

Prayer as Spiritual Coping

Jack Huber, Ph.D.

August 10, 2024

Table of contents

Methods	5
Data source	5
Measurement	5
Outcome measures	6
Predictor measures	8
Demographic covariates	9
Data analysis	9
Results	10
Bivariate correlations	10
Table 1	10
Discussion	11
References	12

1

2

Methods

Data source

The source of data for this project is Wave VI of the Baylor Religion Survey. The survey was conducted via mail and web from January 27 – March 21, 2021, with a random sample of 1,248 adults ages 18 and older, living in all 50 states and the District of Columbia. Gallup randomly selected individuals to participate using an address-based sample (ABS) frame. Respondents had the opportunity to respond to the survey via web or paper. Surveys were conducted in English and Spanish. The final response rate to this survey was 11.3% (AAPOR1). Samples were weighted to correct for unequal selection probability and nonresponse. Demographic weighting targets are based on the 2020 American Community Survey figures for the 18 and older population. The data were weighted to match national demographics of age, education, gender, race, ethnicity, and Census region.

Measurement

The Baylor Religion Survey asked respondents about a variety of topics – health, religion, prayer – using sets of items that used the same 4- or 5-point Likert scale of agreement or frequency, asking respondents to rate specific aspects of the topic. In most cases, it is possible to combine responses from individual items into a single overall measure of the topic (or trait) that sorts respondents by their degree of the trait.

For this project, I used the Rating Scale Model (Andrich (1978)) to measure and evaluate the technical quality of scales derived from items designed to measure the same trait. I used the RSM for several reasons. First, the RSM, like all item response theory measurement models, establishes the same equal interval scale of both item “difficulties” and, of primary interest for this project, person traits. Second, the RSM is appropriate for item sets that share the same response categories, such as, in this case, Likert items on a survey questionnaire. Finally, the RSM is efficient because it evaluates how well each measurement point captures a distinct location on the trait scale rather than minimize measurement error by creating redundancies of multiple items.

Using this approach, scales of the highest quality enjoy the technical characteristics: average item “difficulty” scores increase with the overall individual trait scores; overall item “difficulty” scores are distant enough from each other that each item measures a distinct place on the trait

continuum and item redundancy is minimized; higher average item response category scores (i.e., “1 = Never”, “2 = Seldomly”, etc.) are associated with higher overall individual trait scores and also distant enough from each other that each response category measures a distinct part of trait continuum; all item fit statistics indicate that item response data “fit” the patterns that would be expected by the model; and reliability statistics are acceptably high.

Guided by this framework, I developed scales for all of the following topics derived from item sets. Item response categories that failed to distinguish respondents I collapsed into one of the adjacent categories. Items that showed insufficient model fit or seemed redundant with other items I omitted. Finally, for each scale, I transformed the logit scale into a whole number scale with X as the mean and ranging from X to X . I conducted all psychometric analysis with the `psych` (William Revelle (2024)) and `TAM` (Robitzsch et al. (2024)) packages in RStudio (RStudio Team (2020)).

Outcome measures

General happiness. One item asked respondents to rate how happy they were in general according to a three-point scale: 1 = Not too happy, 2 = Pretty happy, 3 = Very happy. I imputed the mean to all missing values.

Health. One item asked respondents to rate their health in general on a 5-point scale: 1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent.

Physical problem. One item asked respondents if they had a physical health problem that limits the kind or amount of activity they could do. I coded this as a dichotomy in which 1 = Yes and 0 = all others.

Emotional distress. Seven items asked respondents how often in the past week they felt each of the following unpleasant emotions: depressed, sad, worried, tense, anxious, restless, bored, angry. Each item used the following 4-point scale of frequency: 1 = Never, 2 = Hardly ever, 3 = Some of the time, 4 = Most or all of the time. Rating scale analysis found sufficient quality for a scale of emotional distress based on four items: sad, tense, restless, and angry. Cronbach’s alpha was 0.798 and EAP reliability was 0.793. All four categories functioned as expected; no collapsing was necessary. All four items fit the RSM with outfit mean square values less than 2.0.

Agency. Four items asked respondents about their feelings of personal powerlessness: “little control over the things that happen to me”, “There is really no way I can solve some of the problems I have”, “I often feel helpless in dealing with problems of life”, and “I can do just about anything I really set my mind to.” Each item used the following 4-point Likert scale of agreement: 1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree. I reverse-coded the first three items to match the positive direction of the fourth and fit the four items to a rating scale model. I omitted the fourth item, “I can do just about anything I really set my mind to”, due to outfit mean square > 2.0 . The remaining three items formed a scale

of **personal agency** sufficient quality with appropriate item location functioning, category functioning, item fit, and reliability (Cronbach's alpha = 0.713, EAP reliability = 0.723) statistics, in which a higher value indicates *less frequent feelings of personal powerlessness*.

Importance to others. Five items asked respondents to rate their perception of their value to others, including: "How much do you feel other people pay attention to you?", "How much do you feel others would miss you if you went away?", "How interested are people generally in what you say?", "How much do other people depend on you?", and "How important do you feel you are to other people?" Each item used the following 4-point scale of quantity: 1 = Not at all, 2 = A little, 3 = Somewhat, 4 = A lot. Rating scale analysis of these items found sufficient evidence of quality for a scale of **perceived importance to others** in which a higher value indicates more perceived importance or mattering to others. The third item, "How much do other people depend on you?", I omitted because it had outfit mean square exceeding 2.0. The remaining four items showed acceptable item and category functioning, item fit statistics, and reliability (Cronbach's alpha = 0.826, EAP reliability = 0.798, WLE reliability = 0.725).

Personal Impacts of COVID-19. Fifteen items asked respondents how they had been affected by the COVID-19 pandemic. In particular, these items asked respondents whether they had been affected (yes or no) by each of the following events: been personally infected by COVID-19, had a close relative or friend infected, lost their job, reduced their work hours, missed house of rent payment(s), been evicted, received a pay cut, increased their debt, started a business, put off going to the doctor for routine care, gone hungry, gained significant weight, had a relative move into their home, and/or lost a close relative or friend to COVID-19. I coded each item as a dichotomy in which 1 indicated the occurrence of the impact and fit these items to a Rasch model. Together they formed a scale of sufficient reliability in which a higher value indicates less personal impact of the COVID-19 pandemic.

Emotional impact of COVID. Seven items asked respondents about change in emotional states since the COVID pandemic. Each item asked respondents how often they felt each of the following emotions: happy, sad, worried, confident, tense, relaxed, lonely, cared for, and angry. Each item used the same 4-point scale of frequency: 1 = Less often, 2 = About the same, 3 = A little more, 4 = Much more often. Rating scale analysis of these seven items found sufficient evidence for a scale of **emotional impact of COVID** in which a higher value indicates more self-reported change in emotion since COVID. All seven items fit the rating scale model with outfit mean squares less than 2.0. All item categories were in the expected direction, were spaced apart, and each category a distinct range of the trait. No collapsing was necessary. The scale had good reliability with Cronbach's alpha = 0.837, EAP reliability = 0.845, and WLE reliability = 0.842.

Altruism. Three items asked respondents about their altruistic behavior in the preceding year: attendance at a neighborhood event, such as a picnic, parade or street fair; donation of money to help a neighbor or local organization; and working with neighbors to make a positive change in your local community. All of these items were yes/no. Psychometric analysis of these items found insufficient evidence for a scale, so I analyzed them separately.

Closeness to others. Five items asked respondents about their feelings of closeness to others. Specifically, each item asked respondents, “How close do you feel to . . .”: your family, your friends, your co-workers, your neighbors, and an online community. Each item used the same 4-point scale of closeness: 1 = Not close at all, 2 = Not too close, 3 = Somewhat close, 4 = Very close. Rating scale analyses of these five items showed low inter-correlations and thus insufficient evidence of quality for a scale.

Predictor measures

Religious identity. One item asked respondents the religious family with which they identify. The Baylor Religion Survey grouped these religious families into the following RELTRAD categories: Evangelical Protestant, Mainline Protestant, Black Protestant, Catholic, Jewish, Other, and Non-affiliated. I created dummy variables for all but the Non-affiliated category.

Religiosity. One item asked respondents how religious they were. They were provided scale for extent: 1 = Not religious, 2 = Slightly religious, 3 = Moderately religious, 4 = Very religious, and 8 = I don’t know. I recoded the “I don’t know” responses as missing and then imputed the mean to all missing responses.

Spirituality. One item asked respondents how spiritual they were. They were provided scale for extent: 1 = Not spiritual, 2 = Slightly spiritual, 3 = Moderately spiritual, 4 = Very spiritual, and 8 = I don’t know. I recoded the “I don’t know” responses as missing and then imputed the mean to all missing responses.

Frequency of reading sacred text. One item asked respondents how frequently they read their sacred text (Bible, Quran, etc.). Respondents were asked to rate their frequency on the following 9-point scale of frequency: 0 = Never, 1 = Less than once a year, 2 = Once or twice a year, 3 = Several times a year, 4 = Once a month, 5 = Two or three times a month, 6 = About once a week, 7 = Several times a week, and 8 = Daily.

View of Bible. One item asked respondents their views about the Bible. The question was “which one statement comes closest to your personal beliefs about the Bible?” The responses were: 1 = The Bible means exactly what it says. It should be taken literally, word-for-word, on all subjects; 2 = The Bible is perfectly true, but it should not be taken literally, word-for-word. We must interpret its meaning; 3 = The Bible contains some human error; 4 = The Bible is an ancient book of history and legends; and 8 = I don’t know. I coded each of these response options as a dichotomy in which 1 indicates the response and 0 all others. The reference category is respondents who did not respond or did not know.

View of God. One item asked respondents their views of God. The question was, “Which one statement comes closest to your personal beliefs about God?” The response categories were: 1 = I have no doubts that God exists; 2 = I believe in God, but with some doubts; 3 = I sometimes believe in God; 4 = I believe in a higher power or cosmic force; 5 = I don’t know and there is no way to find out; 6 = I do not believe in God; and 7 = I have no opinion. I

coded each of the first six response categories as a dummy variable in which 1 indicates the response and 0 all others. The reference category is respondents who did not respond to this item or who selected 7, indicating no opinion.

Frequency of prayer. Five items asked respondents how often they pray in each of the following ways outside of religious services: alone for less than five minutes, alone for at least five minutes, prayer with others, meditation, and saying grace at meals. Each item used the same 6-point scale of frequency: 1 = Never, 2 = Seldom, 3 = Monthly, 4 = Weekly, 5 = Daily, 6 = Several times a day.

Rating scale analysis found, with some adjustments, sufficient evidence of quality for a scale. The six response categories had reversals, so the middle categories I collapsed into a single category.

Duration of prayer. One item asked respondents how long their prayer typically lasts in duration. They were given the following 6-point scale of duration: 1 = I never pray, 2 = A few seconds, 3 = A minute or two, 4 = Several minutes, 5 = A half an hour, and 6 = An hour or more.

Demographic covariates

Data analysis

Results

Bivariate correlations

Table 1

```
library(gtsummary)

# Table 1
table1 <-
  df3 %>%
  tbl_summary(include = c(health, happy, d_physical))

table1
```

Characteristic	N = 1,248 ^{<i>1</i>}
Health	
1	35 (2.8%)
2	173 (14%)
3	443 (35%)
4	460 (37%)
5	137 (11%)
Happiness	
1	210 (17%)
2	738 (59%)
3	300 (24%)
Physical impairment	412 (33%)

^{*1*}n (%)

Discussion

References

- Andrich, D. (1978). Application of a psychometric rating model to ordered categories which are scored with successive integers. *Applied Psychological Measurement*, 2(4), 581–594.
- Robitzsch, A., Kiefer, T., & Wu, M. (2024). *TAM: Test analysis modules*. <https://CRAN.R-project.org/package=TAM>
- RStudio Team. (2020). *RStudio: Integrated development environment for r*. RStudio, PBC. <http://www.rstudio.com/>
- William Revelle. (2024). *Psych: Procedures for psychological, psychometric, and personality research*. Northwestern University. <https://CRAN.R-project.org/package=psych>