challenges its ideas under truly critical test situations because its position as a science is tenuous. Not only is this a challenge to null hypothesis testing, it is a significant issue for the character of prayer. A truly strong test of prayer *per se* would involve demonstrating its full range of effects. That is simply not feasible given the nature of the practice and its ultimate reliance on a supernatural force. Likewise, an experiment that would randomly assign people to pray to a) improve and b) destroy their own marital relationships is unlikely to occur. While this might seem an odd project, the gold standard in experimental psychology is to be able to demonstrate the ability to move an outcome in any desired direction. Investigating whether the variable can be used for both good and ill is a legitimate test of the boundaries of its influence. This sort of project would take seriously the probability that any given variable can have both beneficial and deleterious effects. In at least one study (Ladd et al., 2007), our research team demonstrated that an emphasis on praying about one’s personal condition correlated with elevated levels of narcissism; not a causal effect, but the relation makes sense and suggests the possibility that prayer may have other than purely positive associations.

Even if this unusual study were to be conducted, what would it mean if the people who prayed for a negative outcome were successful? It would be a logically and theologically torturous (empirically impossible) exercise to link outcomes of such prayers as effected by a supernatural force (e.g., God helping you to destroy your marriage or some other similar aggressive act). The net result from the vantage point of science would lean toward explanations based on self-fulfilling prophecy theories. There are certainly plentiful examples of other forms of imprecatory/destructive prayer (McAlister,

---

2016) and those, too, are unlikely to receive experimental attention, thus weakening our understanding of the full spectrum of prayer qua prayer; again, we are left with measuring affects, behaviors, and cognitions associated with the practice as opposed to evaluating the practice itself.

Over the decades of work in the psychology of prayer, a solid control condition has yet to be articulated and that fact demonstrates the highly intractable nature of the problem. Fincham and colleagues have generated several ideas for controls (thinking positive thoughts, drawing pictures, describing one's partner to one's parents), yet all these fall short of a full-spectrum understanding of prayer that includes the theological context in which it is enacted. The impetus to pray is predicated on multiple theological notions such as omnipotence and omniscience. When one prays for one's partner, those notions are invoked and become an intimate part of the experience. There is simply no opportunity to randomly assign these beliefs and attitudes, therefore, attempts at true experimental work in this domain will always be subject to substantial critiques of its validity and self-selection bias; as with other investigations of beliefs and attitudes, other methodologies, such as quasi-experiments and correlations, will predominate.

It is, of course, possible to compare groups of people who have already engaged the practice of prayer, but that cannot provide an answer to the central experimental question concerning differences that may exist in prayer vs no-prayer behaviors. The issue may become clearer if framed in marketing terms. Among those who already pray, it is possible to explore ways to "tweak" the experience, but that does not increase market share for praying. The real potential for growth is to be able to demonstrate that praying does something totally unique. This does not in any way lessen the usefulness of "tweaking" customer satisfaction, but it highlights the fact that increases or decreases in the decision to practice prayer are ultimately theological in nature. So, while the corpus of work's consistency across studies thus far is admirable, it is not immediately apparent what the consistency reveals that is relevant to prayer *per se*. This, again, is not necessarily a bad situation. Helping understand how people can better use the tools they have chosen remains a very real, tangible, psychologically important contribution.

What the constellation of studies does clearly reveal is small effect sizes (as are common across the psychology of religion: Fincham, 2014) with large caveats. This means that the links relevant to intimate relationships and prayer, as well as most links within the psychology of religion, are persistent, but do not carry an abundance of practical influence. The situation is rather similar to consulting a physician regarding a low-grade fever or asking a mechanic to eliminate a rattle emanating from somewhere deep inside the dashboard of your vehicle; the elevated temperature and the rattle are on the periphery of awareness, but they don't restrict activity and it's hard to pinpoint and address any specific cause.

There appears to be a modest consensus that praying "works" for people who expect it to work. This is certainly in line with general psychological expectancy theories. Since many of the investigations involve self-report measures, this consensus highlights a need to account for the potential influence of

---

both placebo and social desirability effects. This is, of course, not unique to this line of work; it is a persistent situation across the discipline of psychology.

In light of these observations, it seems reasonable to speculate (though not yet explicitly explored) that perhaps one reason prayer “works” marginally better than the proposed controls is because it carries far more in the way of metaphysical assumptions. What is arguably most unique about the practice of prayer is its foundational position that to pray is to be simultaneously connected to both metaphysical (not testable) and physical (testable) realms. In this sense, prayer perhaps is partially, but not solely about satisfying a goal or discovering a technique for coping or for cognitively structuring short and long-term meaning; perhaps a key element is prayer’s perceived temporary distancing, in part, from such temporal and spatial concerns, combined with Julian of Norwich’s mystical affirmation that despite the turmoil of physical existence “all shall be well, and all manner of things shall be well” (Julian, ca 1394/1901, p. 56).

An additional observation is provided by Fincham (2014) who notes that many of the samples are from the southeast portion of the U.S., where social norms are demonstrably different than other portions of the U.S. and the rest of the world. There are, however, at least some non-U.S. indications of how prayer and intimate relationships coincide.

There is some independent evidence from a small sample of Hindus (Toussaint et al., 2016) that praying for a romantic partner as opposed to describing the partner’s physical attributes resulted in a reduction of retaliatory stances; since the beginning levels of retaliation were well below the objective means and the effect sizes were relatively small, this finding fits well into the pattern of the studies conducted in the U.S.

Aman et al. (2019) worked with 508 Pakistani Muslim couples to explore facets of marital satisfaction. Respondents strongly identified religious commitment and practices as important components. It is common in the Muslim tradition for men and women to pray in different sections of the mosque, so at least some of the ritualistic (Salat) prayers are performed outside of each other’s company, however, they might be considered “together” if occurring at the same time. It is also possible that these couples might engage in prayers together in other contexts (e.g., the more individualized Zikr and Dua forms of prayer), however, none of these caveats are noted in the report.

Goodman et al. (2013) solicited open-ended responses from 184 Christian, Jewish, and Muslim couples who reported on the usefulness of praying together. In a fashion very similar to the study of Pakistani relationships (Aman et al., 2019), a major takeaway from this project is that the couples believed God’s help came to them through prayer. Prayer for these respondents was not only an act that they performed, but a way in which they perceived the ability to receive divine guidance.

From a Buddhist perspective, Polinska (2010) writes that the marriage accent falls on a commitment to following Buddhist precepts as opposed to a commitment specifically to each other. Mutual adherence to broad Buddhist ideals is presumed capable of sustaining the relationship because the

---

tradition's principles inherently cultivate practices such as mutuality of respect and openness of communication. The author further observes that meditative practices (somewhat akin to silent prayer at least on a behavioral, if not a theological/philosophical level) can support marital satisfaction because they encourage the sort of development and growth that benefits both partners.

One general conclusion from this small sampling of non-U.S. work regarding prayer and intimate relationships is that approaches toward experimentalism are less prevalent. This may be a result of the narrow scope of relationships and prayer, but it could also be indicative of more fundamental concerns with the principles and application of the philosophical principles underlying the scientific method in general and Western practices more specifically (Ladd, Ladd, & Sahai, 2018).

Setting aside the methodological observation, clearly these other cultural positions readily identify the practice of prayer as an important relational element. The reports that prayer enhances both individual and intimate relationship identities and satisfaction levels suggests a wide cultural basis of common interest and room for expanded investigations.

[Back to Table of Contents](#)

## **VII. RESEARCH OPPORTUNITIES**

As we've seen, prayer is clearly not a monolithic endeavor. So, too, the measurable elements that accompany prayer are numerous.

### *Physical*

When considering the physical nature of prayer there are both personal and impersonal factors. On the personal level, there are experiential differences related to whether the partners are in motion or still. If one is praying while walking, the pattern, rapidity, and duration of the actions are all relevant due to differences in stimulation. Psychological principles of attribution, misattribution, and mimicry/synchrony may play roles in these effects.

Similarly, if the amount of motion is minimal, awareness of bodily postures may be important as the different poses carry both social and physiological significance. As an example, praying while standing erect, holding one's arms extended upwards above the head and tilting the head backward simultaneously induces muscle fatigue of the legs and torso, as well as the arms. In addition, the backward head tilt preferences nasal as opposed to mouth breathing. This posture also influences the possible gaze pattern, limiting the extent to which partners can see each other, highlighting instead what is overhead.

The physical conditions extend beyond the individual bodies and incorporate the surrounding space. The extent to which this space is naturally occurring versus built is one type of variable. Temperature, lighting, coloration, "head room," texture of materials, aromas, shapes, and similar factors can also influence the emotional tone of the interaction between partners. Consider, for instance, a couple

---

meeting outdoors for a time of prayer at 14,000 feet above sea level as opposed to in a functional, beige-colored room located in a contemporary pole-barn worship space. In the author's lab, a series of projects are underway that employ labyrinths as prayer tools. Using labyrinths in combination with prayer for conflict resolution in general or intimate partner counseling is a clear application opportunity (Sellers & Moss, 2016). The flexible nature of the labyrinth as a symbol means that it also can be incorporated into celebratory moments for intimate partners (e.g., weddings, vow renewals). Such celebrations can either be private or public in nature as the strong symbolism of pilgrimage can extend in many directions.

It is also the case that physical locations can be deeply associated with memory functions. Places can evoke stronger reactions than could be predicted, sometimes even surprising the person who experiences the stimulation. A common example here is a person returning to her or his grade school building after many intervening years. More directly relevant to the specific topic at hand, spaces encountered for specific rites associated with different moments of the relationship can be either more or less relevant to individuals; the factors contributing to differences in reactivity to these exposures, and how the discrete levels of arousal influence relational spiritual conditions, are unexplored.

Another example of potential interest concerns gravesites or similar markers of significance following the death of one of the intimate partners. Stories abound of individuals who pray or otherwise communicate with dead partners, with greater or lesser emphasis on this activity as metaphorical. Through antiquity as well as in more contemporary settings (e.g., the spiritualist movement in the U.S. toward the end of the 1800s and into the early 1900s; the current strength of Spiritism in Brazil and other locations around the globe), these practices are persistent. Our knowledge in this domain, however, has often focused on either 1) the trickery involved to relieve the gullible of their cash (consider the crusades of the magicians Houdini, Randi, and the Penn/Teller duo against mediums) or 2) the cognitive experience and constructs formed within the individual. The relational aspect of these beliefs and behaviors remains relatively undefined.

### *Spatial*

Beyond tangible physical characteristics, it can be revealing to consider how those elements are arranged in space. A once popular bumper sticker reads "the family that prays together, stays together." Implicit in this sentiment is a sense of physical closeness. A natural question arises: How close? Past research seeking to understand optimal social distances helped to establish that preferred personal space differed according to a host of principles including in-group/out-group status. Extending that work in the realm of intimate partners could elucidate how preferred spatial differences related to perceived quality of prayer experiences. It could also be linked to physiological work relative to the potentially stimulative effects of touch (Petrella & Rovers, 2017). Holding hands during prayer might be perceived as more powerful than simply sitting near each other; lying in bed beside each other might also evoke different experiences. Further, the influence of gaze could also be of interest. Many traditions incorporate a prayer posture including closed eyes. The relation of gaze to interpersonal experiences of closeness (Aron et al., 1997) and love versus lust (Bolmont, Cacioppo, & Cacioppo, 2014) is clearly relevant to intimate relationship prayer practice.



---

What then of long-distance prayer when the physical elements are removed from intimate partners? Would the power of gaze work to enhance prayer experiences conducted via a digital connection over great distance (or even in an adjacent research room)? Simple measures of distance, however, typically are confounded in the real world by the factor of time duration. Spatial separations often include spaces of days or even months in the cases of partners who have jobs in different geographical locations. It is an open question as to whether praying together in some form at a distance (either simply at the same time, using written communication (letter versus email?) or using a digital connection to add auditory and/or visual signals to the communication) is helpful or detrimental to long-term relationships.

### *Language*

More traditional lines of exploration involve evaluations of vocabulary employed. The ways in which intimate partners use language may provide insight into the extent to which they are attentive to the other. The manner and tone of the language can also carry great weight, employed to either enhance or attack the partner. This relates to the idea of “holy gossip” that takes a decidedly manipulative turn: “Dear God, please forgive my useless spouse who is not strong enough to stop drinking, smoking, and philandering.” Such a prayer uttered in the presence of the spouse or in the presence of an assembly carries significant implications linked to research on passive-aggressive interactions.

While there are a variety of measurement tools available in this domain, Ladd and Spilka (2002, 2006) explicitly sought to find the commonalities among several of the tools. The result of those projects was a conceptualization of the language of prayer as a means of connecting the inward (personal concerns), the outward (concerns for the tangible world), and the upward (concerns with the perceived superphysical/supernatural). This model of prayer has been linked to attribution theory as a model of understanding death experiences (Ladd, 2015) and has been related to theories of love that represent one prominent feature of prayer and religion more generally (Ladd, 2017). The use of this type of conceptual model and empirical measurement tool would allow for the evaluation of the degree to which couples use synchronous or asynchronous emphases in their expressions of prayer. As an extension of that basic idea, it is also feasible to capture either written or spoken prayers from couples and evaluate that natural language using any one of many available computer programs. This latter approach has the benefit of being able to use the conceptual model without the intrusion of physically responding to the short series of words and phrases that comprise the measurement scales.

It is not at all uncommon for intimate partners to spend time in purely silent prayer with each other. “Prayers of the heart” are also an area ripe for investigation because they represent emotional facets of prayer as opposed to the more commonly explored cognitive, linguistic areas (see also the “primary speech” notions of Ulanov and Ulanov, 1982).

### *Cognition*

Beyond language, there are a wide range of potential avenues for exploring cognitive functions. These types of prayer-related studies can be conducted among children in order to isolate basic functions and understandings of the practice in relation to cognitive development (Richert et al., 2017). Longitudinal



---

work tracking developmental cognitive processes remains to be conducted and this could become a major source of information. At the present time, research is primarily cross-sectional. This can create the illusion that prayer is relatively static across the lifespan, yet this is patently not the case. Different ways of praying are either more or less prominent at different times of the lifecycle and in response to different stimuli. “Longitudinal” in this instance could mean across a single prayer because the intimate partners likely cover a multitude of topics in a single prayer. For instance, it would be possible to track the content of prayers, both prescribed and spontaneous (the latter would be most informative), during season of religious importance or even on a single religious holy day. Accumulating the prayers across multiple years would allow for analysis of changes. Employing a nested design, small instances could also be monitored in terms of larger patterns. This is a relatively labor-intensive option, but the complex demands are repaid with uniquely informative data.

Other cognitive work regarding prayer takes a great number of forms. In some cases, these lead to considerations of psychological principles related to the formation of meaning, appraisals, and coping strategies (Miller-Perrin & Mancuso, 2014). Other perspectives arise from sociological conceptualizations of cognition (Wuthnow, 2008). Yet other scholars cast the intellectual net wider than the discipline of psychology to address how ordinary cognitive processes do or do not lend themselves to religious thinking and its concomitant beliefs and rituals (Barrett, 2007). Classic topics yet to be explored here would involve how concepts of the nature and character of the supernatural entity toward which prayers are directed have (or do not have) influence on the quality of intimate relationships. Do couples need to share similar images and concepts for their joint prayers to enhance their relationship?

The various perspectives, especially that of cognitive science as most broadly defined, have critics (Jones, 2019) who argue that the emphasis on cognition unnecessarily sacrifices the role of physicality. The tension between cognitive and embodiment positions (Gibbs, 2005) has many edges to explore with regard to prayer. For instance, cognition, evolution, and embodiment all have a place in the discussion of mimicry as it promotes close relationships (Chartrand & Bargh, 1999; Chartrand & Lakin, 2013; Gueguen, 2009). This perspective could be extended to address the effect of distinctive postures adopted by couples during times of prayer.

### *Vision*

“Seeing eye to eye” is a common phrase used to denote a commonality of perspective. There is, however, more than just language behind this expression. The manner in which people literally see the world around them is influential with regard to their affect, cognition, behavior, and more (Balcetis & Lassiter, 2010). Eye-tracking technology pulls from multiple theoretical backgrounds (Liversedge, Gilchrist, & Everling, 2013) and is useful in tracking how couples visually connect or disengage (Bolmont, Cacioppo, & Cacioppo, 2014). The author’s lab is currently using photovoice and eye-tracking techniques to explore connections between ways of praying and ways of seeing, with preliminary evidence suggesting that theological views (broad/narrow) relate to how people intuitively frame the pictures they take and prefer. It is a short step to applying this sort of investigate technique

---

to intimate relationships and the ways in which their prayers correspond to their intellectual and literal views; this sort of information has significant potential especially within clinical contexts.

### *Affect*

In many ways, prayer is a fundamentally emotional experience. It is common for practitioners to speak of their spiritual experiences as ineffable and that reaction holds true for the practice of prayer. Across the religious traditions outlined, the commentaries on prayer affirm this understanding. Similarly, affect is a critical variable for describing intimate relationships. It is a natural pairing to explore these domains in tandem. The challenge, of course, is finding appropriate methodologies for studying emotionality without forcing language onto the experience. Some attempts to use neuroimaging techniques have appeared, but those have been severely hampered because of a lack of debriefing; it is not known if the results truly reflect praying or the attempt to pray. Doing and thinking about doing are quite different states, hence, the study findings are fully ambiguous.

It is the case that investigations in this area must be fastidious about both positive and negative emotional experiences. As with journaling studies (Pennebaker, 2004), the presence of both types of emotions is likely given the processes that define the act of praying. Since prayer serves in some of its forms as a psychological mechanism of confession and contrition, these characteristics must be represented as adequately as are experiences of joy and happiness. Especially regarding the negative emotions, it is important to consider not just their presence or absence, but the interpretations placed on those emotions by the intimate couple. It could be that one person views the negative emotions as transitory (guilt-released) while the other considers the emotions more permanent (guilt-maintained).

### *Behavior*

Many behaviors relative to intimate partners are exceptionally well documented, so determining how much prayer contributes over and above these other variables is a relatively straightforward task awaiting researchers.

It is worth noting that some of the most widely studied human behaviors involve sexuality beyond the adolescent years, yet there is relatively little detailed research in this area as it involves religion and spirituality. One notable exception is that of Hernandez (2008) who, in her Master's thesis, addressed sexual frequency, satisfaction, intimacy, and distress as related to spiritual sanctification of marriage. Among the findings from this sample of college students, frequency of prayer (individual) and the manifestation of God in sexual intercourse were positively and significantly correlated, however, no indices of partner-focused or dyadic prayer behaviors were included.

This domain, then, presents a unique opportunity for prayer researchers because there are traditions (e.g, Kamasutra, Tantric yoga) that actively promote sexual relationships as an expression of mutual spirituality. Other traditions place far less emphasis on sexual expression as a form of prayerful interaction, and in some cases, certain kinds of sexuality are rejected. Given the current cultural discussions on topics of sexuality ranging from marriage to transgender identity, this area represents a comparatively untapped line of work that while sensitive and challenging, could offer significant

---

insight. The fact that a satisfying sexual relationship was the second highest reported element of a successful marriage further supports this as a potential area of interest for researchers.

Within the same realm, virtual sexuality and its relation to the practice of intimate prayer also looms large due to the availability of internet pornography (IP). Short, Kasper, and Wetterneck (2015) relay the estimate that approximately 40 percent of conservative Protestant clergy struggle with online pornography. A significant proportion of these clergy are likely to be married, hence, the prayer interactions with spouses may or may not have a role in the patterns and interpretation of this virtual sexuality as detrimental or beneficial to the relationships. Short and colleagues (2015) found no differences in religious practices, including prayer, or marital satisfaction for those who never had used IP and those who were currently using IP.

There is also room in this area, as well as in the area of cognition, for consideration of prayer in relation to discussions of spiritual possession (Cohen, 2007; Gammelin, 2020). These notions are often related to the concepts of spiritual warfare that entails significant physical manifestations. The degree to which these trance states and/or warfare conditions are experienced by couples in the course of their relationships is not thoroughly documented. The physicality of these events makes them highly memorable and such strong experiences would be capable of creating durable relational bonds with those present; the absence of one's intimate other would be significant.

[Back to Table of Contents](#)

## **VIII. RESEARCH PRIORITIES**

It would be well worth investigating how the value of the frequency of prayer can be balanced between scientific and theological conceptualizations. As noted before, the strict notion of a dose-response is not universally applicable to prayer. On the other hand, prayer is also a spiritual discipline meant to be engaged on a regular basis. Sorting out the ways of praying that interact with issues of frequency seems a fertile ground for both theoretical and data-driven work.

Methodologically, longitudinal studies tracking across a series of years have particular potential, especially if carefully populated with an array of outcome variables. While it certainly is possible to acquire new knowledge about the short term (e.g., multiple weeks or months), it is clear that the role and practice of prayer can change radically over a lifetime. It is likely that enterprising researchers would not need to initially create projects along this line so much as to uncover information that already exists in the form of personal diaries. It could also be that relevant information could be culled from sermons or other similar documents. As a first step along this path, this sort of qualitative exploration could be joined with short-term longitudinal and cross-sectional projects to effectively plan larger scale work. Another methodological observation is that studies are typically restricted to ostensibly testing positive outcomes of prayer. While the ethical realities are readily apparent, the absence of demonstrations about how prayer involvement could be harmful to the individual reduces

---

the overall message of the findings. This is similar to noting how the practice of yoga can, in fact, result in negative outcomes for some people.

Perhaps the greatest promise for advancing this field of study lies in demonstrating what is (or is not) unique about how prayer relates to intimate relationships. There are many nonprayer variables, such as income and number of children, that are clear and powerful predictors of positive relationships. When things go awry in relationships, clinicians know that these must be addressed. We need to know more about how the practice(s) of prayer fits into this equation. As outlined above, a key strategy in evaluating any given variable is to determine the extent to which that variable is unique in its explanatory power. If other variables (self-talk, long walks, etc.) produce relational changes in a manner similar to prayer, then prayer's uniqueness is limited and hence its applications are circumscribed. This condition extends beyond determinations of statistical significance and explicitly looks for effect sizes that show there is some level of practical difference, for if there is no practical difference between variables, then the discussion of which variable to engage is based on other considerations (cost, simplicity, etc.). This is by no means to suggest that a lack of uniqueness somehow limits or disparages the contributions of prayer practice, it is only to recognize that if there is something truly unique about a variable, that status radically changes how it is approached and the degree to which it adds new knowledge to our understanding of what it means to be human.

Back to Table of Contents

## IX. REFERENCES

- Aman, J., Abbas, J., Nurunnabi, M., & Bano, S. (2019). The relationship and marital satisfaction: The role of religious commitment and practices on marital satisfaction among Pakistani respondents. *Behavioral Science, 9*(3), 30-43. <https://doi.org/10.3390/bs9030030>
- Appelbaum, M., Cooper, H., Kline, R. B., Mayo-Wilson, E., Nezu, A. M., & Rao, S. M. (2018). Journal article reporting standards for quantitative research in psychology: The APA Publications and Communications Board task force report. *American Psychologist, 73*(1), 3-25. <http://dx.doi.org/10.1037/amp0000191>
- Axirvatham, S., Pache, C., & Watrous, J. (2001). *Between Magic and Religion: Interdisciplinary Studies in Ancient Mediterranean Religion and Society*. New York: Rowman & Littlefield.
- Balcetis, E., & Lassiter, G. D. (2010). *Social Psychology of Visual Perception*. Abingdon, U.K.: Psychology Press Taylor & Francis Group. <https://doi.org/10.4324/9780203848043>
- Barrett, J. L. (2007). Cognitive science of religion: What is it and why is it? *Religion Compass, 1*, 768-786. <https://doi-org.proxysb.uits.iu.edu/10.1111/j.1749-8171.2007.00042.x>
- Barrie, T., Bermudez, J., & Tabb, P. J. (2015). *Architecture, Culture, and Spirituality*. New York: Routledge.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497-529. <https://doi.org/10.1037/0033-2909.117.3.497>

- 
- Beach, S. R. H., Fincham, F. D., Hurt, T., McNair, L. M., & Stanley, S. M. (2008). Prayer and marital intervention: A conceptual framework. *Journal of Social and Clinical Psychology, 27*, 641-669. <https://doi.org/10.1521/jscp.2008.27.7.641>
- Beach, S. R. H., Hurt, T. R., Fincham, F. D., Franklin, K. J., McNair, L. M., & Stanley, S. M. (2011). Enhancing marital enrichment through spirituality: Efficacy data for prayer focused relationship enhancement. *Psychology of Religion and Spirituality, 3*(3), 201-216. <https://doi.org/10.1037/a0022207>
- Blanton, A. (2015). *Hittin' the prayer bones: Materiality of spirit in the Pentecostal South*. Chapel Hill: University of North Carolina Press.
- Blocker, H. S., & McIntosh, D. N. (2017). Not all outgroups are equal: Group type may influence group effect on matching behavior. *Journal of Nonverbal Behavior, 41*(4), 395-413. <https://doi.org/10.1007/s10919-017-0258-z>
- Bolmont, M., Cacioppo, J. T., & Cacioppo, S. (2014). Love is in the gaze: An eye-tracking study of love and sexual desire. *Psychological Science, 25*(9), 1748-1756. <https://doi.org/10.1177/956797614539706>
- Brown, F. B. (Ed.). (2014). *The Oxford Handbook of Religion and the Arts*. New York: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780195176674.001.0001>
- Burke, R. J., Weir, T., & DuWors, Jr., R. E. (1979). Type A behavior of administrators and wives' reports of marital satisfaction and well-being. *Journal of Applied Psychology, 64*(1), 57-65.
- Cameron, L. D., & Overall, N.C. (2018). Suppression and expression as distinct emotion-regulation processes in daily interactions: Longitudinal and meta-analyses. *Emotion, 18*(4), 465-480. <https://doi.org/10.1037/emo0000334>
- Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception-behavior link and social interaction. *Journal of Personality and Social Psychology, 76*(6), 893-901.
- Chartrand, T. L., & Lakin, J. L. (2013). The antecedents and consequences of human behavioral mimicry. *Annual Review of Psychology, 64*, 285-308.
- Cohen, E. A. (2007). *The Mind Possessed: The Cognition of Spirit Possession in an Afro-Brazilian Religious Tradition*. New York: Oxford University Press.
- Cornejo, C., Cuadros, Z., Morales, R., & Paredes, J. (2017). Interpersonal coordination: Methods, achievements, and challenges. *Frontiers in Psychology, 8*(1685). <https://doi.org/10.3389/fpsyg.2017.01685>
- Counted V., & Watts F. (Eds.). (2019). *The Psychology of Religion and Place*. New York: Palgrave Macmillan. [https://doi.org/10.1007/978-3-030-28848-8\\_1](https://doi.org/10.1007/978-3-030-28848-8_1)
- Cracco, E., Bardi, L., Desmet, C., Genschow, O., Rigoni, D., De Coster, L., & Brass, M. (2018). Automatic imitation: A meta-analysis. *Psychological Bulletin, 144*(5), 453-500. <https://doi.org/10.1037/bul0000143.supp>
- Croes, E. A. J., Antheunis, M. L., Schouten, A. P., & Kraahmer, E. J. (2020). The role of eye-contact in the development of romantic attraction: Studying interactive uncertainty reduction strategies during speed-dating. *Computers in Human Behavior, 105*, N.PAG. <https://doi.org/10.1016/j.chb.2019.106218>

- 
- Cross, L., Turgeon, M., & Atherton, G. (2019). How moving together binds us together: The social consequences of interpersonal entrainment and group processes. *Open Psychology, 1*(273). <https://doi.org/10.1515/psych-2018-0018>
- Fathi, M., Bateson, M., & Nettle, D. (2014). Effects of watching eyes and norm cues on charitable giving in a surreptitious behavioral experiment. *Evolutionary Psychology, 12*(5), 878-887. <https://doi.org/10.1177/147470491401200502>
- Fincham, F. D., & Beach, S. R. H. (2013a). Can religion and spirituality enhance prevention programs for couples? K. I. Pargament (Ed.). *APA Handbook of Psychology, Religion, and Spirituality, vol. 2: An Applied Psychology of Religion and Spirituality*, 461-479, Washington, DC: American Psychological Association.
- Fincham, F. D., & Beach, S. R. H. (2013b). Gratitude and forgiveness in relationships. J. A. Simpson & L. Campbell (Eds.). *The Oxford Handbook of Close Relationships*, 638-663, New York: Oxford University Press.
- Fincham, F. D., & Beach, S. R. H. (2014). I say a little prayer for you: Praying for partner increases commitment in romantic relationships. *Journal of Family Psychology, 28*(5), 587-593.
- Fincham, F. D., Lambert, N. M., & Beach, S. R. H. (2010). Faith and unfaithfulness: Can praying for your partner reduce infidelity? *Journal of Personality and Social Psychology, 99*, 649-659. <https://doi.org/10.1037/a0019628>
- Fincham, F. D. (2014). I say a little prayer for you: Do prayers matter in marriage and family life? In A. Abela & J. Walker (Eds.). *Contemporary Issues in Family Studies: Global Perspectives on Partnerships, Parenting and Support in a Changing World*, 341-354, Malden, MA: Wiley-Blackwell.
- Fincham, F. D. (2015). Forgiveness, family relationships and health. In L. L. Toussaint, E. L. Worthington, Jr., & D. R. Williams (Eds.). *Forgiveness and Health: Scientific Evidence and Theories Relating Forgiveness to Better Health*, 255-270, New York: Springer.
- Fincham, F. D., & Beach, S. R. H. (1999). Marital conflict: Implications for working with couples. *Annual Review of Psychology, 50*(4), 7-77.
- Fincham, F. D., Ajayi, C., & Beach, S. R. H. (2011). Spirituality and marital satisfaction in African-American couples. *Psychology of Religion and Spirituality, 3*(4), 259- 268.
- Fincham, F. D., Beach, S. R. H., Lambert, N., Stillman, T., & Braithwaite, S. (2008). Spiritual behaviors and relationship satisfaction: A critical analysis of the role of prayer. *Journal of Social and Clinical Psychology, 27*(4), 362-388.
- Fincham, F. D., Lambert, N. M., & Beach, S. R. H. (2010). Faith and unfaithfulness: Can praying for your partner reduce infidelity? *Journal of Personality and Social Psychology, 99*(4), 649-659. <https://doi-org.proxysb.uits.iu.edu/10.1037/a0019628>
- Fincham, F. D., May, R. W., & Sanchez-Gonzalez, M. A. (2015). Forgiveness and cardiovascular functioning in married couples. *Couple and Family Psychology: Research and Practice, 4*(1), 39-48.
- Finkle, E. J., Simpson, J. A., & Eastwick, P. W. (2017). The psychology of close relationships: Fourteen core principles. *Annual Review of Psychology, 68*, 383-411. <https://doi.org/10.1146/annurev-psych-010416-044038>
- Gibbs, Jr, R. (2005). *Embodiment and Cognitive Science*. Cambridge: Cambridge University Press. doi:10.1017/CBO9780511805844



- Giblin, P. R. (1997). Marital spirituality: A quantitative study. *Journal of Religion and Health*, 36(4), 321-332.
- Goldingay, S., Dieppe, P., & Farias, M. (2014). “And the pain just disappeared into insignificance:” The healing response in Lourdes—Performance, psychology and caring. *International Review of Psychiatry (Abingdon, England)*, 26(3), 315–323. <https://doi.org/10.3109/09540261.2014.914472>
- Goodman, M. A., Dollahite, D. C., Marks, L. D., & Layton, E. (2013) Religious faith and transformational processes in marriage family relations. *National Council on Family Relations*, 62(5), 808-823.
- Gueguen, N. (2009). Mimicry and seduction: An evaluation in a courtship context. *Social Influence*, 4(4) 249-255.
- Heiler, F. (1932). *Prayer: A Study in the History and Psychology of Religion* (S. McComb, Trans.). London: Oxford University Press. (Original work published 1918.)
- Hess, U., & Fischer, A. (2013). Emotional mimicry as social regulation. *Personality and Social Psychology Review*, 17(2), 142–157. <https://doi.org/10.1177/1088868312472607>
- Hira, S. N., & Overall, N. C. (2010). Improving intimate relationships: Targeting the partner versus changing the self. *Journal of Social and Personal Relationships*, 28(5), 610-633. <https://doi.org/10.1177/0265407510388586>
- Hwang, T. H., Schmitz, G., Klemmt, K., Brinkop, L., Ghai, S., Stoica, M., & Effenberg, A. O. (2018). Effect and performance-based auditory feedback on interpersonal coordination. *Frontiers in Psychology*, 9(404). <https://doi.org/10.3389/fpsyg.2018.00404/full>
- Julian. (1901). *Revelations of divine love*. (G. Warrack, Trans.) London: Methuen & Company. (Original work published ca 1394.)
- Jones, J. W. (2019). *Living Religion: Embodiment, Theology, and the Possibility of a Spiritual Sense*. New York: Oxford University Press.
- Kerr N. L. (1998). HARKing: Hypothesizing after the results are known. *Personality and Social Psychology Review*, 2(3), 196–217. [https://doi.org/10.1207/s15327957pspr0203\\_4](https://doi.org/10.1207/s15327957pspr0203_4)
- Kurtz, F. B., Rennebohm, S. B., Teal, S. M., Charleson, J. S., and Thoburn, J. W. (2019). Investigating the relationship between behavioral synchrony and dimensions of interpersonal attraction: Why task attraction rises above the others. *Couple and Family Psychology: Research and Practice*, 8(1), 10–23. <https://doi.org/10.1037/cfp0000113>
- Ladd, K. L. (2015). A Fé na(s) Face(s) da Morte: A Matriz das Relações e Teoria da Oração Mimética Corporificada. In T. A. Aquino, M. H. de Freitas, & G. J. de Paiva (Eds.), *Morte, psicologia e religião* [Death, psychology and religion], João Pessoa, Brazil, Nova Fonte, XX-XX. Published simultaneously in English: Faith in the face(s) of death: A matrix of relations and theory of embodied mimetic prayer. In Grzymała-Moszczyńska, H & Motak, D. *Festschrift for Pawel Socha*.
- Ladd, K. L. (Ed.). (2019). Place spirituality [Special issue]. *Archive for the Psychology of Religion*, 41(1), 12-52.
- Ladd, K. L. (2007). Religiosity, the need for structure, death attitudes, and funeral preferences. *Mental Health, Religion, and Culture*, 10(5), 451-472.



- Ladd, K. L. (2017). Toward a tripartite psychological model of prayer. *Revista Pistis Praxis: Teologia e Pastoral*, 9(1), 205-220.
- Ladd, K. L., Cook, C. A., Foreman, K. M., Ritter, E. A., & Mertes, S. C. (2015). Neuroimaging of prayer: Questions of validity. *Journal for the Psychology of Religion and Spirituality*, 7(2), 100-108.
- Ladd, K. L., Ladd, M. L., Ashbaugh, P., Trnka, D., Harner, J., St. Pierre, K., & Swanson, T. (2007). Inward, outward, upward prayer and personal character. *Research in the Social Scientific Study of Religion*, special section on Positive Psychology, Religion, and Spirituality, 18, 209-231.
- Ladd, K. L., Ladd, M. L. & Sahai, N. (2018). Conceptualizing “prayer” for an East–West dialogue and beyond. *Psychological Studies*, 63, 163–171. <https://doi.org/10.1007/s12646-016-0380-8>
- Ladd, K. L. & Spilka, B. (2002). Inward, outward, upward: Cognitive aspects of prayer. *Journal for the Scientific Study of Religion*, 41(3), 475-484.
- Ladd, K. L., & Spilka, B. (2006). Inward, outward, upward prayer: Scale reliability and validation. *Journal for the Scientific Study of Religion* 45(2), 233-251.
- Ladd, K. L. & Spilka, B. (2014). Prayer and health research: Proxies, missed targets and opportunities. *Revista Pistis Praxis: Teologia e Pastoral*, 6(1), 33-50.
- Ladd, K. L., Vreugdenhil, S., Ladd, M. L., & Cook, C. (2012). Interpersonal conversations and prayers: Differences of content and attachment functions. *Journal of Communication and Religion*, 35(3), 295-311.
- Lambert, N. M., Fincham, F. D., DeWall, N. C., Pond, R., & Beach, S. R. H. (2013). Shifting toward cooperative tendencies and forgiveness: How partner-focused prayer transforms motivation. *Personal Relationships*, 20(1), 184-197.
- Lambert, N. M., Fincham, F. D., LaVallee, D. C., & Brantley, C. W. (2012). Praying together and staying together: Couple prayer and trust. *Psychology of Religion and Spirituality* 4(1), 1-9.
- Lambert, N. M., Fincham, F. D., & Stanley, S. (2012). Prayer and satisfaction with sacrifice in close relationships. *Journal of Social and Personal Relationships* 29(8), 1058-1070.
- Lambert, N. M., Fincham, F. D., Stillman, T. F., Graham, S. M., & Beach, S. R. H. (2010). Motivating change in relationships: Can prayer increase forgiveness? *Psychological Science*, 21(1), 126–132. <https://doi.org/10.1177/0956797609355634>
- Levin, J. S. (1996). How prayer heals: A theoretical model. *Alternative therapies in health and medicine*, 2(1), 66–73.
- Levitt, H. M., Bamberg, M., Creswell, J. W., Frost, D. M., Josselson, R., & Suárez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board task force report. *American Psychologist*, 73(1), 26-46. <http://dx.doi.org/10.1037/amp0000151>
- Liversedge, S., Gilchrist, I., & Everling, S. (2013). *Oxford Handbook of Eye Movements*. New York: Oxford.
- McAlister, E. (2016). The militarization of prayer in America: White and Native American spiritual warfare. *Journal of Religious and Political Practice*, 2(1), 114-130. <https://doi.org/10.1080/20566093.2016.1085239>

- 
- Mann, S., Vrij, A., Leal, S., Granhag, P., Warmelink, L., & Forrester, D. (2012). Windows to the soul? Deliberate eye contact as a cue to deceit. *Journal of Nonverbal Behavior*, 36(3), 205–215. <https://doi.org/10.1007/s10919-012-0132-y>
- Markus, H. (1977). Self-schemas and processing information about the self. *Journal of Personality and Social Psychology*, 35, 63-78.
- May, R. W., Sanchez-Gonzalez, M. A., Hawkins, K. S., Batchelor, W. B., & Fincham, F. D. (2014). Effect of anger and trait forgiveness on cardiovascular risk in young adult females. *The American Journal of Cardiology*, 114(1), 47-52.
- Mead, G. H. (1934). *Mind, Self, and Society: From the Standpoint of a Social Behaviorist*. Chicago: University of Chicago Press.
- Meehl, P. (1967). Theory-testing in psychology and physics: A methodological paradox. *Philosophy of Science*, 34, 103-115.
- Meehl, P. (1978). Theoretical risks and tabular asterisks: Sir Karl, Sir Ronald, and the slow progress of soft psychology. *Journal of Consulting and Clinical Psychology*, 46, 806-834.
- Meehl, P. (1990). Appraising and amending theories: The strategy of Lakatosian defense and the two principles that warrant it. *Psychological Inquiry*, 1, 108-141.
- Meehl, P. (1997). The problem is epistemology, not statistics: Replace significance tests by confidence intervals and quantify accuracy of risky numerical predictions. In L. L. Harlow, S. A. Mulaik, & J. H. Steiger (Eds.), *What If There Were No Significance Tests?* (pp. 393-425). Mahwah, New York: Lawrence Erlbaum Associates.
- Miller-Perrin C., Krumrei Mancuso E. (2015) Faith and cognition. In *Faith from a Positive Psychology Perspective*. Springer, Dordrecht. [https://doi.org/10.1007/978-94-017-9436-7\\_4](https://doi.org/10.1007/978-94-017-9436-7_4)
- Miyatake, S. & Higuchi, M. (2017). Does religious priming increase the prosocial behaviour of a Japanese sample in an anonymous game? *Asian Journal of Social Psychology*, 20, 54-59. <https://doi.org/10.1111/ajsp.12164>
- Otto, R. (1937). *The Idea of the Holy*. (J. W. Harvey, trans.). New York: Oxford University Press.
- Overall, N. C., Simpson, J. A., Campbell, L., & Fletcher, G. (2019). *The science of intimate relationships*. Chichester, West Sussex: Wiley Blackwell. <https://doi.org/10.1002/9781119519416>
- Pennebaker, J. W. (2004). *Writing to Heal: A Guided Journal for Recovering from Trauma and Emotional Upheaval*. Oakland, CA: New Harbinger Press.
- Pereira, M. G., Taysi, E., Orcan, F., & Fincham, F. D. (2014). Attachment, infidelity, and loneliness in college students involved in a romantic relationship: The role of relationship satisfaction, morbidity, and prayer for partner. *Contemporary Family Therapy*, 36(3), 333-350.
- Petrella, C., & Rovers, M. (2017). Inter-partner touch in couple counselling: Theory and emerging practice. In M. Rovers, J. Malette, M. Guirguis-Younger (Eds), *Touch in the Helping Professions: Research, Practice and Ethics*. Ottawa: University of Ottawa Press.
- Pew Research Center (Oct. 26, 2016). One-in-Five U.S. Adults Were Raised in Interfaith Homes. Retrieved 15 November 2019 from <https://www.pewforum.org/wp-content/uploads/sites/7/2016/10/Mixed-Religions-full-report.pdf>
- Polinska, W. (2010). Till death do us part? Buddhist insights on Christian marriage *Buddhist-Christian Studies*, 30, 29-40.
- Richert, R. A., Saide, A. R., Lesage, K. A., & Shaman, N. J. (2017). The role of religious context in

- 
- children's differentiation between God's mind and human minds. *The British Journal of Developmental Psychology*, 35(1), 37–59. <https://doi.org/10.1111/bjdp.12160>
- Rivera, P. M., & Fincham, F. D. (2015). Forgiveness as a mediator of the intergenerational transmission of violence. *Journal of Interpersonal Violence*, 30(6), 895-910.
- Sanchez-Gonzalez, M. A., May, R. W., Koutnik, A. P. & Fincham, F. D. (2015). Impact of negative affectivity and trait forgiveness on aortic blood pressure and coronary circulation. *Psychophysiology*, 52(2), 296-303.
- Sellers, J. & Moss, B. (Eds.) (2016). *Learning with the labyrinth: Creating reflective space in higher education*. London: Palgrave. 978-1-137-39383-8
- Selye H. (1975). Stress and distress. *Comprehensive Therapy*, 1(8), 9-13.
- Shariff, A. F. & Norenzayan, A. (2007). God is watching you: Priming God concepts increases prosocial behavior in an anonymous economic game. *Psychological Science*, 18(9), 803-809.
- Sharon-David, H., Mizrahi, M., Rinott, M., Golland, Y., and Birnbaum, G. E. (2019). Being on the same wavelength: Behavioral synchrony between partners and its influence on the experience of intimacy. *Journal of Social and Personal Relationships*, 36(10), 2983–3008. <https://doi.org/10.1177/0265407518809478>
- Short, M. B., Kasper, T. E., & Wetterneck, C. T. (2015). The relationship between religiosity and internet pornography use. *Journal of Religion and Health*, 54(2), 571-583.
- Sørensen, J. (2008). *A Cognitive Theory of Magic*. New York: Rowman & Littlefield.
- Sternberg, R., & Lubart, T. (1998). The concept of creativity: Prospects and paradigms. In R. Sternberg (Ed.), *Handbook of Creativity* (pp. 3-15). Cambridge, UK: Cambridge University Press. <https://doi.org/10.1017/CBO9780511807916.003>
- Tambiah, S. (1990). *Magic, Science and Religion and the Scope of Rationality*. Cambridge, UK: Cambridge University Press.
- Tong, Z., Li, T., Feng, J. & Zhang, Q. (2020). Using images of eyes to enhance green brand purchase intentions through green brand anthropomorphism strategies: The moderator role of facial expression. *Frontiers in Psychology: Experimental Psychology*, 11, Article 568595. [doi.org/10.3389/fpsyg.2020.568595](https://doi.org/10.3389/fpsyg.2020.568595)
- Toussaint, L., Kamble, S., Marschall, J. C., & Duggi, D. B. (2016). The effects of brief prayer on the experience of forgiveness: An American and Indian comparison. *International Journal of Psychology*, 51(4), 288–295. <https://doi.org/10.1002/ijop.12139>
- Ulanov, A, & Ulanov, B. (1982). *Primary Speech*. Louisville, KY: Westminster John Knox.
- Vicaria, I., & Dickens, L. (2016). Meta-analyses of the intra- and interpersonal outcomes of interpersonal coordination. *Journal of Nonverbal Behavior*, 40(4), 335–361. <https://doi.org/10.1007/s10919-016-0238-8>
- Weatherhead, S., & Daiches, A. (2015). Key issues to consider in therapy with Muslim families. *Journal of Religion and Health*, 54(6), 2398-2411.
- Wuthnow, R. (Ed.). (2008). Religion and culture [Special issue]. *Poetics*, 36(5-6), 333-506.
- Zaki, J. (2014). Empathy: A motivated account. *Psychological Bulletin*, 140(6), 1608-1647. <https://doi.org/10.1037/a0037679>