

ABSTRACT

Too Blessed to be Stressed?
Correlations between Prayer, Scripture Readings, and Mental Health Measures

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Throughout history, healing has been associated with spirituality. Even today, many believe in the power of prayer for wellness and healing and find it especially relevant to areas of mental health. This thesis gives a historical glimpse into the topic, reviews the state of current research, analyzes data from a national survey conducted among young adults in the US, and conducts a novel controlled experiment of prayer and mental health among young adults in the Waco area. The findings show a significant positive correlation between different types of prayer, scripture readings, and various measures of mental health. The implications of these findings are discussed, and suggestions for future research are outlined.

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TOO BLESSED TO BE STRESSED? CORRELATIONS BETWEEN PRAYER,
SCRIPTURE READINGS, AND MENTAL HEALTH MEASURES:
AN INTERVENTIONAL STUDY

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PREFACE

My mother is a physician who often prays with her patients. In fact, whenever I approach her with a complaint of illness, her first response is to ask if I have prayed; if not, she prays with me before anything else. I personally believe in miraculous healing, as I and several of my family members have experienced it. Furthermore, I believe there is room for prayer in medical settings.

I participated as a research assistant for a study on health literacy at the Family Health Center in Waco. This role gave me the opportunity to enter patient rooms to conduct surveys during the vulnerable time when they awaited their physician. I had the privilege of meeting many patients in these moments and hearing their stories. One especially moving story occurred with a woman who had experienced frequent abuse. As she answered my survey questions, she kept apologizing for not being able to articulate responses accurately and her story emerged in pieces. She had been dropped on the head as a child, beaten by a caregiver, abused by a partner, and sustained several head injuries which she believed made her “not right.” At one point, she broke into tears. As a second semester freshman in college, I did not know how to respond other than handing her a Kleenex and telling her everything would be all right (while wondering if it was my place to do so). I felt a tiny nudge to pray for her, but I was stopped by the knowledge that my physician mother had been reprimanded and faced severe consequences for doing so with patients at her previous jobs. Yet, when the woman went quiet and asked, “Will you pray for me?” I could not help but believe I was in that room with her at that moment for that

exact reason. While she smiled and we completed the survey successfully, after I closed the door behind me, I never saw her again. I have no idea if or how that prayer affected her life.

The next semester, I had the opportunity to explore whether there was scientific evidence for prayer writing a paper for my Introduction to Sociology class on the subject. While the literature on the subject was old, and the conclusions were mixed, I believed further study could be done. I was also interested in mental health and its correlations with prayer. Many of the research articles I read for my paper involved using prayer as a treatment method for depression. While interning at the VA Center of Excellence at Waco, I studied possible neuroimaging treatments for veterans with Traumatic Brain Injury and Post-Traumatic Stress Disorder. During my time there, I had an encounter with a veteran who told a story of the miraculous healing of one of his friends during war. The veteran I spoke to shared that this experience led him to become a chaplain and gave me his card to speak more about the many other instances of miraculous healing he knew of. While I unfortunately lost his card, the conversation reignited the interest I had in the topic of prayer and healing. The neuroimaging research I conducted at the VA also made me aware of physiological correlations of mental conditions, and I sought to incorporate that into my thesis with electroencephalography measures. Ultimately, this proved to be too challenging to incorporate, so we conducted an intervention-based survey instead.

As a future physician, I want to help my patients in any way possible. If there were more evidence that prayer helps people, perhaps prayer could become an evidence-based practice that could be more widespread and help more patients.

ACKNOWLEDGMENTS

Thank you to firstly God, for the miraculous healing that made my life possible. Thank you to Dr. Bradshaw, for his endless patience, understanding, and perseverance throughout all the obstacles that occurred during this process—this truly would not have been possible without him. Thank you to my mentors at the VA, especially Dr. Zambrano-Vazquez for her constant support and encouragement during and apart from my internship. Thanks also to Dr. Fillmore for his willingness to help and to Dr. Klausmeyer for sharing my survey. Thank you to Dr. DiLuzio for making ancient Greek texts seem understandable and for piquing my interest in ancient medicine. Finally, thank you to my readers: Dr. Barron and Dr. McGrath. You have both been amazing professors, mentors, and supporters throughout my time at Baylor and I cannot imagine the past four years without you.

DEDICATION

To my parents who have instilled in me faith and a pursuit of scholarship and to my little sister for being my biggest cheerleader.

CHAPTER ONE:

Background and Historical Context

Most cultures around the world have some sort of belief in the supernatural and many people rely on prayer for healing. From Biblical examples of healing, to stories of saints and prophets in the Christian tradition and even shamanic healing in Eastern cultures, prayer has been a prevalent healing method historically. During ancient times, personalistic etiologies of disease were prevalent. Such etiologies believed individual agents, such as spirits, demons, and gods acted intentionally to cause disease, so ancient societies quite naturally used prayer as a tool for healing. ¹ Appealing to gods seemed to be the logical course of action when one believed that they were the cause of illness.

Furthermore, ancient charismatic healers could be considered the earliest physicians. These individuals were believed to see spiritual causes of illness and had a connection to the divine. ² Such healer-seers have a mythological legacy, including noted Asclepius, a demi-god himself as the son of Apollo. Asclepius contributed greatly to the tradition of medicine, with his rod being a symbol of medicine even today. Followers of Asclepius soon came together as cults and eventually built healing temples that paved the way for modern hospitals. This will be examined shortly.

¹ Foster, "Disease Etiologies in Non-Western Medical Systems."

² Petaros et al., "Historical and Social Evolution of the Healers' Charisma."

In contrast to personalistic etiologies of medicine, naturalistic etiologies soon prevailed. Impersonal natural forces came to be known as logical causes of disease. This shift in thought can be seen through Hippocrates' *The Sacred Disease*, in which the author argues that "the sacred disease," what we today would consider epilepsy, is not "any more divine or sacred than any other disease but, on the contrary, has specific characteristics and a definite cause."³ The author argues this disease is caused by the natural force of flux, in which phlegm blocks air flow in the body from reaching the brain causing convulsions. While the physiology may not be accurate by today's standards, the author makes a compelling case against faith healers, arguing they blame the gods for illnesses they are unable to heal rather than further studying and creating treatments. Following this school of thought, advances in modern medicine have led us to neglect prayer as an acceptable treatment in itself. It may prove helpful to examine how ancient centers of prayer-healing operated, and how they have contributed to our modern health care systems. Two such examples are found in healing temples of Asclepius and early Christian monasteries.

The healing temples of Asclepius originated due to an increase in power and prestige among the Asclepian physician guilds during the first millennium B.C.E.⁴ One typical practice of temple healing was petition, in which participants appealed to temple gods for healing. Supplicants were expected to either physically visit the temple or send a proxy if they had difficulty with mobility. There is evidence of a girl named Iphigenia

³ Henderson, "HIPPOCRATES OF COS, The Sacred Disease."

⁴ Crislip, Andrew T., *From Monastery to Hospital: Christian Monasticism and the Transformation of Health Care in Late Antiquity*.

who was not well enough to go to the temple herself, so she sent two people named Proclus and Pericles instead.⁵ Interestingly, this was her second option after the non-temple physicians were unsuccessful in helping her. Other options included the possibility of being carried into the temple if one was too physically ill, which is reminiscent of the Biblical account of the paralyzed man who was lowered through a roof by his friends to be healed by Jesus (Mark 2:1-4). In terms of the petition itself, it seems there was a variety in permissible prayer, including length and complexity. Overall, petition played a key role in Asclepian temple healing.

When Christianity was legalized in the fourth century, it also influenced healthcare. The rise of Christian healthcare can be seen as a form of duty, or charity, as Jesus provided an example of healing the sick and caring for the poor. In line with their mission, early Christian healthcare systems usually did not charge its patients. This can be seen in early Christian monasticism; while it provided healthcare primarily for its participants, it also provided care for the infirm nearby and travelers. Early Christian monasticism began in the early fourth century and soon established a healthcare system distinct from the outside society.⁶

Early monastic treatment included both medical and nonmedical healing. Nonmedical healing—what one would consider treatment for naturalistic etiologies, such as humoral constitution, environmental conditions, or wounds—was prevalent in monastic life. Such healing had a personalistic etiology, so it used divine help and

⁵ Avalos, Hector, *Illness and Health Care in the Ancient Near East: The Role of the Temple in Greece, Mesopotamia, and Israel*.

⁶ Crislip, Andrew T., *From Monastery to Hospital: Christian Monasticism and the Transformation of Health Care in Late Antiquity*.

therapies that invoked God. By the middle of the first century, the idea of *charisma*, “a spiritual gift bestowed upon select members of the church,” was prevalent among Christians. This shows parallels to the charismatic healer-seers in ancient Greece. Such healers used therapies such as “prayer; invocation of the name of Jesus; exorcism (in the case of demonic possession); laying on of hands; and the application of holy water, holy oil, and the sign of the cross.” Monastic literature describes treatment as “discernment,” and this was important to distinguish between human and supernatural sources of affliction.⁷

Interestingly, there is a direct link between Christianity and the healing temples of Asclepius, as the former ultimately led to the demise of the latter. When Constantine embraced Christianity in the fourth century, he ordered the destruction of Asclepian temples, citing an angry and jealous God.⁸ This leads to a parallel between the healing temples of Asclepius and early Christian monastic healthcare in the presence of a healing deity. For the former it was Asclepius, and for the latter it was Christ. As for Asclepius, there were mixed ideas of his origin. Some thought of him as a highly skilled human physician, as he was referred to in Homer’s *Iliad*.⁹ Others thought of him as a pre-Homeric deity of the underworld who was demoted to hero status (as referenced in Homer), then in the classical period promoted back to full deity. The most popular idea is that he was a patron hero of physicians. Some sources say Asclepius only became deified in the 6th century B.C.E after being considered a healing god independent of Apollo.

⁷ Crislip, Andrew T.

⁸ Edelstein, Emma J., *Asclepius Collection and Interpretation of the Testimonies*.

⁹ Homer and Fagles, Robert, *The Iliad*.

Regardless, in Greek mythology, most consider Asclepius to be the son of Apollo. This is an interesting parallel to Christian tradition, which sees Jesus as the son of God.

Incidentally, there were mixed ideas of Jesus' origin with His contemporaries, as evidenced in the Gospels when Jesus asked His disciples who people thought He was: "Who do people say the Son of Man is?" The disciples replied, "Some say John the Baptist; others say Elijah; and still others, Jeremiah or one of the prophets" (Matthew 16:13-14). Regardless of this controversy, Christians ultimately accept Jesus as the Son of God, which is an interesting parallel to the idea of Asclepius as son of Apollo.

In addition to a similar reverence of deity, there are similarities in the reports of supernatural healings of both, many resulting from prayer. Even today, people tell tales of being at the brink of death and coming back to life as a result of prayers from their loved ones. Despite holding roots in healing centers like Asclepian temples and Christian monastic hospitals, modern medical practices typically do not incorporate prayer as a healing treatment. For the most part, physicians follow guidelines for evidence-based-practices, which leads to the question of whether there is scientific evidence of the effectiveness of prayer healing. Studies have been performed over the past several years to try to answer this question, and the next chapter will examine these studies. It will initially examine research on prayer and healing, and then review studies examining the links between prayer and mental health.

CHAPTER TWO

Review of Current Scientific Literature

In 1988, a scientist published a study of the effect of intercessory prayer on patients in the coronary care unit (CCU) of San Francisco General Hospital.¹⁰ Byrd found a statistically significant beneficial effect of intercessory prayer on the outcomes of CCU patients. Until 1999, Byrd's study had been the only published trial of such a study with clinically significant outcomes, but more scientifically designed studies were needed to support it.

A group took on this task by performing a randomized, controlled, double-blind, parallel group trial testing whether remote intercessory prayer affected the outcomes and duration of stay in the CCU of a private university hospital.¹¹ Harris and his team studied 990 patients and randomized them into an experimental and control group; the former received remote intercessory prayer, while the latter received usual care. A team of intercessors from various Christian denominations prayed daily for the prayer group members for 4 weeks. The double-blind aspect was enforced by the fact that patients were unaware they were being prayed for, and the intercessors did not know or meet the patients. Researchers then performed a blinded, retrospective chart review to correlate

¹⁰ Byrd, Randolph C., "Positive Therapeutic Effects of Intercessory Prayer in a Coronary Care Unit Population."

¹¹ William S. Harris, "A Randomized, Controlled Trial of the Effects of Remote, Intercessory Prayer on Outcomes in Patients Admitted to the Coronary Care Unit."

CCU outcomes with prayer. The results showed no difference in duration of stay between the prayer and usual care group; but the prayer group had lower adverse outcomes overall, supporting Byrd's initial study. This difference in outcomes between the prayer and control group show that prayer may have a beneficial effect on outcomes for CCU patients.

While Harris' study focused on outcomes for CCU patients, another study examined outcomes for coronary artery bypass graft (CABG) surgeries. In 2006, Herbert and colleagues used 2,406 patients in six different U.S. hospitals to test the effects of certainty of receiving intercessory prayer on complication outcomes during recovery after CABG surgeries.¹² They were divided into three experimental groups: two groups that were told they may or may not receive prayer (with one group actually receiving prayer, and the other group not), and a group that was told it would and did receive prayer. The intercessors were from varying Christian backgrounds. There seemed to be no correlation of outcomes to the prayer itself; however, the group that was certain they were receiving prayer had higher rates of complication. These results are interesting when compared with the Harris' (1999) and Byrd's (1988) CCU outcome studies, in which patients unaware that they were being prayed for and had lower adverse outcomes. These two studies together may suggest that remote intercessory prayer can decrease adverse outcomes, but only if the patient is unaware. This begs the questions: what effect does the knowledge that someone is praying for you have, and will these adverse outcomes translate into prayers for one's self?

¹² Benson Herbert and et al., "Study of the Therapeutic Effects of Intercessory Prayer (STEP) in Cardiac Bypass Patients: A Multicenter Randomized Trial of Uncertainty and Certainty of Receiving Intercessory Prayer."

While these studies both observed the effectiveness of remote intercessory prayer, they were performed several years ago and looked at the outcomes of heart patients. A more recent double-blind, randomized controlled trial examines a different condition—whether there was a correlation between intercessory prayer and adverse pregnancy outcomes.¹³ Rosa and team randomly assigned 564 pregnant women into either a control group or an intercessory prayer (IP) group. Both groups of women had similar baseline characteristics and statistics. A team of women participated in remote intercessory prayer for IP group by praying for a good delivery and healthy newborn. The study was double blind, so none of the pregnant women knew if they were receiving prayer, nor did the people praying know whom they were praying for. Researchers then analyzed outcomes in terms of type of delivery, Apgar scores, birth weight, and other such measures. The results showed no significant effects of intercessory prayer on any of the outcomes. This data suggests that remote intercessory prayer may not be effective in reducing adverse pregnancy outcomes. It also leads us to consider the use of other types of prayer.

One such study observed the effects of one-on-one individualized prayer and its long-term effects on depression and anxiety.¹⁴ Boelens and team performed a one-year follow up of depression and anxiety patients who underwent prayer intervention. The sample population of 60 (57 women and 3 men with depression) originally underwent six weekly 1-hour prayer sessions in an office setting with intercession from a nondenominational Christian layperson. Researchers measured depression measuring

¹³ Rosa and et al., “A Randomized Clinical Trial on the Effects of Remote Intercessory Prayer in the Adverse Outcomes of Pregnancies.”

¹⁴ Boelens et al., “The Effect of Prayer on Depression and Anxiety: Maintenance of Positive Influence One Year after Prayer Intervention.”

scales before and after the six-week treatment, and 44 women returned for measures one year after intervention. This one-year follow up found significant decreases in depression and anxiety compared to the baseline measures. Unlike other blinded studies, this study shows that direct person-to-person prayer may be effective in treating depression, and outcomes can be retained over time. It is interesting to note that this study isolated the variable of gender, and only observed women. A future direction may be to perform a similar study with men to see if gender affects the outcomes.

While one-on-one prayer seems to have beneficial long-term effects on depression and anxiety patients, another study looked for correlations between types of prayer and depression outcomes in cancer patients.¹⁵ Pérez and team studied 179 predominantly White, female, Christian ambulatory cancer patients. The researchers assessed the frequency and type of patients' prayers and correlated them with measures assessing their depressive symptoms. They found that prayers of all types, including adoration, reception, thanksgiving, and prayers for the well-being of others all correlated with lower levels of depression in cancer patients. This is another study that suggests a correlation between prayer and decreasing depressive symptoms. However, it contrasts with the previously mentioned studies because rather than another person participating through either one-on-one intercessory prayer, it measures outcomes of the patients' own prayers. This study also seems to isolate females, and perhaps further research can be done on outcomes for males.

All of aforementioned studies have one thing in common: the prayer intervention

¹⁵ Pérez, John E. et al., "Types of Prayer and Depressive Symptoms among Cancer Patients: The Mediating Role of Rumination and Social Support."

followed a logical view of time. However, an early 2001 study tests the effects of retroactive intercessory prayer, on the assumption that God is not confined to our linear sense of time. ¹⁶This researcher performed a double-blind, randomized controlled trial studying the effects of remote retroactive intercessory prayer on the duration of stay and outcomes for patients with bloodstream infections. The sample size was 3393 adult patients with bloodstream infections at a university hospital in Israel from 1990-1996. In July 2000, the researchers randomly created an intervention group using a random number generator and coin toss. The first names of intervention group patients were given to one person who prayed for the group, but there was no sham group. It is important to note that the intervention group received prayer 4-10 years after their hospitalization. The researchers then compared the number of deaths in hospital, length of hospital stay, and duration of fever. While the results show similar mortality rates, a significantly shorter hospital stay and significantly shorter duration of fever was found for the intervention group. This study was especially interesting because it shows that retroactive prayer may have a beneficial effect on patients by decreasing their lengths of hospital stay and fever duration. However, it is difficult to comprehend how such treatment could be administered in a practical sense.

All of these studies show how different types of prayer affect patient outcomes. The first study by Harris' group shows that remote intercessory prayer can result in lower adverse outcomes for coronary patients in the CCU. The Benson study shows that patients who know they are being prayed for have higher rates of complications in CABG

¹⁶ Leibovici, "Effects of Remote, Retroactive Intercessory Prayer on Outcomes in Patients with Bloodstream Infection: Randomised Controlled Trial."

surgery. This is interesting because while Benson's study did not show any significant improvements as a result of prayer, it can be combined with Harris' study—in which patients did not know they were being prayed for and had lower adverse outcomes—to suggest prayer may be beneficial if patients are unaware of it. However, the results of both these studies contrast with those of Rosa and her team, who studied the effects of remote intercessory prayer on pregnancy outcomes and found no significant difference between the prayer and control groups. The pregnant women did not know they were being prayed for, so this suggests that the effectiveness of prayer may not actually be correlated with whether patients are aware that they are being prayed for. While the results of remote intercessory prayer are mixed, there seems to be evidence for one-on-one and individual prayer for depression and anxiety in the Boelens and Pérez studies. It should be noted that Boelens' study (2012) shows a year-long retention of beneficial effects on depression and anxiety. Likewise, Pérez' study (2011) shows the beneficial effects of several types of prayer on cancer patients' depression; this study is significant because it shows the power of personal, or individual, prayer on one's own condition. Both depression studies were comprised predominantly of women, so it may be advantageous to research similar studies in men.

The final study by Leibovici shows evidence for beneficial effect of retroactive prayer on patients with bloodstream infections. The research presented this paper had several differences, including the type of prayer and conditions studied. An interesting thing to note is the conditions for which prayer was effective; it is possible prayer may be more effective for CCU patients, patients with depression and anxiety, and patients with bloodstream infections, than for patients with other conditions. The type of prayer may

influence its effectiveness as well; these studies suggest that one-on-one, personal, and retroactive prayer are more effective than remote intercessory prayer.

While these studies all tried to correlate different types of prayer with healing outcomes in different conditions, it is important to consider the design of such a study. Researchers tried to control for many variables by designing double-blinded and randomized studies; however, it is possible that patients had family members praying for them or were even praying for themselves without researchers knowing it. Because prayer is so intangible and immeasurable, it is difficult to isolate it as a variable and design a study to test its effectiveness. Still, researchers have tried in several studies, and found mixed evidence.

Additional research on prayer and mental health has focused primarily on simple correlations between the two using self-reported survey data. For example, some work has examined how religiosity and prayer habits correlate with college student anxiety.¹⁷ Harris and team found a negative correlation between religious variables and trait anxiety. The study suggests that committed religiosity may be associated with lower levels of general anxiety. A similar study was conducted with Arabic college students to assess the correlations between religiosity and death distress.¹⁸ Al-Sabwah and team found significant negative correlations between religiosity and death anxiety and death depression. This study also suggested that religiosity may be associated not only with anxiety, but with depression as well, and that this connection may not be limited to a

¹⁷ Harris JI, Schoneman SW, and Carrera SR, "Approaches to Religiosity Related to Anxiety among College Students."

¹⁸ Al-Sabwah MN and Abdel-Khalek AM, "Religiosity and Death Distress in Arabic College Students."

specific religion. This study also dealt with a specific population of Arab students, which was a limitation that the proposed study would address with a more diverse participant sample. Another study was conducted on Iraq and Afghanistan veterans regarding prayer and mental health correlations.¹⁹ This study found that prayers for assistance, calm, and focus were correlated with fewer PTSD and depressive symptoms. This is yet another study on a specific population.

What do these findings suggest? One possibility, which is supported by several studies²⁰ in the literature, is that prayer frequency is positively associated with desirable mental health outcomes.²¹ This outcome may provide support for the idea of divine intervention, or simply prove prayer to be an effective coping mechanism for mental health issues. The other major potential conclusion is that prayer frequency is either unrelated to health, or positively correlated with symptoms of depression and other undesirable mental health outcomes²², as demonstrated by several studies.²³ This

¹⁹ Tait, Currier, and Harris, "Prayer Coping, Disclosure of Trauma, and Mental Health Symptoms Among Recently Deployed United States Veterans of the Iraq and Afghanistan Conflicts."

²⁰ Ai et al., "Private Prayer and Optimism in Middle-Aged and Older Patients Awaiting Cardiac Surgery."; Ai et al., "The Influence of Prayer Coping on Mental Health among Cardiac Surgery Patients."; Fry, "Religious Involvement, Spirituality and Personal Meaning for Life: Existential Predictors of Psychological Wellbeing in Community-Residing and Institutional Care Elders."; Maltby et al., "Religion and Health: The Application of a Cognitive-Behavioural Framework"; Musick et al., "Religious Activity and Depression among Community-Dwelling Elderly Persons with Cancer: The Moderating Effect of Race."; Nooney and Woodrum, "Religious Coping and Church-Based Social Support as Predictors of Mental Health Outcomes: Testing a Conceptual Model."

²¹ Ellison et al., "Prayer, Attachment to God, and Symptoms of Anxiety-Related Disorders among U.S. Adults."

²² Ellison et al.

²³ Bradshaw, Christopher G. Ellison, and Kevin J. Flannelly, "Prayer, God Imagery, and Symptoms of Psychopathology"; Bradshaw, Christopher G. Ellison, and Jack P. Marcum, "Attachment to God, Images of God, and Psychological Distress in a Nationwide Sample of Presbyterians"; Ellison, "Race, Religious Involvement, and Depressive Symptomatology in a Southeastern U.S. Community"; Fry, "Religious Involvement, Spirituality and Personal Meaning for Life: Existential Predictors of Psychological

outcome can be explained by considering the sample; perhaps the people who demonstrate increased prayer frequency are doing so because they have adverse mental health symptoms.

At the present time, we do not fully understand the association between prayer and health, so additional research is needed. In the remainder of this thesis, I describe two studies that were designed to contribute to our understanding of the prayer-health connection. The first one is a longitudinal analysis of a large-scale national survey that included measures of prayer and depressive symptoms. This study can tell us whether prayer is associated with depression at a single point in time (cross-sectionally), as well as longitudinally over a 1-2 year period. It can also tell us the direction of the correlation (i.e., positive or negative). It is possible that prayer will be inversely associated with depressive symptoms because of the real or perceived benefits of prayer for mental health. However, it may be the case that depression leads to increase in prayer, leading to a positive correlation. The second study attempts to more strongly link prayer to mental health in a causal manner by conducting a randomized, controlled experiment which is capable of ruling out unmeasured variables that might confound the association between prayer and mental health, such as personality traits or biological influences.

Wellbeing in Community-Residing and Institutional Care Elders.”; Strawbridge et al., “Religiosity Buffers the Effects of Some Stressors on Depression but Exacerbates the Effects of Others.”

CHAPTER THREE:

Materials and Methods

Two different types of data will be collected and analyzed. First, we will analyze data from a large, national sample of young adults (the National Longitudinal Study of Adolescent to Adult Health) to examine the associations between prayer and depressive symptoms (Study 1). This data has already been collected and provided to Dr. Bradshaw. Second, we collected primary data on 199 participants in the Waco area. In this survey, we conducted a baseline survey to measure stress and health, demographics, attachment to and perception of God, prayer habits, and personality assessments (Study 2).

METHODS

Study 1

Data

Data come from Waves 1 and 2 of the National Longitudinal Study of Adolescent to Adult Health (Add Health). The sample was drawn from 80 high schools selected with probabilities proportional to size, and an additional 52 feeder middle schools. The overall response rate at baseline was 79 percent. Of the more than 90,000 students who completed in-school surveys during the 1994-1995 academic year, a sample of 20,745 adolescents in grades 7-12 was interviewed in 1994-1995 (Wave 1). A subsequent wave of data was collected in 1995-1996 (Wave 2). Additional details can be found at:

<http://www.cpc.unc.edu/projects/addhealth>.

Measures

Dependent Variable

At both waves, depressive symptoms were measured with a mean index composed of nine questions (Meadows et al. 2006; Radloff 1991): "Now, think about the past seven days. How often was each of the following things true during the past seven days: (a) You were bothered by things that usually don't bother you; (b) You could not shake off the blues, even with help from your family and your friends; (c) You felt you were just as good as other people (reverse coded); (d) You had trouble keeping your mind on what you were doing; (e) You felt depressed; (f) You felt that you were too tired to do things; (g) You felt happy (reverse coded); (h) You enjoyed life (reverse coded); and (i) You felt sad." Response categories ranged from 0=never or rarely to 3=most of the time or all of the time.

Independent Variable

Frequency of prayer was measured with the following question at Wave 1: "How often do you pray?" Response categories were: 0=never; 1=less than once a month; 2=at least once a month; 3=at least once a week; and 4=at least once a day.

Control Variables

Control variables included: age (in years), gender (female=1), race (dummy system for black, Hispanic, Asian, Native American, and other compared with whites), marital status (spouse or a partner=1), living in a rural town area and living in a farm area compared with larger urban areas, mother's education was measured with a dichotomous variable

indicating college graduates (coded 1) compared with non-college graduates (father's education was measured in the same way) and total parental income during adolescence was measured in dollars.

Missing Data

Missing data would have resulted in a loss of roughly 20% of the sample. The potential biases of missing data are well documented, and multiple imputation is perhaps the best way to deal with this problem. Missing data on all variables except for weights were imputed using the "mi" procedure in Stata 15.0. OLS regression was used to estimate predicted values for continuous variables, ordered logistic regression was used for ordinal variables, and logistic regression was used for dichotomous variables. The final sample used in all analyses consisted of 14,800 individuals. The results are based on five imputed datasets, but they were comparable when listwise deletion was employed and when additional imputed datasets were analyzed.

Study 2

Data

Experimental data was collected on 199 participants in the Waco area. In this online Qualtrics survey, we conducted a baseline survey to measure stress and health, demographics, attachment to and perception of God, prayer habits, and personality assessments. Then, participants underwent one of five intervention groups (Common Prayer of Thanksgiving, Personal Prayer of Thanksgiving, Common Prayer of Peace and Confidence, Personal Prayer of Peace and Confidence, and Scripture reading) or a control

group. Using multiple types of prayer to compare those effects was inspired by Poloma's studies which identified different responses associated with varying types of prayer, including meditative, colloquial, ritualistic, and petitionary.²⁴ Participants then did a post-interventional assessment of stress and health. We then compared the pre and post interventional assessments to find differences across the experimental groups.

Measures

Dependent Variables

Psychological Well-Being / Distress was measured with the following questions: (a) "I currently feel joyful and happy." (b) "At the present time, I feel a lot of stress." (c) "Right now, I feel depressed." (d) "Life is a struggle for me right now." and (e) "I currently feel inner peace and harmony." Each of these measures was coded: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=somewhat agree; 5=agree; and 6=strongly agree. Each question was analyzed as single-item outcome measures using ordered logistic regression, and as a mean-index using OLS regression. For the index, the first and last questions were reverse coded, so higher numbers represent more distress.

Key Independent Variables

To examine the association between prayer, Bible reading, and psychological well-being / distress, a randomized, controlled experiment was conducted. Participants were randomly assigned to one of six possible groups: (1) a control group that did not engage in any prayer or Bible reading; (2) a group that was asked to repeat a common prayer of

²⁴ Poloma and Pendleton, "Exploring Types of Prayer and Quality of Life: A Research Note."

thanksgiving; (3) a group that was asked to pray for thanksgiving in any way they wanted to; (4) a group that was asked to recite a common prayer of peace / confidence; (5) a group that was asked to say their own prayer about peace / confidence; and (4) a group that was asked to read a passage of scripture from the Bible that includes messages about thanksgiving, peace, and confidence. Each group is described in detail below:

- *Group 1 (Control)*: No prayer or Bible reading. These participants simply skipped the portion of the experiment where they were asked to pray or read, and immediately answered the post-test questions about psychological well-being / distress.
- *Group 2: (Common Prayer-Thanksgiving)*: Respondents were given the following prompt: “Please take a moment to pray this prayer of thanksgiving: Accept, O Lord, our thanks and praise for all that you have done for us. We thank you for the splendor of the whole creation, for the beauty of this world, for the wonder of life, and for the mystery of love. We thank you for the blessing of family and friends, and for the loving care which surrounds us on every side. We thank you for setting us at tasks which demand our best efforts, and for leading us to accomplishments which satisfy and delight us. We thank you also for those disappointments and failures that lead us to acknowledge our dependence on you alone. Above all, we thank you for your Son Jesus Christ; for the truth of his Word and the example of his life; for his steadfast obedience, by which he overcame temptation; for his dying, through which he overcame death; and for his rising to life again, in which we are raised to the life of your kingdom. Grant us the gift of your Spirit, that we may know him and make him

known; and through him, at all times and in all places, may give thanks to you in all things. Amen.”²⁵

- *Group 3: (Personal Prayer-Thanksgiving)*: “Please take a moment to pray a prayer of thanksgiving.”
- *Group 4 (Common Prayer-Peace/Confidence)*: “Please take a moment to pray this prayer of peace and confidence: Eternal God, in whose perfect kingdom no sword is drawn but the sword of righteousness, no strength known but the strength of love: So mightily spread abroad your Spirit, that all peoples may be gathered under the banner of the Prince of Peace, as children of one Father; to whom be dominion and glory, now and forever. O God of peace, *who hast* taught us that in returning and rest we shall be saved, in quietness and confidence shall be our strength: By the might of *thy* Spirit lift us, we pray *thee*, to *thy* presence, where we may be still and know that *thou art* God; through Jesus Christ our Lord. *Amen.*”²⁶
- *Group 5 (Personal Prayer-Peace/Confidence)*: “Please take a moment to pray for peace and confidence.”
- *Group 6 (Scripture Reading)*: “Please read and reflect on the following Scriptures: Come to me, all you who are weary and burdened, and I will give you rest. Take my yoke upon you and learn from me, for I am gentle and humble in heart, and you will find rest for your souls. For my yoke is easy and my burden is light (Matthew 11:28-30). Peace I leave with you; my peace I give you. I do not give to you as the world gives. Do not let your hearts be troubled and do not be afraid. Keep your lives free

²⁵ “Common Prayer for Thanksgiving.”

²⁶ “Common Prayer for Peace.”

from the love of money and be content with what you have, because God has said, never will I leave you; never will I forsake you. So we say with confidence, The Lord is my helper; I will not be afraid. What can mere mortals do to me (Hebrews 13:5-6)? Do not be anxious about anything, but in every situation, by prayer and petition, with thanksgiving, present your requests to God. And the peace of God, which transcends all understanding, will guard your hearts and your minds in Christ Jesus (Philippians 4:6-7). So do not fear, for I am with you; do not be dismayed, for I am your God. I will strengthen you and help you; I will uphold you with my righteous right hand (Isaiah 41:10).”

Control Variables

Pre-test measures of psychological well-being / distress identical to the dependent variables were included as controls for baseline levels of mental health. *Age* was measured in year, *gender* was included as a dichotomous variable (female=1; male=0), and *race/ethnicity* was also included as a dichotomous variable (white/Caucasian=1; other race/ethnicity=0). In theory, the randomization process also controls for most, if not all, potentially confounding variables.

CHAPTER FOUR:

Results

Table 1: Descriptive Statistics (Study 1)

	Mean/Proportion	Std. Dev.	Min.	Max.
Depressive Symptoms (W1)	0.712	0.494	0	3
Depressive Symptoms (W2)	0.706	0.495	0	3
Prayer (W1)	2.581	1.563	0	4
Age	16.133	1.733	12	21
Female	0.532	-	0	1
Male	0.468	-	0	1
White	0.561	-	0	1
Black	0.201	-	0	1
Hispanic	0.073	-	0	1
Asian	0.061	-	0	1
Native American	0.018	-	0	1
Other Race	0.086	-	0	1
Urban	0.361	-	0	1
Rural	0.256	-	0	1
Suburban	0.362	-	0	1
Other Urban/Rural	0.021	-	0	1
Mother College Degree	0.257	-	0	1
Father College Degree	0.216	-	0	1
Parental Income	46.670	51.154	0	999

Notes:

n = 14,800

Table 1 shows descriptive statistics for all measures used in Study 1. Depressive symptoms were relatively low at both waves: 0.712 and 0.706, respectively, for Waves 1 and 2 (on scales that ranged from 0-3). Average levels of prayer were 2.581 at Wave 1. The average age at Wave 1 was 16.133, 53.2% of the sample was female, and 56.1% was white. Information on all other variables is available in table.

Table 2: Cross-Sectional Analysis of the Association between Prayer at Wave 1 (Independent Variable) and Depressive Symptoms at Wave 1 (Dependent Variable) among Adolescents and Young Adults in Study 1 (OLS Regression Coefficients)

	Model 1
Prayer (W1)	-0.024 ***
Age	0.031 ***
Gender (Ref=Male)	
Female	0.154 ***
Race (Ref=White)	
Black	0.063 ***
Hispanic	0.069 ***
Asian	0.164 ***
Native American	0.162 ***
Other Race	0.115 ***
City Size (Ref=Urban)	
Rural	-0.006
Suburban	-0.003
Other Urban/Rural	0.081 ***
Mother College Degree	-0.066 ***
Father College Degree	-0.066 ***
Parental Income	-0.000 *

Notes:

n = 14,800

***p<0.001; **p<0.01; *p<0.05; +p<0.10

Table 2 shows the cross-sectional association between frequency of prayer and depressive symptoms at Wave 1 of the Add Health study. Controlling for sociodemographic variables including age, gender, race city size, and parental SES, there is an inverse correlation between prayer and depressive symptoms (b = -0.024; p<0.001). As the frequency of prayer increases, depressive symptoms decrease. This association is statistically significant.

Table 3: Longitudinal Analysis of the Association between Prayer at Wave 1 (Independent Variable) and Depressive Symptoms at Wave 2 (Dependent Variable) among Adolescents and Young Adults in Study 1 (OLS Regression Coefficients)

	Model 1
Prayer (W1)	-0.011 ***
Depressive Symptoms (W1)	0.543 ***
Age	0.004 +
Gender (Ref=Male)	
Female	0.054 ***
Race (Ref=White)	
Black	0.033 ***
Hispanic	0.022
Asian	0.065 ***
Native American	0.036
Other Race	0.069 ***
City Size (Ref=Urban)	
Rural	-0.009
Suburban	0.006
Other Urban/Rural	0.008
Mother College Degree	-0.026 **
Father College Degree	-0.029 **
Parental Income	-0.000

Notes:

n = 14,800

***p<0.001; **p<0.01; *p<0.05; +p<0.10

Table 3 shows findings that examine the longitudinal association between prayer at baseline (Wave 1) and depressive symptoms at Wave 2 controlling for baseline levels of depression at Wave 1. In essence, these findings examine whether prayer at baseline is associated with longitudinal changes in depressive symptoms across Waves 1 and 2 (a 1-2 year time span). The results show that prayer at baseline is associated with decreases in depressive symptoms across this time period controlling for baseline depressive symptoms and all control variables. This suggests that prayer at one point in time is linked with changes in depression at later points in time, in this case, 1-2 years later.

Overall, the results shown in Tables 2 and 3 show that there is a statistically significant, inverse correlation between prayer and depressive symptoms both cross-sectionally and longitudinally over a relatively short period of time (1-2 years). This data is correlational in nature, however, and does not allow us to establish that prayer is causally linked with depression. It is possible that depression, not prayer, is driving this relationship. In other words, prayer may not be causally associated with depressive symptoms; instead, depressive symptoms may lead to different levels and patterns of prayer. Large-scale surveys, like the one used in Study 1, are not capable of addressing this issue, and a different research method is necessary. Study 2 (Tables 4 and 5) show the results of an experimental study, which may shed light on this issue.

Table 4: Descriptive Statistics (Study 2)

	Mean/Proportion	Std. Dev.	Min.	Max.
Post-Test Happiness	4.060	1.293	1	6
Post-Test Stress	4.286	1.444	1	6
Post-Test Depression	2.709	1.320	1	6
Post-Test Struggle	3.558	1.395	1	6
Post-Test Peace/Harmony	3.924	1.359	1	6
Post-Test Distress Index	3.314	1.099	1	6
Baseline Happiness	4.121	1.245	1	6
Baseline Stress	4.940	1.162	1	6
Baseline Depression	2.824	1.342	1	6
Baseline Struggle	3.568	1.454	1	6
Baseline Peace/Harmony	3.553	1.278	1	6
Baseline Distress Index	3.532	1.036	1	6
Reference/Control (No Prayer or Scripture)	0.166	-	0	1
Common Prayer-Thanksgiving	0.171	-	0	1
Common Prayer-Peace/Confidence	0.166	-	0	1
Personal Prayer-Thanksgiving	0.166	-	0	1
Personal Prayer-Peace/Confidence	0.171	-	0	1
Scripture Reading	0.161	-	0	1
Age	3.201	1.239	1	7
Female	0.754	-	0	1
Male	0.246	-	0	1
White	0.633	-	0	1
Other Race	0.367	-	0	1

Notes:

n = 199

Table 4 shows descriptive statistics for all variables used in Study 2. Mean levels of happiness, stress, and harmony—at both baseline and post-test—were relatively high. In contrast, depressive symptoms were relatively low in this sample of young adults. There was roughly an equal number of participants in each of the five experimental groups: control (no prayer or scripture reading); common prayer-thanksgiving; common prayer-peace; personal prayer-thanksgiving; personal prayer-peace; and scripture reading. Roughly 75.4% of the sample was female and 63.3% was white.

Table 5: Associations between Mental Health and Experimental Groups among Young Adults in the Waco, TX Area

Reference/Control (No Prayer or Scripture)	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Post-Test Happiness	Post-Test Stress	Post-Test Depression	Post-Test Struggle	Post-Test Peace/Harmony	Post-Test Distress Index
Common Prayer-Thanksgiving	2.767*	0.272**	0.440+	0.457	1.761	-0.362**
Common Prayer-Peace/Confidence	1.715	0.547	0.545	0.557	1.136	-0.251+
Personal Prayer-Thanksgiving	2.087	0.368*	0.851	0.473	0.905	-0.242+
Personal Prayer-Peace/Confidence	1.336	0.438+	0.546	0.466	3.417**	-0.261*
Scripture Reading	2.745*	0.319*	1.011	0.321*	1.975	-0.364**
Age	1.165	0.833	0.994	0.909	1.094	-0.055+
Female (Reference=Male)	0.600	1.080	1.838+	1.666	0.919	0.066
White (Reference=Other Race)	0.847	1.069	0.794	1.025	1.136	-0.008
Baseline Happiness	4.011***	-	-	-	-	-
Baseline Stress	-	5.172***	-	-	-	-
Baseline Depression	-	-	6.648***	-	-	-
Baseline Struggle	-	-	-	6.327***	-	-
Baseline Peace/Harmony	-	-	-	-	6.024***	-
Baseline Distress Index	-	-	-	-	-	0.898***
Pseudo R2 (Adj. R2 for Model 6)	0.205	0.231	0.322	0.333	0.275	0.535

n=199
 +p<0.10; *p<0.05; **p<0.01; ***p<0.001

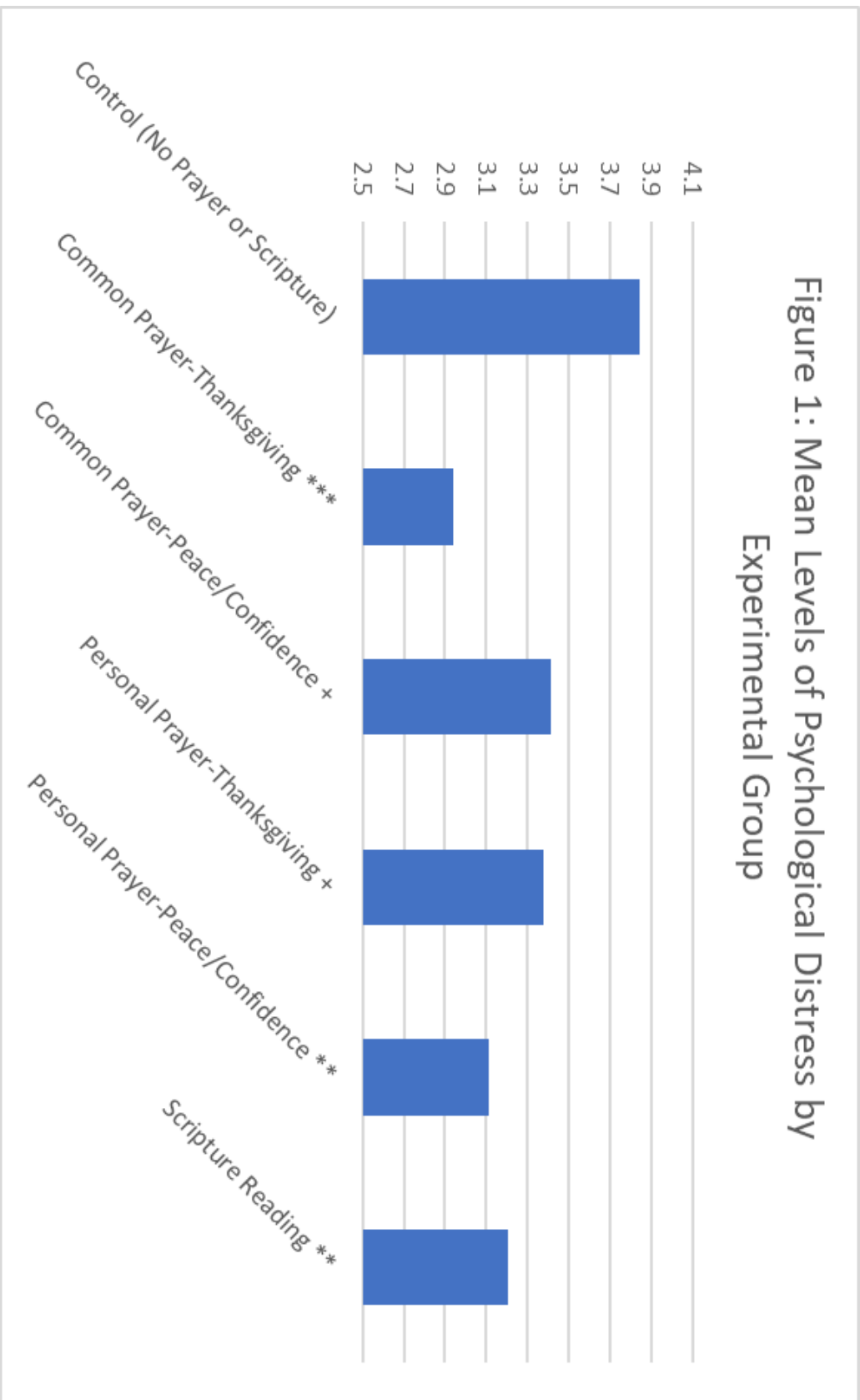
Table 5 shows the results from the experimental findings (Study 2). All of the results shown in this table include controls for baseline (pre-test) psychological well-being / distress, age, gender, and race. Model 1 shows that post-test levels of happiness increased after the experimental stimulus by a factor of 2.767 (odds ratio from the ordered logistic regression of post-test happiness on experimental group membership and all control variables; $p < 0.05$) for the group that recited a common prayer of thanksgiving compared with the control group that did not pray or read verses from the bible. Similarly, the group that was asked to read a passage of scripture that contained messages about thanksgiving, peace, and confidence showed a significantly higher level of happiness (OR=2.745; $p < 0.05$) at the post-test measurement compared with the control group. Model 2 shows the results for feeling stress. Participants who were asked to say a common prayer of thanksgiving, a personal prayer of thanksgiving, and read passages from the Bible about thanksgiving, peace, and confidence showed lower self-reported levels of stress compared with the control group. Odds ratios were 0.272, 0.368, and 0.319, respectively, and all were statistically significant. Prayer and Bible reading do not appear to be associated with changes in feelings of depression, however (Model 3). Model 4 shows that individuals who read passages from the Bible reported lower levels of feeling like life is a struggle at the moment (OR=0.321; $p < 0.05$), while Model 5 shows that saying a personal prayer of peace and confidence is associated with increases in feelings of peace and harmony compared with the control group (OR=3.417; $p < 0.01$).

Model 6 presents findings for an overall measure of psychological well-being / distress. The dependent variable is a composite measure created by taking the mean of the five individual post-test items: happiness (reverse coded), stress, depression, life is a

struggle, and feelings of peace / harmony (reverse coded). The results are parameter estimates from the OLS regression of the distress index on experimental group membership and control variable. The results show statistically significant declines ($p < 0.05$ or less) in distress among the groups that prayed a common prayer of thanksgiving, a personal prayer of peace / confidence, and who read a passage from the Bible compared with the control group. The other two group, saying a common prayer of peace / confidence and a personal prayer of thanksgiving, were inversely associated with distress, but the results were only marginally significant ($p < 0.10$). Figure 1 shows a graphical representation of these results.

Overall, the results shown in Table 5 suggest that there are statistically significant associations between prayer and several different indicators of mental health including depressive symptoms, feelings of stress, feeling peace and harmony, and a scale of psychological distress. These findings suggest, but do not prove, that prayer is causally linked with self-reported measures of mental health. Combined with the findings from Study 1, this provides strong support for the possibility that prayer is associated with desirable mental health outcomes among young adults.

Figure 1: Mean Levels of Psychological Distress by Experimental Group



CHAPTER FIVE: Discussion and Implications

Overall, the results from these two studies show there is a positive correlation between prayer and psychological well-being, at least in the short term. The first study shows that frequency of prayer is correlated with lower levels of depressive symptoms at one point in time, as well as with longitudinal declines in depressive symptoms across a 1-2 year period. The second study seems to indicate a causal relationship between prayer and short-term improvements in mental health, at least when measured with self-report questionnaires.

The most significant results of the second study were found in the Personal Prayer for Peace and Confidence, Common Prayers of Thanksgiving, and Scripture Reading groups. The Scriptures used focused on themes of casting one's burdens onto Jesus, accepting the peace He gives, focusing on Christ, and remembering His presence in times of fear. This group had increased post-test happiness, decreased post-test stress, and decreased post-test struggle (controlling for baseline levels of these measures). Perhaps these verses were familiar to the readers and provided relief as they felt comfort in familiarity. Another possibility is that these verses allowed the reader to engage in their belief of God's greater plan, relieving their sense of responsibility and anxiety and giving them happiness in hopes of a better future. In this way, scripture reading may have facilitated a momentary shift from an internal to an external locus of control that provided relief from anxiety. Likewise, the Common Prayer of Thanksgiving improved post-test happiness and decreased post-test stress. This prayer had similar themes of casting

failures and disappointments unto God and instead depending on God alone. The prayer requires reflection on creation, beauty, love, family and friends and thinking of these things could lead to chemical increases of hormones responsible for happiness and decreasing stress. Finally, the Personal Prayer for Peace and Confidence decreased post-test stress and increased post-test peace and harmony. Perhaps praying for peace caused the participants to take a moment and put their trust in God, attributing peace and confidence to Him rather than themselves. This could have led to stress relief and a feeling of peace that is reflected in our results.

Given that a randomized, controlled experiment was conducted, the role of confounding variables such as personality traits (e.g., neuroticism), genetic or other biological differences, and social-environmental influences (e.g., different levels of religiosity, parent-child relations, SES, etc.) should be minimized if not completely taken into consideration. This was accomplished through the randomization process. Since individuals were randomly assigned to different experimental and control groups, virtually all characteristics should be equally represented in each group. This means that any changes in the mental health measures following the experimental stimulus (i.e., the prayer or scripture reading) should be explained by the stimulus. Controlling for baseline (i.e., pre-stimulus) levels of mental health also helps to further isolate the true effects of prayer and scripture readings on post-test measures of mental health. The finding of significant differences in several post-test measures of mental health can be interpreted as reasonably strong evidence that prayer and scripture reading can have desirable effects on mental health, at least over short periods of time. Coupled with the findings from Study 1 showing that prayer is associated with decreases in depressive symptoms across a 1-2

year period, these findings provide additional support for the role of prayer in shaping mental health. Given the strong link between mental and physical health, prayer should be taken into account by physicians seeking to improve the health of their patients.

At the time of writing this, in the hallway of an academic building, I am watching one student pray aloud for another student's worries and anxieties. This paints a picture of the setting where the second study occurred and may support the idea that patients' beliefs affect the outcome. While the second study's results occurred within relatively small sample of undergraduate students at a private Christian university, perhaps the sample group could be expanded. In addition to this, it may be interesting to study the effects of this experiment among different religious groups. A fact worth noting is that these results occurred almost instantaneously—this was a short survey that took under 15 minutes, so people were more likely to complete it. Perhaps it would be beneficial to implement follow-up surveys and track these changes over time in a similar fashion to the first longitudinal study. If these results are replicable, it may support the case for the efficacy of prayer.

Another strength of our novel interventional study is the use of different types of prayer. This allows us a glimpse of what mechanisms behind prayer may be responsible for its efficacy. While the sample size of our study was mostly college students, which limits the applications for this study, this is a population that would likely benefit from it. In a recently published study, a large survey of college students from over 100 campuses found an overall increased depression, anxiety, and suicidality in comparison to a normal

adult population.²⁷ Liu and team also report that one in four college students had either been diagnosed with or treated for a mental health disorder in the previous year. Many college students are overwhelmed by their classes and activities and may not have time or the ability to afford counseling, so prayer may be a simple and free option to help alleviate stress for students.

A broader and more ambitious application of these findings may be the use of prayer in medical settings. Currently, it seems the only room for prayer in a hospital is as a last-resort, when all modern medical treatments have failed. However, if there were more evidence of the beneficial results of prayer, perhaps it could be implemented as an earlier form of treatment. Further directions to establish this include physiological measurements such as blood pressure, cortisol, and electroencephalography before, during, and after prayer in order to explore potential physical effects of prayer. The findings of such a study may paint a clearer picture of a physiological mechanism of action for prayer and support its use as evidence-based. While in no way intended to replace medical attention, prayer could be an added tool in the arsenal of physicians while treating patients' mental health. Perhaps we could learn from the ancients and use prayer to enhance our modern treatments for more holistic care.

²⁷ Liu et al., "The Prevalence and Predictors of Mental Health Diagnoses and Suicide among U.S. College Students."

APPENDIX

APPENDIX:

Survey Used in Study 2:

Q1 Indicate how much you disagree or agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly Agree
I currently feel joyful and happy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At the present time, I feel a lot of stress.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right now, I feel depressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Life is good, and my future is bright.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I currently feel sad or blue.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my life at the moment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My energy level is low right now, and I feel very lethargic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At the present time, I feel loved, and like others care for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Life is a struggle for me right now.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I currently feel inner peace and harmony.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q2 Indicate how much you disagree or agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly Agree
I tend to be a happy person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I put the needs of others before my own.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My physical health is excellent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have close, supportive friends to call on when I have problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am currently experiencing financial hardship (i.e. trouble paying bills, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am an anxious, neurotic person by nature.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My life is stressful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a person of worth, at least on an equal plane with others, and I have a positive view of myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes feel powerless to control what happens to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3 How often do you feel major stress?

- Never
- Less than once a month
- Once a month
- 2-3 times a month
- Once a week
- 2-3 times a week
- Daily

Q4 Please answer the following:

	None	1-10 days	11-20 days	21-29 days	All 30 days
Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the past 30 days, for about how many days did pain physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the past 30 days, for about how many days have you felt sad, blue, or depressed?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

During the past 30 days, for about how many days have you felt worried, tense, or anxious?

During the past 30 days, for about how many days have you felt healthy and full of energy?

Q5 Over the past month, how often have you:

	Never	Rarely	Some times	Often	Very Often
Felt nervous, anxious, or on edge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thought too much about pointless matters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Been afraid something terrible would happen if you did not perform certain rituals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Felt that it is not safe to trust anyone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not been able to stop or control worrying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Felt compelled to perform certain actions, for no justifiable reason	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Became anxious doing things because people were watching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Been plagued by thoughts or images that you cannot get out of your mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Repeated simple actions that realistically did not need to be repeated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thought too much about things that would not bother other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feared that you might do something to embarrass yourself in a social situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Endured intense anxiety in social or performance situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- Felt that people were taking advantage of you
- Worried too much about different things
- Felt like you were being watched or talked about by others

Q6 Age

- Under 18
- 18
- 19
- 20
- 21
- 22
- 23 and older

Q7 Gender

- Male
- Female
- Other

Q8 Race/Ethnicity

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Hispanic or Latino
- Other

Q9 How much education did your mother receive?

- Mother not present in my life
- Less than high school
- High school graduate
- Some college
- Bachelor's degree (e.g., B.S., B.A.)
- Graduate degree (e.g., M.D., Ph.D., J.D.)

Q10 How much education did your father receive?

- Father not present in my life
- Less than high school
- High school graduate
- Some college
- Bachelor's degree (e.g., B.S., B.A.)
- Graduate degree (e.g., M.D., Ph.D., J.D.)

Q11 When you were growing up, how often did your parents suffer from financial hardship, such as having trouble paying their bills each month?

- Never
- Some years, but not others
- At least once every year
- Several times a year
- Most of the time during my childhood

Q12 Indicate how much you disagree or agree with the following statements.

	Strongly disagree	Disagree	Agree	Strongly Agree
I have a warm relationship with God	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
God knows when I need support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that God is generally responsive to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
God seems impersonal to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
God seems to have little or no interest in my personal problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
God seems to have little or no interest in my personal affairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
God sometimes seems responsive to my needs, but sometimes not	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
God's reactions to me seem to be inconsistent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q13 How well do you feel that each of the following words describe God in your opinion?

	Not at all	Not very well	Somewhat well	Very well (
Absolute	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fatherly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Punishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Just	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wrathful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forgiving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Severe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q14 Please answer the following questions regarding prayer.

	Never	Less than once a month	Once a month	A few times a month	Once a week	A few times a week	Once a day	Several times a day
I have a few questions about prayer. How often do you pray by yourself?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When you're by yourself, how often do you pray that God's will be done?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When you're by yourself, how	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

often do you offer prayers of thanksgiving?

When you're by yourself, how often do you pray for guidance?

When you're by yourself, how often do you pray for your own health?

When you're by yourself, how often do you pray for material things, like a job, money, car, and help with tests or assignments?

Q15 How much do you agree with each statement about you as you generally are now, not as you wish to be in the future?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am the life of the party	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sympathize with others' feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get chores done right away	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have frequent mood swings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a vivid imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I worry about things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm always optimistic about my future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get angry easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't talk a lot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not interested in other people's problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often forget to put things back in their proper place	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am relaxed most of the time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not interested in abstract ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not easily bothered by things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hardly ever expect things to go my way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely get irritated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I talk to a lot of different people at parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel others' emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like order	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get upset easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have difficulty understanding abstract ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get stressed out easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Overall, I expect more good things to happen to me than bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I lose my temper	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I keep in the background	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not really interested in others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make a mess of things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I seldom feel blue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have a good imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q17 Randomized Intervention

Common Prayer - Thanksgiving

Please take a moment to pray this prayer of thanksgiving:

Accept, O Lord, our thanks and praise for all that you have done for us. We thank you for the splendor of the whole creation, for the beauty of this world, for the wonder of life, and for the mystery of love.

We thank you for the blessing of family and friends, and for the loving care which surrounds us on every side.

We thank you for setting us at tasks which demand our best efforts, and for leading us to accomplishments which satisfy and delight us.

We thank you also for those disappointments and failures that lead us to acknowledge our dependence on you alone.

Above all, we thank you for your Son Jesus Christ; for the truth of his Word and the example of his life; for his steadfast

obedience, by which he overcame temptation; for his dying, through which he overcame death; and for his rising to life again, in which we are raised to the life of your kingdom.

Grant us the gift of your Spirit, that we may know him and make him known; and through him, at all times and in all places, may give thanks to you in all things. *Amen.*

Personal Prayer - Thanksgiving

Please take a moment to pray a prayer of thanksgiving.

Common Prayer - Prayer of Peace/Confidence

Please take a moment to pray this prayer of peace and confidence:

Eternal God, in whose perfect kingdom no sword is drawn but the sword of righteousness, no strength known but the strength of love: So mightily spread abroad your Spirit, that all peoples may be gathered under the banner of the Prince of Peace, as children of one Father; to whom be dominion and glory, now and for ever.

O God of peace, *who hast* taught us that in returning and rest we shall be saved, in quietness and confidence shall be our strength: By the might of *thy* Spirit lift us, we pray *thee*, to *thy* presence, where we may be still and know that *thou art* God; through Jesus Christ our Lord. *Amen.*

Personal Prayer - Peace/Confidence

Please take a moment to pray for peace and confidence.

Scripture

Please read and reflect on the following Scriptures:

“Come to me, all you who are weary and burdened, and I will give you rest. Take my yoke upon you and learn from me, for I am gentle and humble in heart, and you will find rest for your souls. For my yoke is easy and my burden is light.” (Matthew 11:28-30)

"Peace I leave with you; my peace I give you. I do not give to you as the world gives. Do not let your hearts be troubled and do not be afraid." (John 14:27)

"Keep your lives free from the love of money and be content with what you have, because God has said, “Never will I leave you; never will I forsake you.” So we say with

confidence, "The Lord is my helper; I will not be afraid. What can mere mortals do to me?" (Hebrews 13:5-6)

"Do not be anxious about anything, but in every situation, by prayer and petition, with thanksgiving, present your requests to God. And the peace of God, which transcends all understanding, will guard your hearts and your minds in Christ Jesus." (Philippians 4:6-7)

"So do not fear, for I am with you; do not be dismayed, for I am your God. I will strengthen you and help you; I will uphold you with my righteous right hand." (Isaiah 41:10)

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Post-Intervention Stress/Health Measures

Q18 Indicate how much you disagree or agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly Agree
I currently feel joyful and happy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At the present time, I feel a lot of stress.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right now, I feel depressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Life is good, and my future is bright.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I currently feel sad or blue.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my life at the moment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My energy level
is low right now,
and I feel very
lethargic.

At the present
time, I feel loved,
and like others
care for me.

Life is a struggle
for me right now.

I currently feel
inner peace and
harmony.

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