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Exploring Interdisciplinary Prayer Research in a Health Context

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Communication, Psychology, and Sociology are three leading academic disciplines engaged in the social scientific study of prayer, the spiritual communication between a believer(s) and God, but rarely do these disciplines collaborate in interdisciplinary prayer scholarship. Possibilities for interdisciplinary prayer research in a health context are explored through a review of the literature and academic interviews. Interdisciplinary linkages in the prayer-health context are organized in an integral "all-quadrant" theoretical model, and an assessment of the viability of interdisciplinary prayer-health research is considered. **Key Words:** *Prayer, Health, Communication, Interdisciplinary, Religion, Spirituality*

Let us begin with a seemingly unrelated question to understand how multiple disciplinary sites might define and engage in research about prayer: how might one describe and explain "a flower," specifically a variety of daisy known informally as *Lady Susan* (technically a perennial yellow flower called *Rudbeckia fulgida*)? A botanist or master gardener might be interested in how the flower was cultivated, the conditions of the soil, temperature, lighting, and so forth. An artist, observing intensely the flower's colors, hues, and shapes, may apply paint to the canvas, capturing the beauty of the flower. An entrepreneur may consider synthetically mass-producing the flower for a specific market niche--and so the list could go on. Thus, there are many perspectives that can inform an understanding and appreciation of something as simple as a daisy.

If we substitute the word "prayer" for the word "flower" in the preceding example, and if we use the same perspectives of botanist, artist, and capitalist, then several creative insights about prayer are apparent.[1] A botanist might study the ideal

conditions that will allow prayer to flourish and then determine if these conditions can be homegrown by the average gardener. An artist, immersing her/himself in the experience of prayer, may capture the experience on canvas or in verse. An entrepreneur, after conducting market research on the impact of prayer, might package a particular prayer technique for consumer consumption in the form of instructional books or digital media. In sum, the flower metaphor applied to prayer uncovers multiple meanings for prayer and alternate lines of praxis, depending on the particular perspective. Similarly, different academic disciplines can serve as perspectives for enlarging the meanings and praxis potentials of prayer research in a health context. Before pursuing this thesis, a conceptual definition of prayer will be offered followed by a review of issues related to interdisciplinary prayer research among three specific academic disciplines. Next, to demonstrate the potential viability of an interdisciplinary prayer research perspective, an extended exemplar of interdisciplinary prayer research in a health context is developed, supplemented with interview data and framed by integral theory.

Academics and Prayer

The same line of reasoning for various *non-academic* perspectives on prayer applies to *academic* descriptions and understandings of prayer. Before considering academic perspectives on prayer, a conceptual definition for prayer is in order. The following definition of prayer is based on a review of over 50 definitions of prayer: *prayer is a type of spiritual communication between human(s) and God* (Baesler, 1997, 1999). This definition of prayer is compatible with Schultze's (2005) notion of God as a *speech agency* in human interaction. One advantage of this conceptualization of prayer is that it encompasses common sense definitions of prayer such as talking, listening, and dialoguing with God, and also mystical definitions of prayer such as contemplation, hunger/thirsting, and love union (Baesler, 2003). This definition of prayer also allows for the study of prayer in the context of several major world religions, including Islam, Judaism, and Christianity, and possibly other religions as well.[2]

Disciplinary Sites of Prayer Research:
Psychology, Sociology, and Communication

The traditional choice for the academic study of prayer is Theology/Religious Studies (Zaleski & Zaleski, 2005), but if a social scientific worldview is adopted as an epistemological starting point[3] then disciplines other than Theology/Religious Studies may also be appropriate choices for the investigation of prayer phenomenon. There are several broad reviews of religion/spirituality in the literature that include prayer as one of many religious/spiritual variables, often in connection with health outcomes (e.g., Koenig, McCullough, & Larson, 2001; Larson & Larson, 2003). Within these reviews, most studies affirm a positive relationship between prayer and health, and are conducted by scholars in the field of Psychology. Other reviews that focus specifically on the empirical prayer literature (e.g., Finney & Malony, 1985; Francis & Evans, 1995; Masters & Spielmans, 2007) indicate that most scholars engaged in prayer research are affiliated with the academic disciplines of Psychology and Sociology. In addition, I propose including the academic discipline of Communication since spiritual *communication* is central to the conceptualization of prayer. Juxtaposing Communication *vis-à-vis* Psychology and Sociology also provides an opportunity to clarify the convergence of these fields in describing and understanding prayer phenomenon.

Interdisciplinary Prayer Convergence

Content domains for the disciplines of Communication, Psychology, and Sociology were plotted in tabular form (see sample of content domains in Table 1) based on information from national professional association websites (American Psychological Association, National Communication Association, and American Sociological Association). Two or more similar content domains across a particular row in Table 1 represent areas of *convergence* among the disciplines. Table 1 shows convergence for the topic of religion/spirituality, indicating the need/possibility of interdisciplinary prayer research among the disciplines of Communication, Psychology, and Sociology, yet there is no interdisciplinary empiri-

cal prayer research among the three disciplines that I am aware of. Occasionally, two of the three disciplines conduct interdisciplinary prayer research (e.g., Ladd, Anderson, Smith, & Baesler, 2006 representing Psychology and Communication), but most often the typical pattern of prayer research is associated with a specific discipline (e.g., Baesler, 2003 for Communication; Ladd & Spilka, 2002, for Psychology; Poloma & Pendelton, 1991 for Sociology). Outside the specific content domain of religion/spirituality, there are other domains that have generated discipline specific prayer research and demonstrate convergence among two (e.g., culture, politics) or three (e.g., family, health) of the disciplines, suggesting the possibility of interdisciplinary prayer research within these content domains (other content domains, like "animals and society" in Sociology, "military" in Psychology, and "performance studies" in Communication represent areas of *divergence,* and do not suggest the possibility of interdisciplinary research).[4]

I am not suggesting that individuals *must* engage in interdisciplinary prayer research for all convergent content domains, but I am suggesting that interdisciplinary research for convergent content domains is *possible* and potentially more heuristic in scope of content, application of diverse methodologies, and in building and testing prayer theories. The National Academy of Science (2005, p.188) committee on facilitating interdisciplinary research in their findings and recommendations argue that interdisciplinary research is becoming an integral feature of society due to four drivers: "…the inherent complexity of nature and society, the desire to explore problems and questions that are not confined to a single discipline, the need to solve societal problems, and the power of new technologies." Prayer research is compatible with these drivers in that prayer is pervasive in society (Gallup Organization, 2001), not confined to a single discipline (Baesler, 2003), may assist people in coping with stress and illness (Baesler, 2003), and can be explored using new technologies like neuroimaging (Ladd, Andreasen, Smith, & Baesler, 2006). These arguments suggest heuristic advantages to adopting diverse methods and theories that might be realized by future interdisciplinary prayer research.

Table 1

Samples of Interdisciplinary Convergence and Divergence
for Disciplinary Content Domains

Communication Units	Psychology Divisions	Sociology Sections
		Animals & Society
Family	*Family* Child, Youth, & Family	*Family*
Critical & *Cultural* Studies	Study of Social Issues	*Culture*
Health	*Health* Psychopharmacology & Substance Abuse Psychotherapy	Mental *Health* Alcohol & Drugs
	Military	
Organizational Public Relations	Industrial and *Organizational*	*Organizations*, Occupations, & Work Labor & Labor Management
Performance Studies Public Address Theatre		
Political		*Political* *Political* Economy Of the World
Spiritual	*Religion*	*Religion*

Note. Italicized content domains across rows represent areas of inter-
disciplinary convergence.

There are many possible reasons for the lack of interdisciplinary prayer research. First, there are issues related to accessing and evaluating prayer research. In the recent past, some researchers may have relied on one or two favorite electronic databases (e.g., MEDLINE, Psych INFO) which miss prayer studies in journals like *Journal of Communication and Religion*, or in specialized databases like ComAbstracts. Alternatively, searching newer databases like GOOGLE SCHOLAR pose a different challenge. The sheer volume of studies from mega search engines makes it difficult to prioritize and evaluate individual sites (e.g., a title search in 2007 using the keyword *prayer* in GOOGLE SCHOLAR yielded 7,770 hits). In addition, a number of small to mid-sized University libraries may have limited funding for search engines dedicated to religious/spiritual content. Thus, specialized prayer research may simply be unavailable, or hidden within the thousands of internet sites produced by mega search engines. Further, it is difficult to collaborate with prayer researchers from other disciplines when one does not even know who these scholars are or what types of prayer research they are engaged in with the possible exception of cross campus collaboration.

A second set of issues for the lack of interdisciplinary prayer research surround institutional academic regulations and privileges. For many on academic tenure tracks, there is tremendous pressure to publish sole author pieces to prove their competency as researchers, thus interdisciplinary research projects are a low priority. Those privileged with tenure and/or an academic rank higher than assistant professor tend to be more comfortable communicating with individuals that share their discipline specific worldview, and generally do not venture into the challenges of interdisciplinary research. This insular pattern of communication is often evident from observations at informal academic luncheons (who dines with colleagues from other disciplines to discuss interdisciplinary research?) and meetings at professional associations (who attends conferences outside their primary academic affiliation to engage in interdisciplinary research?). Institutional structures (rules for

promotion and tenure), economic concerns (library budgets, attending multiple conventions), and cognitive comfort zones (high dissonance resulting from interdisciplinary dialogue) *may* contribute in varying degrees to the lack of interdisciplinary prayer research.

Interdisciplinary Prayer Research in a Health Context

Exploring academic content domains for Communication, Psychology, and Sociology reveals several possible avenues for future interdisciplinary prayer research. Rather than outline several different programs of interdisciplinary prayer research (see Baesler, 2003 for examples), one extended example of interdisciplinary prayer research in a health context is developed. Exploring how prayer, a type of spiritual communication, impacts health communication and health outcomes is consistent with Tukey's (1995) call over a decade ago for research that addresses the relationship between communication and spirituality. The connection between prayer and health is also a topic of interest to most people of prayer (an estimated 88 to 90 percent of the U.S. population according to Gallup poll data from the last 40 years [Gallup Organization, 2001]). Since all human beings experience illness at some point in their life, individuals that pray are more likely than those that do not pray to turn to prayer in times of illness. With the cost of health care continuing to skyrocket, individuals seeking health care (especially the large cohort of baby boomers entering their senior years), medical insurance providers, and health care practitioners are all interested in ways to reduce the costs of health care.

Research investigating the relationship between prayer and health addresses several significant health issues that could impact health care costs: promoting health wellness, coping with chronic health problems, preventing illness, alleviating suffering, and healing disease. However, the precise nature of the relationship between prayer and health outcomes is a matter of some debate (McCullough, 1995; Larson, Swyers, & McCullough, 1997; Levin, 2004), but this need not deter *proposing* the interdisciplinary study of the relationship between prayer and health [5] by: (a) examining

interdisciplinary prayer-health connections between Communication, Psychology, and Sociology, (b) expanding the number of disciplines that contribute to understanding the prayer-health relationship, and (c) organizing prayer-health research topics in an integral system that demonstrates the potential for future programmatic interdisciplinary research.

There is a steadily growing interest in the relationship between prayer and health in the empirical research literature (e.g., Dossey, 1993; Koenig, 2002; Levin, 1996; Sloan, 2006) with the exception of the field of Communication in general and sub-field of health communication in particular. Health communication as a whole has not developed a line of research in the area of prayer and health. For instance, examining the subject index of four texts with titles including the words *health* and *communication* (Kreps & Thorton, 1992; Northouse & Northouse, 1998; Thomas, 2006; Thompson, Dorsey, Miller, & Parrott, 2003) for the term *prayer* or any derivative thereof uncovered no studies on prayer and health. In addition, a search for articles with the term *prayer* in the title in Com Abstracts (which indexes *Journal of Health Communication*) yielded no studies. The lack of prayer-health research in Communication was highlighted three years ago when Parrott (2004) suggested that the sub-field of health communication was suffering from *collective amnesia*, an overall absence of research on religious faith and spirituality in the health communication literature. Another lead researcher in the field of health communication (G. Kreps, personal communication, October 31, 2006) sees a growing interest in incorporating religion/spirituality in health communication as exemplified by a forthcoming edited volume of readings entitled *Communicating spirituality in health*. I believe Kreps' prediction of increased connectedness between communication and religion/spirituality is prophetic. The near future will likely see more linkages between religion/spirituality and health in general, and perhaps more interdisciplinary research on prayer and health in particular.

To develop a meaningful research agenda for interdisciplinary prayer research in the health context, I created a hypothetical scenario of a family member who is ill (let us assume she or he

has the flu with the accompanying symptoms of fever, pain in the muscles/joints, and periodic vomiting) and another family member who is praying for his or her health. The most pressing need in this scenario is the restoration of physical health for the ill person, but if we consider the whole person, then the ill individual's emotional, mental, and spiritual health[6] is also relevant. Several examples follow that illustrate how the academic disciplines of Communication, Psychology, and Sociology could engage in interdisciplinary prayer research for this particular health scenario.

First, psychological "mental maps" of the ill person and family member praying for them are expressed as verbal/nonverbal communication messages that are, in turn, influenced by sociological demographic variables like religious affiliation. Second, psychological individual difference variables in the ill person's health habits occur in a number of communication contexts that are, in turn, influenced by larger sociological networks. Third, economic profiles of family systems may predict frequency of prayer for an illness. These economic profiles are partly influenced by sociodemographic variables, mediated influence attempts to donate money, and psychological personality predispositions. Finally, how schemata, scripts, roles and groups influence prayer for the ill individual will be explored. For each of the previous examples, I hope to demonstrate how interdisciplinary collaboration among the three disciplines, when compared to any single discipline working alone, can potentially create a richer, more meaningful, and comprehensive description and explanation of the dyadic relationship between the ill individual and person praying for them.

Mental Maps of Psychology. A psychologist might investigate the individual characteristics of the ill person (e.g., personality, attitudes and beliefs about prayer and health, and religious/spiritual orientation) based on standard psychological tests and other measures of religion/spirituality (Koenig, 2002). With some modification in wording, similar information could be gathered from the person praying for the health of the ill individual. These mental maps about spirituality, faith, prayer, and

healing could be analyzed for degree of in/congruity between the ill individual and person praying for them, and then predictions about the degree of conflict, emotional support, and efficacy of prayer could be tested. Further, the individual being prayed for may be more receptive to certain types of mental imagery during prayer (e.g., compare the image of a fleet of Star Trek-ish ships blasting a virus to pieces using photon torpedoes to the image of gentle waves of warm water slowly and persistently bathing the body, carrying the virus away). Use of imagery during prayer can be understood from the perspective of Psychology as an internal mental map of memorial coordinates, as socially constructed images based on interactions with others and mediated sources (Communication perspective) or as group and institutional symbol-making (Sociological perspective).

Verbal and Nonverbal Messages of Communication. A communicologist may be interested in how psychological mental maps are expressed via verbal and nonverbal prayer messages for those that are ill. There are many possibilities for investigating prayer messages and variables impacting those messages: (a) types of verbal messages associated with prayers for healing (e.g., praise, forgiveness, petition, and contemplative prayer, and the frequency and duration of these prayers; see Baesler, 2003), (b) relational messages including immediacy/affection, similarity/depth, receptivity/trust, composure, formality, dominance, and equality (Burgoon & Hale, 1987), and (c) a variety of nonverbal messages (Burgoon, Buller, & Woodall, 1996) describing/influencing the interaction between the person praying and the ill individual: kinesic cues (e.g., gestures, facial expressions), eye behavior (e.g., frequency and duration), haptics (e.g., touch—frequency, intensity, body parts involved), vocalics (e.g., loudness, pitch, warmth, articulation), olfactics (e.g., flowers, incense), proxemics (e.g., spatial distance between interactants, and the positioning of religious/spiritual objects in the environment), environmental variables (e.g., lighting, colors, temperature), and artifacts (e.g., attire, "prayer objects" like medals, holy water, beads, candles, statues, and religious icons).

Demographics of Sociology. A sociologist might explain psychological mental maps and communication related verbal/ nonverbal messages in terms of the sociodemographic characteristics of the individuals involved (e.g., age, gender, education, marital status, and income). A sociologist might also investigate the expectations about prayer and health by examining the role of religious organizational affiliation. For instance, would charismatic Protestant denominations like the Assemblies of God be more likely to offer spontaneous prayers for healing in a family context than other Christian denominations like Methodists? Would conservative Jews be more or less likely to pray for the healing of a family member who is ill than reformed Jews? Would Hindus who regularly attend temple, or Muslims who pray several times a day, be more or less likely than low frequency attenders/pray-ers to actively pray for a family member who is ill? Religious affiliation also impacts individual religious beliefs (mental maps from the Psychology perspective) about the appropriateness of prayer for a family member who is ill based on organizational teaching/doctrine. Religious organizations may also prescribe specific prayer rituals for an individual who is ill. Differences in prayer rituals based on religious affiliation could be understood from the Communication perspective by examining verbal/nonverbal message characteristics of rituals.

Health Habits, Prayer Contexts, and Institutional Affiliations. A health psychologist (see Taylor, 1999) could investigate how prayer may be related to the following variables: eating (e.g., prayer before or after meals), exercise habits (e.g., mantram type prayer during repetitive exercise), use of alcohol, tobacco, and other drugs (e.g., prayer as a means to cope with addiction), and stressful life-events (e.g, prayer as a buffer against stressful events, see Krause, 2003). A communicologist might examine these variables in various prayer contexts (e.g., personal, interpersonal, small and large group), providing contextual explanations of the individual's prayer life. A sociologist adds an additional layer of meaning to these prayer variables and contexts by connecting them to group and institutional networks. The number and types of groups associated with the

ill person's religious affiliation may provide sources of support (e.g., a home cooked meal, transportation to doctor's appointments, group prayer for the ill person). Intensity of commitment to religious affiliation may also predict adherence to religious dietary prescriptions that might in turn promote health (e.g., Latter Day Saints, Seventh Day Adventists, and Orthodox Jews). Prayers of blessing before and/or after eating alone or in groups is a custom of many religious/spiritual traditions. What is the impact of "blessing food" and other accompanying prayers, like thanksgiving and petition during mealtime, for the health of the ill person? Perhaps mealtime prayers create a "prayerful atmosphere" for the peaceful consumption of a meal and the accompanying fellowship.

Economics, Media, and Personality. A sociologist could employ socio-economic profiles to predict types of healing prayer offered on behalf of the ill individual. For instance, families with less economic resources to obtain medical care may be more likely to pray for the healing of a family member who is ill than those with more economic resources. A communicologist adds a media perspective to understanding the economics of prayer and health. Mediated prayer content may influence the financial status of the ill individual. For example, some radio/television/internet evangelists will ask people to donate "seed money" to their ministry, usually with a scripture based promise that God will multiply the money and return it to the donator 10 to 100-fold. The media evangelist persuades believers to: pray that their faith is strong enough to donate large sums of money, place their hope in God's promise, and expect that they will receive financial rewards. These mediated influence attempts have tremendous economic and emotional appeal for individuals experiencing financial stress in times of illness. A psychologist could examine what types of personalities are predisposed to this type of mediated influence, and in a therapeutic context, assist individuals in developing better ways to cope with their financial situation.

Schemata, Scripts, Roles, and Groups. Prayers offered for healing will likely depend on previous experience with healing prayers. These experiences can develop into scripted sequences

of behaviors and cognitive schemata for what is expected as appropriate healing prayer. The scripts and schema are further influenced by roles that individuals adopt via interaction in family, educational, work, and other organizational systems. In addition, scholars that specialize in groups (social psychology of groups, small group communication, and sociology of groups) could jointly examine the role of prayer in social support groups. For instance, involvement with a weekly "prayer group" or a support group for a particular type of illness may provide emotional and relational resources that encourage prayer for a family member who is ill. Social support also includes the role of immediate and extended family networks. For example, individuals socialized in praying for healing in their "family of origin" may be more likely to pray for the health of an ill individual in their "family of choice." In the family context there are several relational considerations of interest: (a) status, authority, and power in the family system, (b) gender roles; several studies consistently show that women pray more than men (Francis & Astley, 2001), thus one would expect that women would be more likely than men to offer healing prayer for a family member who is ill, and (c) other roles in the family system; perhaps some families view certain members as more "spiritually gifted," expecting them to lead prayers for family members who are ill. Finally, the impact of other social groups, for example the informal and formal network of relationships in educational and work contexts, need to be considered in terms of encouraging or discouraging prayer for someone who is ill.

Method and Results of Interdisciplinary Prayer Interviews

In addition to Communication, Psychology, and Sociology, there are a number of other academic disciplines that could contribute to an understanding of the relationship between prayer and healing in the hypothetical health scenario.[7] To assess the potential contributions of additional disciplines to the prayer-health relationship, I conducted 24 interviews with academics (all tenured professors, 75% male, age range 38 to 63) in 12 different disciplines over the course of one year. This convenience sample

is based on personal contacts with individuals I met during the past 10 years through various academic activities (e.g., college committees, panels at conferences). The majority of these interviews were conducted face-to-face and took place at my home institution. Interviews lasted 20 to 90 minutes with an average length of 50 minutes. I began the first interview with a set of structured questions about disciplinary contributions toward an understanding of prayer and health, but quickly changed the protocol to ask a single question that serendipitously emerged during the first interview: "If I gave you $10,000 and the summer off to write a chapter for an edited volume called *Interdisciplinary Perspectives on Prayer and Health,* what would you write about?" This initial query, when combined with follow-up questions based on participant responses, was sufficient to fill nearly an hour of time for each individual interviewed.

Several categorical themes emerged from close reads of the notes I recorded during the academic interviews. Frequency counts of these categories yielded quantitative data in the form of percentages with the following pattern of responses. Almost two-thirds (63 percent) of professors spontaneously discussed their personal prayer life (e.g., prayer during religious services, how they learned to pray, accounts of answered prayer, methods of prayer, prayer in coping with illness). About two-thirds of respondents were able to describe the connection between prayer and health for their particular discipline (e.g., rhythmic drumming to calm the body for Music, journal writing to emote for Creative Writing, and carving out sacred space to recharge energy for Geography). Slightly more than half (56 percent) of respondents suggested discipline specific *methodologies* for investigating prayer topics (e.g., discourse analysis for Linguistics, historical criticism for Rhetoric, and experimental design for Physics) while a minority (six percent) were aware of any discipline specific *theories* about prayer (in all, only two psychological prayer theories were mentioned). Just over a third (38 percent) of professors were aware of prayer research outside their specific discipline, and nearly half (44 percent) expressed a willingness to participate in interdisciplinary prayer research at

some time in the future, although this latter findings is probably upwardly biased due to respondents' personal relationship with the interviewer. Finally, almost all respondents (94 percent) were able to suggest topics for prayer research not specifically related to health. Qualitatively, the content of these prayer research topics varied enormously based on the particular disciplinary affiliation.

To provide a sense of the range of topics that may be useful for those interested in interdisciplinary prayer research, Table 2 offers samples of research insights/ideas about prayer and health research based primarily on the academic interviews and on my own thinking and discussions with other academics over the past 10 years. I have purposely selected/created research topics that demonstrate how those in the field of Communication might engage in interdisciplinary prayer research. These potential topics for future interdisciplinary prayer research are enumerated in the form: "Name of Discipline…Prayer as…"

An Integral Approach to Interdisciplinary Prayer and Health Research

One format for organizing different disciplinary topics into a meaningful program of interdisciplinary prayer and health research is to adopt Wilber's (2006) integral approach .[8] Wilber divides the *kosmos* into four different quadrants: (a) interior/individual, the subjective "I", e.g., cognitions, affect, images, memories, schema, and scripts, (b) exterior/individual, the objective "it", e.g., physiological bodily functions, organs, and systems, (c) exterior/collective, interobjective "it", e.g., physical organizations, institutions, and technologies, and (d) interior/collective, the intersubjective "we", e.g., shared beliefs, myths, and social conventions. [9]

Interior/Individual: Quadrant 1

Prayer and health issues in the Interior/Individual quadrant could be investigated through diary, interview, and focus groups using subjective reports of experiences related to the generation and/or reception of different types of healing prayer. This kind of phe-

Table 2
Academic Disciplines and Exemplars of
Prayer-Health Research Topics

Discipline	Prayer As…
Accounting	Counseling sessions with a spiritual director lead to reaping the rewards of sound spiritual investments
Art	Expressing subterranean spiritual emotions in object forms serve as nonverbal symbolic messages for audiences in art exhibits
Biology	The healing influence of plants used for medicinal purposes interacts with the language intensity of shamanic messages in religious healing rituals
Creative Writing	Journaling with God to understand self and make sense of life becomes a series of negotiated dialectic tensions
Education	Spiritual learning/teaching is marketed differently depending on the preferred communication technology of different age groups
English Rhetoric	Understanding suffering through the interpretation of sacred texts by rhetorical analysis of speaker, message, medium, audience, and culture
Geography	Proxemic analysis of groups that create temporary vs. permanent sacred spaces to facilitate spiritual experiences of awe, wonder, and beauty
Linguistics	Verbal intonational units revealing different levels of spiritual states of consciousness as measured by EEG brain wave activity
Music	Vocalic characteristics of different types of spiritual chants influence physiologic outcomes (e.g., heart rate, blood pressure, skin temperature)
Neuroscience	Images of brain activity outside conscious awareness during the production of different types of prayer messages
Psychology	Negotiating different individual maps of internal spiritual attitudes, beliefs, and values to produce a unified sense of prayer between dyads
Sociology	Family cohesiveness as a function of variations in table blessing prayers

Note. Topics for each discipline are connected to one or more verbal and/or nonverbal communication variables/processes/outcomes.

nomenological experience is compatible with the expression of emotions and the meaning-making associated with: first-person accounts of illness/healing, diary of events and feelings about illness/healing, and experiences associated with expressing ill-ness/healing via art, including for example, drawing, painting, sculpting, and photography. Subjective, affective and cognitive experiences related to an illness could be preceded by the reception of prayers in the form of instrumental music like the violin concertos of Mozart, or different types of chanting (see Gass, 1999). In sum, ill individuals may experience and/or create prayer in the form of stories, art, and music, thus bringing together a number of disciplines in the Individual/Interior quadrant: Art, Communication, Creative Writing, Music, and Psychology.

Exterior/Individual: Quadrant 2

Research in the Exterior/Individual quadrant, focusing on objective measures of prayer and health, is compatible with the discipline of Neuroscience, and could be used to map brain activity for different types of prayer (e.g., vocal versus mental prayers). Brain cartography could be correlated with other objective medical measures, for example, heart rate, blood pressure, respiration, and levels of immune agents found in salivary and blood samples. Controlled clinical trials, examining the effects of different prayers on known disease causing agents--while controlling for socio-demographic variables, and other Exterior/Interior variables like diet, weight, fitness, drug usage--might reveal specific mechanisms that explain the prayer-health relationship. In the Individual/Exterior quadrant, the disciplines of Biology, Health Science, Medicine, Neuroscience, Physics, and Sociology could collaborate to investigate objective measures associated with prayer and health.

Exterior/Collective: Quadrant 3

There are several ways that organizations and institutions of society might conduct prayer-health research in the Exterior/Collective quadrant. There are observable features of public prayer spaces that could be investigated: religious/spiritual architecture,

spiritual symbols and icons (or absence of these) in the prayer environment, and the attire, postures, and spatial arrangement of individuals/groups praying. Some individuals create cultural symbols to display on their persons and in the physical environment when praying with others, engendering certain spaces as prayerful, holy, set apart for the purpose of prayer. In addition to research on places of prayer, this quadrant is appropriate for historical investigations of how prayer shapes the development/disintegration of societal structures like the family, where prayer is typically first learned by rote memory and modeling, and educational systems where different policies about acceptable prayer practices are learned in public, private, and home schools. Finally, the efficacy of new media technologies as outlets for prayer is open to investigation. There are many ways to digitally pray, for example, posting a prayer request on a web site, sending an e-prayer (via e-mail, text message, or fax), or, for the ill person, watching an inspirational spiritual DVD, listening to spiritual music on CD, or watching a Web Cast about prayer. This quadrant integrates a number of disciplinary sites, including Architecture, Economics, Geography, History, Mathematics, New Media Technologies, and Political Science.

Interior/Collective: Quadrant 4

Research efforts in the Interior/Collective quadrant could aim at understanding the relationship between shared beliefs, attitudes, values, and cultural meanings of prayer and states of illness/wellness. Several spiritual topics may be relevant here, including beliefs about the purpose in life, the existence of God, relevance of sacred texts for instruction in prayer, and expectations about the nature of prayer and its consequences. These topics could be investigated from the perspective of different cultural units, including couples, family groups, other small support groups, and larger groups associated with particular ethnic, political, religious, and organizational identities. This type of Interior/Collective data is the domain of disciplines like Communication, Philosophy, Psychology, Sociology, and Theology.

Table 3

Integral "All Quadrant" Approach to Prayer-Health: Interdisciplinary Connections

	Interior (I)	**Exterior (E)**
Individual (I)	1. II Subjective I (Intentional) Phenomenological experiences of prayer and healing Disciplines: Philosophy, Psychology	2. EI Objective IT (Behavior) Biological/Physical manifestations of prayer-healing experiences Disciplines: Biology, Medicine
Collective (C)	4. IC Intersubjective WE (Cultural) Cultural meanings assigned or associated with prayer-healing stories Disciplines: Sociology, Theology	3. EC Interobjective IT (Social) Tangible objects, like prayer objects or published accounts of prayer-healing stories Disciplines: Anthropology, Economics

Note. The four quadrants, based on Wilber's Integral "All Quadrant" approach to understanding the *kosmos* (Wilber, 2006), are applied to the prayer-health relationship in terms of prayers for the healing of an illness. The disciplines listed in the table are illustrative; for instance, the Communication discipline could have been listed in all four quadrants.

Connecting the Quadrants

Wilber's "All Quadrant" approach is a convenient way to organize four *different* types of interdisciplinary prayer-health research, but there are also interdisciplinary prayer-health *connections between* the quadrants that highlight the nature of the integral approach (See Table 3). There is a clear progression from the micro individual subjective life experience (Quadrant 1: Sub-

jective I) with its corresponding objective manifestation in the body (Quadrant 2: Objective IT) to outward displays of these experiences as societal objects (Quadrant 3: Interobjective IT) and cultural meanings (Quadrant 4: Intersubjective WE). For example, research that organizes a collection of healing stories in book form could serve as spiritual reading for others (e.g., Weil, 1995). Phenomenological experiences of life lived as story narrated in the first person (Quadrant 1: Interior/Individual) have corresponding physical manifestations in the body/brain (Quadrant 2: Exterior/Individual) that become concrete objects when written/crafted/digitized (Quadrant 3: Exterior/Collective). These cultural objects (e.g., a collection of stories in book form) when read and discussed by others in small groups (e.g., reading clubs, self-help groups, and classrooms) can become part of the cultural storehouse of knowledge in societal groups (Quadrant 4: Interior/Collective). Consider a second example involving music. Prayer-health research could examine the phenomenological experience and physiological effects (Quadrants Interior/Individual and Exterior/Individual) of different types of music: rhythmic drumming (Hart, 1999), instrumental music, and chanting as anchoring of memories, entrainment of the body/psyche, alteration of breath, and different tones/vibrations producing sonic effects on the body (Gass, 1999). Recorded music becomes a cultural artifact (Quadrant 3) that people may listen/respond to (Quadrants 1 & 2), comment on in newspaper, magazine, and on-line reviews or blogs (Quadrant 3), and assimilate as part of a group identity (Quadrant 4). In addition to the story and music examples, other prayer-health topics could be developed to illustrate the interdisciplinary connections among Wilber's four quadrants including: laying on of hands prayer (Matthews, Marlowe, MacNutt, 2000), group healing prayer services, mediated/digital prayers for healing (e.g., audio greeting cards, handwritten letters, and electronic text messages), and prayers for healing offered by medical practitioners and chaplains (Koenig, 2002).[10]

Conclusion: Skepticism and Hope

No one scholar operating independently within his/her own discipline could investigate all of the prayer-health topics enumerated herein. Even if one were to restrict the domain of inquiry to a specific area of health (for instance, to petitionary prayers for the healing of the common wart), the research of one individual's entire academic career might not be able to exhaust all possible permutations for research within and between the four quadrants. It seems to me that, as one who has for the most part operated as an independent prayer researcher within the academic discipline of Communication, I have made only minimal progress in my academic understanding of prayer phenomenon during the past decade. To create more "ferment in the field" of prayer research, and to advance a collective understanding of prayer, I propose that scholars from different academic disciplines bring their ideas about prayer theory, methods, research, and practice into a genuine interdisciplinary dialogue,[11] especially in the context of health where human suffering on the physical, mental, emotional, and spiritual levels is most pressing. Venues for coordinating the action of such interdisciplinary research endeavors include: (a) convention panels on prayer and health (e.g., National Communication Association's Spiritual Communication Division, the Religious Communication Association, Society for the Scientific Study of Religion, and Religious Research Association), (b) creation of Institutes/Centers for the study of prayer and health (similar to Harvard's Mind-Body Institute, Center for Spirituality, Theology and Health at Duke, and Oxford's Center for the Study of the Mind), (c) creating an on-line non-academic journal/blog on prayer and health for students, doctors, patients, caregivers, and academics modeled after the journal *Flow* (2005), (d) special journal issues devoted to the topic of prayer and health (e.g., *Journal of Communication and Religion*, *Journal of Health Communication*), (e) a regular column on prayer and health in popular press magazines (e.g., *Health and Spirituality*, *Psychology Today*), a feature section of weekend editions of local newspapers, and a weekly national radio broadcast (like *National Public Radio*)

with rotating "prayer experts" supplemented with audience questions, and (f) creating and maintaining a prayer-health internet resource website housed by one of the many Centers for the Study of Religion/Spirituality and Health.

I am somewhat skeptical about the success of such interdisciplinary endeavors. In my own field of Communication, our different theoretical perspectives, while borrowing heavily from other academic disciplines, have not yielded much interdisciplinary theorizing and research about prayer. My general observations of scholars interacting in the context of seminars, colloquiums, and conventions over the past 20 years suggest that it is terribly difficult for many academics to leave behind their own disciplinary assumptions and engage in genuine deep dialogue about research with others from the same (yet alone different) academic disciplines. But I am not all together without hope for the success of interdisciplinary prayer research. My sense is that the *scholars who will realize the fruits of interdisciplinary prayer research will be ones that are personally and professionally deeply immersed in the phenomenon they seek to understand.* That is, interdisciplinary prayer research will gain momentum from scholars that are people of prayer, willing to (at least temporarily) relax their own discipline specific assumptions, see with open eyes of curiosity and wonder, engage in genuine dialogue with others from different disciplines, and transcend their personal research agendas for the sake of a vision that acknowledges and moves toward unifying multiple disciplinary perspectives on prayer for the benefit of others.

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Endnotes

[1] The idea of applying metaphors to a given phenomenon to obtain creative insights is based on Von Oech's (1990) use of metaphor; for instance, he employs bagel, grapefruit, elevator, and poker metaphors to understand the "meaning of life."

[2] In considering some of the eastern religions such as Buddhism, Taoism, and Confucianism, there is no "God concept" at an intellectual level, but in some instances, for example Buddhism, there is a practice of praying to Buddha as a kind of "God" or to ancient ancestors who are revered as having "God-like" powers. For other earth-based religions (e.g., Australian Aboriginals) there is a sense of "other" that can be communicated with (whether that be, for instance, the "spirit" of sky, rock, or animal) and in this sense, the communication is spiritual but not directed to "God" per se as it is usually understood in the monotheistic sense. Thus, a case could be made that at least some eastern and indigenous religions also engage in a kind of "prayer" (Carmody & Carmody, 1990).

[3] There are of course other epistemological perspectives besides social science that contribute to an understanding of prayer, namely those metaphysical perspectives in Theology and Philosophy, but for this initial inquiry, the scope will primarily be limited to social science. This means that questions about the nature and purpose of God are technically "outside the bounds" of social science. However, a social scientist can still explore this "out of bounds territory" by examining individual's perceptions about their "experience of God in prayer" which is an entirely different matter. Similar arguments are advanced for a social science of religion by Greeley (1995). A radically different perspective suggests that "…a science of any human things [including the science of religion in general and the scientific study of prayer in particular]…are by their nature not merely hopeless, but crazy" (Chesterton, 1905, p. 146).

[4] There are a number of ways to conceptualize *interdisciplinary* prayer research. On one level, interdisciplinary prayer research could involve incorporating research ideas/practices that originate outside one's primary disciplinary affiliation. At a deeper level, interdisciplinary prayer research might involve working with individuals from other disciplines on a common research project. Further still, one could *imagine* scholars from different disciplines with different religious orientations, and different epistemologies, conducting funded prayer research in the context of a Prayer Institute/Center. In terms of previous interdisciplinary prayer research efforts, there is one scholarly edited book on prayer by Brown (1994) that incorporates research from several disciplines (e.g., Anthropology, Psychology, Philosophy, and Theology), but these projects, represented as book chapters, are based on the work of scholars operating independently (there are no

co-authored pieces representing collaborative efforts of individuals from different disciplines). Brown's concluding chapter suggests the need for discussing theoretical, empirical, and practical issues related to prayer research from a number of disciplinary perspectives, but there is no explicit comparison of interdisciplinary linkages, nor the development of an interdisciplinary framework. Further, Francis and Astley's (2001) book on *Psychological perspectives on prayer* has an interdisciplinary flavor (covering topics like prayer and: psychological development, adolescence, personality, effects, careers, faith, quality of life, coping, health, and therapy) even though the title of the book explicitly highlights the psychological disciplinary perspective.

[5] Levin's (2001) theory of *theosomatic* medicine provides several principles for examining the role of spirituality and prayer on health processes and outcomes. Three of his seven principles seem most applicable to the interdisciplinary study of prayer: (a) participation in worship and prayer benefits health through the physiological effects of positive emotions (principle 3), (b) mystical experiences benefit health by activating a healing bioenergy life force or altered state of consciousness (principle 6), and (c) absent prayer for others is capable of healing by paranormal means or by divine intervention (principle 7).

[6] Refer to Carlson and Shield (1984), MacNutt (1999), and Weil (1995) for introductions to holistic healing. These sources discuss somatic, mental, emotional, and spiritual aspects of individuals in relation to prayer, health, and healing.

[7] Some of these academic disciplines introduce epistemological assumptions different from the original assumption about adopting a social scientific position. For example, there are stricter assumptions about causality for disciplines like Physics and Biology than for disciplines in the Humanitites. Other interpretive-critical epistemologies found in disciplines like Art, Music, and Literature (which are compatible with rhetorical/humanistic traditions in Communication) are acknowledged here as "loci of truths" for understanding prayer and health. Admittedly, some of the topics associated with the academic disciplines listed in this section are not as amenable to social scientific inquiry as those topics associated with the fields of Communication, Psychology, and Sociology. However, most of these additional disciplines can nonetheless be studied in a systematic, logical, reliable (tests of internal consistency), and valid manner (from the viewpoint of two or more individuals that share common characteristics in a speech community).There are also *non-academic* topics that could provide insight into the relationship between prayer and health, but these topics for the most part fall outside the domain of social scientific inquiry. I briefly mention some of them here for consideration as stepping-stones to the creative generation of new ideas in the social scientific research process. This notion fits with Rudner's (1966) distinction between two contexts in social science: discovery

and verification. Social science as discovery uses a variety of creative means to generate ideas for theory building and research, but social science as verification is a hypothesis testing enterprise subject to a set of rules, procedures, and conventions. Thus, some of these topics may lead to creative ideas about prayer which could in turn generate, for example, new theories about prayer and health which might later be tested. Given the broad context of discovery in the social science research process, and the specific context of health, prayer could be used *in conjunction with* efforts for: (a) physical healing, for example, the use of acupuncture/pressure, herbs, homeopathy, massage therapy, fasting, tai chi, and yogic breathing, (b) emotional healing, for example, affection, laughter, play, anger release, color and aroma therapies, and mental healing as guided imagery, visualization, and affirmations (Carlson & Shield, 1989).

[8] There are other alternatives to Wilbur's integral approach that emphasize the interdisciplinary nature of prayer-health research. One alternative is to adopt the phrase biopsyhosociospiritual (Sperry, 2005) when discussing prayer-health theory/research to remind ourselves that prayer-health phenomenon are embedded in interrelationships between biological, psychological, sociological, and spiritual perspectives/disciplines. Sperry developed the term biopsychosociospiritual based on Engel's (1977) work describing a biopsychosocial model to understand health, illness, and well-being. The term biopsychosociospiritual represents a more holistic/integrative approach than the classical biomedical model for understanding prayer-health relationships, however, there are some disadvantages of this approach. First, primacy is given to Biology as the lead discipline in the interdisciplinary phrase. One could argue that Physics has primacy over Biology since all biological function is based on the principles of Physics. Second, there are a limited number of disciplines represented: Biology and Psychology serve as cornerstone disciplines, and the term "socio" is a catch all phrase for disciplines like Anthropology, Communication, History, and finally "spiritual" represents disciplines like Religious Studies/Theology. Some disciplines associated with "socio," by the nature of their important contribution to understanding the prayer-health relationship, merit inclusion of their disciplinary identity in the interdisciplinary phrase. For example, in the discipline of Communication, the role of verbal and nonverbal message processing during prayer is primary to the study of the prayer-health relationship, thus Communication should be added as a cornerstone discipline to the interdisciplinary phrase. Thus, we have the phrase Biopsychosocio*communio*spiritual. How many more disciplines would advocate such inclusion? Third, there are pragmatic difficulties with using such a lengthy term in academic discourse. Finally, the use of a term like bioppsychosociocommunio-spiritual does not explicitly describe/explain the interrelationships between disciplines.

[9] This oversimplification of Wilber's integral approach is adapted for the purpose of organizing academic disciplines into an interdisciplinary framework. Wilbur's actual integral approach is more complex than I have described. For instance, within each of the quadrants are various "levels" holarchically arranged (consisting of a series of nested holons, each subsuming its junior). Details of the integral approach is developed in a series of books (for an introduction see Wilber, 2006).

[10] There are a host of other possible research projects that may be relevant to the prayer-health relationship. The following topics are suggestive of additional interdisciplinary prayer research projects that may influence mental, physical, and spiritual health outcomes: the role of prayer in the process of providing spiritual direction (Baesler, 2005), comparison of accounts of prayer in the sacred scriptures of the world religions (Fox, 2000), the role of critical life-events in shaping patterns of prayer (Albrecht & Cornwall, 1989), prayer as discernment for individual, interpersonal, and small group decision-making (e.g., spiritual exercises of St. Ignatius, Fleming, 1978), accounts of prayer journeys from journal writings (Progoff, 1975), a developmental account of prayer over the course of the life-span (Coombs & Nemeck, 1987; Roehikepartain, King, Wagener, & Benson, 2006), children's prayers (Coles, 1990), cyber-prayer (Casey, 2003), prayer campaigns and movements (e.g., National Day of Prayer, and Charismatic Prayer movement), prayer progressions and cycles (Baesler, 1999), documenting states of consciousness for different types and stages of prayer (Austin, 1998; Wilber, 2006), prayer in exercise and sports (Higgs, 1995), personality types and prayer (Michael & Norrisey, 1991), inter-religious and inter-cultural dimensions of prayer (Baesler, 2001; Carmody & Carmody, 1990), prayer languages (Chapman, 2002), the role of mass media in portraying images of prayer within popular culture (Greeley, 1988), and developing and testing theories of prayer (e.g., Baesler, 1999, 2002, 2003).

[11] One example of this kind of dialogue is the seven stages of "deep dialogue" outlined by Swidler (1999) where an individual's relationship with "other" is understood as anyone in the human family that is perceived to be different from oneself. In the present context, we could consider Swidler's dialogue occurring between two or more scholars from different academic disciplines that share a common interest in some prayer research topic. There are other options for facilitating dialogue between individuals in the communication literature, for example, Anderson's (1991) ingredients for dialogue are: presence, unanticipated consequences, otherness, vulnerability, mutual implication, temporal flow, and authenticity.

Works Cited

Albrecht, S., & Cornwall, M. (1989). Life events and religious change. *Review of Religious Research, 31,* 23-38.

Anderson, R. (1991, November). *Anonymity, presence, and the dialogic self in a technological culture.* Paper presented at the Central States Communication Association, Chicago.

Austin, J. H. (1998). *Zen and the brain: Toward an understanding of meditation and consciousness.* Cambridge: MIT Press.

Baesler, E. J. (1997). Interpersonal Christian prayer and communication. *The Journal of Communication and Religion, 20,* 5-13.

Baesler, E. J. (1999). A model of interpersonal Christian prayer. *The Journal of Communication and Religion, 22,* 40-64.

Baesler, E. J. (2001). The prayer of the Holy Name in eastern and western spiritual traditions: A theoretical, historical, cross-cultural, and intercultural prayer dialogue. *Journal of Ecumenical Studies, 38,* 196-216.

Baesler, E. J. (2002). Prayer and relationship with God II: Replication and extension of the relational prayer model. *Review of Religious Research, 44,* 58-67.

Baesler, E. J. (2003). *Theoretical explorations and empirical investigations of communication and prayer.* Lewiston, NY: Edwin Mellen Press.

Baesler, E. J. (2005). The role of prayer in spiritual direction. *Presence: An International Journal of Spiritual Direction, 11,* 40-45.

Brown, L. B. (1994). *The human side of prayer: The psychology of praying.* Birmingham, AL: Religious Education Press.

Burgoon, J., Buller, D., & Woodall, W. (1996). *Nonverbal communication: The unspoken dialogue* (2nd ed.). New York: McGraw-Hill.

Burgoon, J., & Hale, J. (1987). Validation and measurement of the fundamental themes of relational communication, *Communication Monographs, 54,* 19-41.

Carlson, R., & Shield, B. (Eds.) (1989). *Healers on healing.* New York: G. P. Putnam.

Carmody, D., & Carmody, J. (1990). *Prayer in world religions.* New York: Orbis.

Casey, C. (2003, November). *Practicing faith in cyberspace: Conceptions and functions of religious ritual on the Internet.* Paper presented at the Society for the Scientific Study of Religion, Norfolk, VA.

Chapman, G. (2002). *The love languages of God.* Chicago: Northfield.

Chesterton, G. K. (1905). *Heretics.* New York: Lane.

Coles, R. (1990). *The spiritual life of children.* Boston: Houghton Mifflin.

Coombs, M., & Nemeck, F. (1987). *The spiritual journey: Critical thresholds and stages of adult spiritual genesis.* Wilmington, DE: Glazier.

Dossey, L. (1993). *Healing words: The power of prayer and the practice of medicine.* San Francisco: Harper.

Engel, C. (1977). The need for a new medical model: A challenge to biomedical medicine. *Science, 196,* 129-135.

Fleming, D. (1978). *The spiritual exercises of St. Ignatius: A literal translation and a contemporary reading.* St. Louis, MO: Institute of Jesuit Sources.

Flow (2005). Retrieved June 8, 2005, from http://www.flowtv.org

Finney, J., & Malony, H., Jr. (1985). Empirical studies of Christian prayer: A review of the literature. *Journal of Psychology and Theology, 13,* 104-115.

Fox, M. (2000). *One river many wells: Wisdom springs from global faiths.* New York: Tarcher/Putnam.

Francis, L., & Astley, J. (2001). *Psychological perspectives on prayer: A reader.* Leominster, England: Gracewing.

Francis, L., & Evans, T. (1995). The psychology of Christian prayer: A review of empirical research. *Religion, 25,* 371-388.

Gallup Organization (2001). *Poll releases.* Retrieved June 8, 2007, from http://www.gallup.com/poll/releases

Gass, R. (1999). *Chanting: Discovering spirit in sound.* New York: Broadway Books.

GOOGLE SCHOLAR (2007). Title search using the keyword *prayer*, Retrieved June 11, 2007, from http://www.scholar.google.com/advanced_scholar_search?hl=en&lr=//

Greeley, A. (1988). *God in popular culture.* Chicago: Thomas More Press.

Greeley, A. (1995). *Religion as poetry.* New Brunswick, NJ: Transaction.

Hart, M. (1999). *Spirit into sound: The magic of music.* Petaluma, CA: Grateful Dead Books.

Higgs, R. (1995). *God in the stadium: Sports and religion in America.* Lexington: University of Kentucky Press.

Koenig, H. (2002). *Spirituality in patient care: Why, how, where, and what.* Philadelphia: Templeton Foundation Press.

Krause, N. (2003). Praying for others, financial strain, and physical health status in late life. *Journal for the Scientific Study of Religion, 42,* 377-391.

Koenig, H., McCullough, M., & Larson, D. (Eds.) (2001). *Handbook of religion and health.* New York: Oxford University Press.

Kreps, G., & Thornton, B. (1992). *Health communication: Theory and practice* (2nd ed.). Long Grove, IL: Waveland.

Ladd, K., Andreasen, N., Smith, B., & Baesler, E. J. (2006, August). *Toward best practices linking prayer psychometrics and neuropsychological investigations of religion.* Paper presented to the International Association for the Psychology of Religion, Leuven, Belguim.

Ladd, K., & Spilka, B. (2002). Inward, outward, and upward: Cognitive aspects of prayer. *Journal for the Scientific Study of Religion, 41,* 475-484.

Larson, D., & Larson, S. (2003) Spirituality's potential relevance to physical and emotional health: A brief review of quantitative research. *Journal of Psychology and Theology*, 31, 37-52.

Levin, J. (1996). How prayer heals: A theoretical model. *Alternative Therapies, 2,* 66-73.

Levin, J. (2001). *God, faith, and health: Exploring the spirituality-healing connection.* New York: Wiley.

Levin, J. (2004). Prayer, love, and transcendence: An epidemiological perspective. In K. Schaie, N. Krause, & A. Booth (Eds.), *Religious influences on health and well-being in the elderly* (pp. 69-95). New York: Springer.

MacNutt, F. (1999). *Healing.* Notre Dame, IN: Ave Maria.

Masters, K., & Spielmans, G. (2007). Prayer and health: Review, meta-analysis, and research agenda. *Journal of Behavioral Medicine, 30,* 329-338.

Matthews, D., Marlowe, S., & MacNutt, F. (2000). Effects of intercessory prayer on patients with rheumatoid arthritis. *Southern Medical Journal, 93,* 1177-1186.

McCullough, M. E. (1995). Prayer and health: Conceptual issues, research review, and research agenda. *Journal of Psychology and Theology, 23,* 15-29.

Michael, C., & Norrisey, M. (1991). *Prayer and temperament: Different prayer forms for different personality types.* Charlottesville, VA: The Open Door.

National Academy of Sciences (2005). *Facilitating interdisciplinary research.* Washington: National Academies Press.

Northouse, L., & Northouse, P. (1998). *Health communication: Strategies for professionals* (3rd ed.). Stamford, CT: Appleton & Lange.

Parrott, R. (2004). Collective amnesia: The absence of religious faith and spirituality in health communication research and practice. *Health Communication, 16,* 1-15.

Poloma, M., & Pendleton, B. (1991). The effects of prayer and prayer experiences on measures of general well-being. *Journal of Psychology and Theology, 19,* 71-83.

Progoff, I. (1975). *At a journal workshop.* New York: Dialogues House Library.

Roehikepartain, E., King, P., Wagener, L. & Benson, P. (Eds.) (2006). *The handbook of spiritual development in childhood and adolescence.* Thousand Oaks, CA: Sage.

Rudner, R. (1966). *Philosophy of social science.* Englewood Cliffs, NJ: Prentice Hall.

Schultze, Q. (2005). The 'God-problem' in communication studies. *Journal of Communication and Religion, 28,* 1-22.

Sloan, R. (2006). *Blind faith: The unholy alliance of religion and medicine.* New York: St. Martin's Press.

Sperry, L. (2005). Integrative spiritually oriented psychotherapy. In L. Sperry & E. Shafranske (Eds.), *Spiritually oriented psychotherapy* (pp. 307-329). Washington, DC: American Psychological Association.

Swidler, L. (1999). *Seven stages of deep-dialogue.* Retrieved June 8, 2007, from http://astro.temple.edu/~dialogue/case.htm

Taylor, S. (1999). *Health psychology* (4th ed.). Boston: McGraw Hill.

Thomas, R. K. (2006). *Health communication.* New York: Springer.

Thompson, T. L., Dorsey, A., Miller, K. I., & Parrott, R. (Eds.). (2003). *Handbook of health communication.* Mahwah, NJ: Lawrence Erlbaum.

Tukey, D. (1995). Researching "Ultimate" communication: A response to Kirkwood and a research agenda. *Journal of Communication and Religion, 18,* 65-72.

Von Oech, R. (1990). *A whack on the side of the head: How you can be more creative.* New York: Warner.

Weil, A. (1995). *Spontaneous healing: How to discover and enhance your body's natural ability to maintain and heal itself.* New York: Knopf.

Wilber, K. (2006). *Integral spirituality: A startling new role for religion in the modern and postmodern world.* Boston: Integral Books.

Zaleski, P. & Zaleski, C. (2005). *Prayer: A history.* Boston: Houghton Mifflin.