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Same Book, Different Bookmarks: The Development and Preliminary Validation of the
Bible Verse Selection Task as a Measure of Christian Fundamentalism

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Data and materials for all six studies are archived in an open-access format at <https://osf.io/fd45x/>. Preregistrations of the hypotheses, data collection plans, and data analysis plans are archived at <https://osf.io/wh4se/> (Study 3), <https://osf.io/deauw/> (Study 4), <https://osf.io/b536m/> (Study 5), and <https://osf.io/bq5pe/> (Study 6).

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Abstract

The development and preliminary validation of a new measure of Christian fundamentalism required a multi-stage process. In an initial exploratory study, participants indicated which of a set of Bible verses were most central to their faith, and factor analysis was used to identify verses that appeared to tap a latent dimension of religious fundamentalism (Study 1). These relationships were re-tested with a new method in a new sample (Study 2), and the items that predicted fundamentalism in both samples were incorporated into a new measure of Christian fundamentalism, the Bible Verse Selection Task (BVST). Importantly, the forced-choice format of the BVST may be less impacted by social desirability response styles that may affect scores on existing fundamentalism scales (Studies 3 & 4) while preserving useful levels of criterion-related validity (Study 5) and convergent evidence of construct validity (Study 6). These studies provide initial psychometric evidence for the BVST as an internally consistent measure of Christian fundamentalism that predicts scores on other fundamentalism scales and related constructs including traditionalism, authoritarianism, and political conservatism.

Keywords: Fundamentalism; Measurement/assessment of religion/spirituality

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Although Christianity is often referred to as a singular religion in everyday conversation, there is considerable heterogeneity among Christian belief systems. Beyond sectarian and denominational distinctives, a wide variety of factors differentiates the beliefs of Christians, creating a diverse population of individuals that may differ from each other in substantive ways. One such factor is Christian Fundamentalism (CF; Altemeyer, 1996). Religious fundamentalism can be understood as a way of relating to and interpreting the sacred text of a tradition; it emphasizes a belief in the divine origin of the text that grants it an exclusive, authoritative and privileged claim to unchanging truth (Williamson, Hood, Ahmad, Sadiq, & Hill, 2010).

The degree to which Christians hold fundamentalist beliefs predicts other patterns of attitudes and behaviors (Altemeyer & Hunsberg, 2005). Researchers have found, for example, differences in coping strategies (Phillips & Ano, 2015) and have shown that fundamentalism levels relate to Christians' responses to existential ambiguity (Nell, 2014) and reminders of their own mortality (Friedman & Rholes, 2009; Vess, Arndt, & Cox, 2012). High fundamentalism has also predicted prejudice toward out-group members, especially when they are perceived as threatening to one's worldview (Blogowska & Saroglou, 2013). Differences in CF have been linked to political ideology (Jonathan, 2008) and attitudes regarding sociopolitical issues including capital punishment (Unnever & Cullen, 2006) and sexual orientation (Maynard, Ocampo, & Posada, 2014). In short, differences in CF have been related to multiple practical, attitudinal, and ideological differences among Christians.

Christians at both ends of the fundamentalism continuum situate their religious beliefs within a context founded on the same canonical Bible. Although the same sacred text informs

high and low fundamentalist Christians alike, Christians relate to and understand the Bible differently, particularly with regards to their emphasis on its inerrant, authoritative, and self-interpretive nature (Williamson et al., 2010). Thus, CF may be conceptualized on the basis of the particular Biblical themes that are emphasized, not only on acceptance or rejection of Biblical or doctrinal statements.

Several measures of religious fundamentalism have been developed for research purposes. Some of these, such as the Multidimensional Fundamentalism Inventory (MFI; Liht, Conway, Savage, White, & O'Neil, 2011) and the Intratextual Fundamentalism Scale (IFS; Williamson et al., 2010) were developed to be applied to a wide range of religions. Others have been developed specifically to address fundamentalism in a Christian context; these include the Revised Religious Fundamentalism Scale (RRFS; Altemeyer & Hunsberger, 2004) and the Christian Orthodoxy Scale (COS; Hunsberger, 1989). Perhaps the most focused measure of Christian fundamentalism is the North American Protestant Fundamentalism Scale (NAPFS; Deal & Bartoszuk, 2014), which was specifically designed to assess a set of beliefs that characterize fundamentalism within Protestant denominations. With this variety of fundamentalism scales available, Liht et al. (2011) recognized the possibility of the proliferation of measures; indeed, a new measure of CF would only be needed if it differed from extant measures in some substantive and important way. However, these extant measures do share a characteristic that might be a liability for some applications; all of these measures present respondents with Likert-type item formats. This often takes the form of asking respondents the extent to which they agree or disagree with traditional Christian doctrinal statements or the extent to which they agree or disagree with beliefs that are common in fundamentalist movements; this may cause some Christian respondents to feel pressure to respond in specific

ways because disagreeing with traditional views might feel like a rejection of important aspects of their faith¹. In other words, the extant measures of CF might be subject to a Social Desirability response bias. First identified by Edwards (1957), Social Desirability refers to instances in which a person provides responses that are reflective of what she or he considers socially acceptable, rather than providing responses that are accurately self-descriptive (Nunnally & Bernstein, 1994), thereby affecting the validity of the responses (King & Bruner, 2000; Krumpal, 2013).

The present manuscript describes the development of a new measure of CF that appears to be relatively unaffected by Social Desirability influences. Rather than using a Likert format to ask respondents if they agree or disagree with various doctrinal statements or Christian beliefs, we conceptualized a forced-choice measure that would present respondents with pairs of Bible verses, asking them to identify the verse that is most central to their religious beliefs or worldview. Because both options within each pair would be Bible verses, it was hypothesized that the measure would not be subject to the same degree of Social Desirability influence when completed by Christian respondents. Creating such a measure required several steps. The project began with an exploratory study that examined the relationship between CF and the level of emphasis Christians place on different passages of the Bible; this resulted in the identification of candidate Bible verses for the new measure (Study 1). The majority of these candidate items were supported with a new data set (Study 2). We found evidence of Social Desirability for responses on a commonly used measure of CF (Study 3), but found evidence that Social

¹ Anecdotally, the first author of this manuscript became interested in this possibility when conducting a research study that used the RRFS. After completing the measure, one subject stated that she had a difficult time answering the questions because she knew what she “should” believe, even though her actual beliefs differed. She stated that she ended up giving the answers that a “good Christian” would give, even though she didn’t actually agree. Finally, she asked, “Is that a problem?” This is a single incident, however, and empirical evidence would be needed to determine whether or not this concern generalizes beyond one respondent; that is the purpose of this manuscript’s Study 3.

Desirability of responses was not as salient for the new measure (Study 4). We examined the criterion-related validity of the new measure based on correlations with extant measures of religious fundamentalism (Study 5), and examined the convergent evidence of the new measure's validity based on correlations with measures of associated constructs (Study 6).

Study 1: Identification of Bible Verses Associated with Religious Fundamentalism

This exploratory study examined the relationship between participants' prioritization of specific Bible verses and their levels of CF. Starting with an initial item pool of 100 frequently-searched Bible verses, we identified a small number of specific verses for which faith-centrality ratings showed sizable positive or negative relationships with CF, as well as verses that were largely unrelated to fundamentalism that could serve as neutral options.

Method

Participants. A sample of 211 students at a private, religiously affiliated university participated in this study to satisfy a portion of a research participation requirement for their introductory psychology or introductory statistics classes. Because this study was focused on fundamentalism among Christians, only the data from 164 respondents who endorsed a Christian religious affiliation were retained. Of these, 110 completed a follow-up questionnaire; this comprised the final data set for the following analyses. All of these students indicated that they were being attentive and accurate in both phases of the study and that their data should be retained. They ranged in age from 18 to 27 ($M = 19.32$; $SD = 1.50$), and the sample included 82 women and 28 men. The most common religious affiliation was Other Christian (50.0%), followed by Catholic (19.1%), Baptist (13.6%), Presbyterian (5.5%), Episcopal (4.5%), Lutheran (3.6%), Methodist (1.8%), and Mormon (1.8%). The majority self-identified as Euro-American,

White or European (58.2%), followed by Asian or Asian-American (15.5%), Multiracial (11.8%), Latina/o (9.1%) and African-American, Black, or African (5.5%).

Materials. Having identified the 100 Bible verses that were most frequently searched on an online Bible site during a 2-month span of time (Rau, 2009), we created a Q-Sort packet for each participant. Each packet included 100 stickers printed with the 100 Bible verses. In addition, we created a packet of response sheets on which the participants could affix the stickers. The packet directed the participants to identify the 20 passages that were most central to their worldview, religious faith, or belief system and to place these stickers on the first response sheet. Next, participants were directed to review the remaining 80 stickers and identify the next 20 that were most central to their worldview, faith, or beliefs and place them on the second page. The instructions directed participants to continue this process until they had placed each sticker onto one of five ordered pages, with 20 stickers on each page; each verse on the first page was given a score of 5, and the verses on the remaining pages were given scores of 4, 3, 2, and 1, respectively. The packet also contained a demographic information sheet that asked participants to indicate their gender, age, religious affiliation, and race or ethnicity. Participants were also asked to provide their e-mail addresses in order to link their responses to those given in a follow-up survey. Finally, the Q-sort session ended with an Opt-In/Opt-Out question as recommended by Rouse (2015); the question read “Realistically, I know some respondents do not pay close attention to the questions they are answering. This affects the quality of my data. Please select one of the following honestly. Your answer is confidential. It will not affect whether or not you receive credit for your work. Did you pay attention and answer honestly?” Response options were “You should keep my data; I paid attention and answered honestly” or “You should delete

my data; honestly, I wasn't really taking this seriously". Only those respondents who selected the first option were included in analyses.

An online follow-up survey that participants later completed on their own time presented several brief personality tests included for exploratory purposes. The only scale relevant to the present study was the Revised Religious Fundamentalism Scale (RRFS; Altemeyer & Hunsberger, 2004), a 12-item Likert-based measure of acceptance of CF beliefs and attitudes. Half are positively-scored (such as "God has given humanity a complete, unfailing guide to happiness and salvation, which must be totally followed") and the others are negatively-scored (such as "It is more important to be a good person than to believe in God and the right religion"). These items were presented on a five-point Likert scale, with options ranging from 1 (i.e., "Strongly disagree") to 5 (i.e., "Strongly agree"). Altemeyer and Hunsberger (2004) demonstrated that these twelve items form a unidimensional scale, with internal consistency coefficients above .90. The validity of the scale scores was supported through correlations with measures of right-wing authoritarianism, belief in creationism, religious ethnocentrism, and religious dogmatism. The follow-up survey concluded with the same Opt-In/Opt-Out question used in the first phase.

Procedures. Following Institutional Review Board approval, we held data collection sessions. Students were informed that they could earn two hours toward a four-hour research participation requirement by participating in the study. Furthermore, they were informed that participation in a follow-up study would allow them to earn a third hour. After the session, we sent all participants a link to the online follow-up survey.

Results

Responses on the RRFS showed a high level of internal consistency, with an alpha of .84.

We performed a factor analysis, seeding the analysis with the twelve RRFS items². This procedure allowed us to identify the specific Bible verse ratings that shared variance with an underlying fundamentalism factor, separating them from verses with ratings that had little fundamentalism-relevant variance. Using Unweighted Least Squares factor analysis with Varimax rotation, extracting two factors, all twelve RRFS items had their highest loading on the first factor; this first factor, then, represented variance associated with religious fundamentalism. In addition, twelve Bible verse ratings had factor loadings greater than an absolute value of .30 on Factor 1 and loadings lower than an absolute value of .20 on Factor 2; these twelve Bible verses were identified as potential predictors of Christian fundamentalism. Item means, item standard deviations, and factor loadings for the twelve identified verses are provided in Online Supplementary Table 1.

Discussion

Study 1 identified a set of twelve candidate Bible verses to include in a new measure of Christian fundamentalism; seven verses had ratings that positively loaded on the same factor as the RRFS items, while five verses had ratings that were negatively loaded. Because factor structures can be volatile, cross-validation of these candidate items was necessary.

² The factor analytic strategy used in Study 1 is a modification of the process used by Tellegen et al. (2003) in the development of the Restructured Clinical scales for the Minnesota Multiphasic Personality Inventory-2 (MMPI-2). Tellegen and colleagues argued that each of the traditional Clinical Scales included “demoralization” variance in addition to variance distinct for that scale, and argued that the demoralization variance in each of the scales resulted in intercorrelations among the clinical scales. They performed a series of factor analyses (one for each clinical scale), seeding the factor analysis with items from a Demoralization scale. They used this process to identify demoralization-loaded items within each clinical scale (i.e., items that loaded highly on the first factor), distilling out a scale of remaining items that better measured distinct content. Although the goals of our analyses differed, like Tellegen et al. we sought to identify items that shared high levels of variance with an underlying latent factor (in our case, religious fundamentalism).

Study 2: Cross-Validation of Candidate Verses and Scale Development

The purpose of the second study was to cross-validate the candidate items identified in Study 1, allowing for the creation of a new CF measure.

Method

Participants. Data were collected from 200 Amazon Mechanical Turk (MTurk) workers living in the United States. MTurk is an online resource allowing workers to offer their services for short, online work tasks; it has been used by psychological researchers to access more diverse samples. More information about MTurk is provided by Rouse (2015). In order to be included in the present analyses, respondents had to provide a correct response to an attention-check question, described below, and positively endorse the same Opt-In/Opt-Out question used in Study 1. Because this study was focused on fundamentalism among Christians, only those respondents who endorsed a Christian religious affiliation were included. Of the 200 participants who completed the survey, 102 self-identified as Christians. Of these, two participants indicated that their data should be deleted because they were not being accurate or attentive, and two others did not provide an appropriate answer for the attention-check question.

The analyzable data set was comprised of 98 participants who ranged in age from 19 to 68 ($M = 36.82$, $SD = 12.03$), with 50 participants indicating that they were men, 47 participants indicating that they were women, and 1 participant opting not to respond. The majority (81.6%) self-identified as Euro-American or White, followed by 9.2% African-American or Black, 6.1% Asian-American, 4.1% Latina/o, 1.0% Native American, and 1.0% who indicated "Other"; because respondents could select multiple race/ethnic identities, the total exceeded 100%. The most common religious affiliation was Baptist (28.6%), followed by Other Christian (25.5%),

Catholic (24.5%), Methodist (5.1%), Mormon (5.1%), Presbyterian (5.1%), Episcopal (3.1%), and Lutheran (3.1%).

Materials and Procedure. We created an online survey, designed to be administered within the MTurk platform. The survey began with demographic questions. Following best practice recommendations provided by Rouse (2015), an attention-check question asked respondents to write the second word from the question “What author wrote the book *Moby Dick*?” with a correct response being “author”.

Next, the survey included the RRFs; items were presented on a five-point Likert scale, with options ranging from 1 (i.e., “Strongly disagree”) to 5 (i.e., “Strongly agree”). This was followed by the preliminary version of the Bible Verse Selection Task (BVST; presented in Online Supplementary Table 2). Each forced-choice question was developed by matching one of the fundamentalism marker verses identified in Study 1 with a Bible verse that had a neutral loading on the fundamentalism factor but a similar mean endorsement rating, in order to match verses with respect to their overall level of belief centrality. For example, in Study 1 the verse “If you confess with your mouth that ‘Jesus is Lord’ and believe in your heart that God raised him from the dead you will be saved” had a loading of 0.55 on the fundamentalism factor, and had a mean endorsement rating of 3.26. We paired it with a Bible verse that had a similar mean rating (i.e., 3.24) but a relatively low fundamentalism loading (i.e., -0.08). To be considered as a potential marker verse, the Fundamentalism factor loading obtained in Study 1 had to have an absolute value greater than or equal to .30. To be considered as a potential neutral verse, the Fundamentalism factor loading obtained in Study 1 had to have an absolute value lower than .10. Finally, to be paired together based on similar mean endorsement rating, the difference between mean endorsement scores from Study 1 for the two verses had to be less than 0.50.

Finally, the survey ended with an Opt-In/Opt-Out question, similar to the one used in Study 1, but rephrased for MTurk Workers: “Realistically, I know some mTurk respondents do not pay close attention to the questions they are answering. This affects the quality of my data. Please select one of the following honestly. Your answer is confidential. It will not affect whether or not you receive payment and will not affect any rating given to you for your work.” The response options were the same as those provided in Study 1.

Prior to data collection, a pilot focus group completed the survey and found it to be clear and understandable. Based on the speed with which the focus group completed the survey, a 3-minute completion time was expected; therefore, using the local minimum wage rate for guidance, a \$0.50 payment rate was set for MTurk workers.

Results

Scores on the RRFS showed high levels of reliability, with an alpha coefficient of .95.

For each of the twelve pairs of Bible verses (presented in Online Supplementary Table 2), a *t*-test was performed to determine whether the mean score on the RRFS differed as a function of the verse that was selected. It was hypothesized that higher RRFS means would be observed for those who selected the verse that had been associated with high fundamentalism in Study 1 compared to those who selected the neutral verse, and it was hypothesized that lower RRFS means would be observed for those who selected the verse that had been associated with low fundamentalism compared to those who selected the neutral verse. The results of the *t*-tests are presented in Online Supplementary Table 3. For ten of the twelve pairs, mean scores on the RRFS differed significantly in the predicted direction ($p < .01$ for each); for these ten pairs, effect sizes were moderate or large and corrected item-total point-biserial correlations were all at .27 or higher. Although mean scores differed in the predicted direction for Item 8, the difference

was not statistically significant, and the difference for Item 12 was negligible; therefore, these two items were dropped from further consideration.

Because ten of the twelve pairs of items were shown to be related to religious fundamentalism, a summative score was calculated for these ten items by giving respondents scores of -1 for every low-fundamentalism verse endorsed, 0 for every neutral-fundamentalism verse endorsed, and 1 for every high-fundamentalism verse endorsed. This ten-item final version of the BVST had three items that were negatively-keyed and seven items that were positively keyed, resulting in possible scores ranging from -3 to 7 ($M = 1.46$, $SD = 2.80$); higher scores represented more frequent endorsement of the verses associated with higher fundamentalism. The scores yielded an internal consistency estimate of .78. The correlation between BVST and RRFS scores was .74 ($p < .001$).

Discussion

The second study suggested most of the Bible verses that had been associated with high or low fundamentalism in Study 1 continued to show this relationship, replicating associations first observed for a face-to-face student sample using an online, paid, non-student sample. Moreover, the data suggested that the ten remaining pairs of items on the BVST (excluding Items 8 and 12) had the potential to function as a CF scale. These ten items comprise the final version of the BVST, which is presented in Appendix A. Strong levels of internal consistency were observed, and the scores showed a substantial correlation with the RRFS.

Study 3: Rated Social Desirability of the Revised Religious Fundamentalism Scale

The purpose of the third study was to determine whether Social Desirability response styles might affect responses given by self-identified Christians on a representative extant measure of CF. Because a literature search suggested that the RRFS is used for psychological

research more than any other CF scale, we chose to examine this measure³. We hypothesized that the mean rating of Social Desirability for RRFS items would be significantly higher than a neutral level.

Method

Participants. A sample of 150 MTurk workers living in the United States completed an online survey. Of these workers, 140 respondents met an inclusionary criterion of correctly answering an attention check item, and 147 respondents met an inclusionary criterion of opting in for the same Opt-In/Opt-Out question used in the previous studies. A final analyzable sample of 137 respondents met both criteria.

The sample included 76 men, 59 women, and 2 respondents who declined to report gender. Ages ranged from 19 to 61, with a mean of 33.41 ($SD = 9.53$). Although the sample was overrepresented by Euro-American or White respondents (81.0%), it also included Latina/o or Hispanic (6.6%), African-American (5.1%), Asian-American (5.1%), Native American (2.2%), Middle Eastern and North African (1.5%), and Hawaiian and Pacific Islander (0.7%) respondents. Although 41.6% of the sample identified as Christian, the sample also included participants who identified as Atheist (25.5%), Agnostic (18.2%), Nothing in Particular (9.5%), Jewish (1.5%), Muslim (1.5%), Unitarian (1.5%), and Other (0.7%). For the subsample identifying as Christian, affiliations included Catholic (45.6%), Baptist (21.1%), Nondenominational (14.0%), Other Christian (5.3%), Methodist (3.5%), Orthodox (3.5%), Church of Christ (1.8%), Episcopal (1.8%), Lutheran (1.8%), and Presbyterian (1.8%).

³ A literature search conducted in the fall of 2016 found that the RRFS (Altemeyer & Hunsberger, 2004) had been cited 106 times, compared with 46 citations of the COS (Hunsberger, 1989), 16 citations for the IFS (Williamson et al., 2010), and 0 citations of the MFI (Liht et al., 2011).

Materials and Procedure. We created an online survey to be administered within the MTurk platform. The survey began with informed consent information, followed by demographic items, and the attention-check item used in Study 2.

Next, the survey presented each item from the RRFS. Participants were asked to rate the social desirability of each item. The instructions given to each participant were as follows: “Sometimes, when people answer research surveys, they have a tendency to provide the most socially desirable or socially acceptable answer, not an answer that accurately describes how they feel. Please imagine a Christian who attends church on a regular basis. Imagine that this Christian is asked to complete a research survey. Please try to imagine how socially desirable it would be for this person to provide various answers to the following questions. Please rate how socially desirable it would be for a Christian to agree with each statement.” Each item was presented with response options ranging from 1 (i.e., “A Christian would consider it VERY DESIRABLE to disagree with that statement”) to 7 (i.e., “A Christian would consider it VERY DESIRABLE to agree with that statement”), with a neutral response of 4 (i.e., “A Christian would consider it equally desirable to disagree or agree with that statement”). Finally, the survey ended with the same Opt-In/Opt-Out question used in Study 2.

Prior to data collection, a pilot focus group completed the survey and found it to be clear and understandable; specifically, they understood that the respondent was not being asked to answer the RRFS questions, but to rate the social desirability of each item. Based on the speed with which the focus group completed the survey, a 3-minute completion time was expected; a \$0.50 payment rate was set to align with local minimum wage rates and all respondents were paid, regardless of whether or not they met inclusionary criteria.

Results

Social desirability ratings were reverse-coded for the negatively keyed items on the RRFS. Mean item ratings ranged from 5.12 (Item 7) to 6.14 (Item 1), relative to a neutral level of 4.00; all item rating means are presented in Online Supplementary Table 4. A summative Social Desirability score was created for each respondent by summing ratings given by that respondent for all 12 items ($M = 70.93$, $SD = 9.74$). A single-sample t -test was performed to contrast these scores with a hypothetical score of 48.00, which would be the score for a 12-item scale with neutral item ratings. The difference was significant at $p < .001$ ($t = 27.57$, $df = 136$, $d = 2.35$). The analysis was repeated for the subset of self-identifying Christians. The mean score ($M = 68.68$, $SD = 10.87$) continued to be significantly higher than a score of 48.00 ($t = 14.36$, $p < .001$, $df = 56$, $d = 0.84$).

Conclusion

The third study demonstrated that respondents (including self-identified Christians) rate fundamentalist responses on the RRFS as being socially desirable for church-attending Christians. This suggests that the face validity of the RRFS, which may be a benefit for some research purposes, may be a liability for researchers who are concerned about the potential of social desirability in their measurement of CF.

Study 4: Rated Social Desirability of the Bible Verse Selection Task

The purpose of the fourth study was to evaluate whether or not social desirability response styles would be less salient for the BVST than had been observed in Study 3 for the RRFS. We hypothesized that the mean rating of Social Desirability for BVST items would be closer to neutral than the mean obtained in Study 3 for RRFS items (but adjusted for a 10-item scale); therefore, it was hypothesized that a single-sample t -test would yield statistically significant results when the mean social desirability rating for the BVST was contrasted with a

proration of the mean social desirability for the RRFS obtained in Study 3. We also hypothesized that the mean Social Desirability rating for BVST items would not deviate significantly from a score representing neutral Social Desirability; therefore, it was hypothesized that a single-sample *t*-test would not yield statistically significant results when the obtained social desirability rating for the BVST items was contrasted with a neutral score.

Method

Participants. An initial sample of 150 MTurk workers living in the United States completed the survey. Of these, 142 respondents met the inclusionary criterion of correctly answering an attention check item, and 147 respondents met the inclusionary criterion of opting in for an Opt-In/Opt-Out question. In addition, one participant was excluded because he reported being 13 years old. A final analyzable sample of 140 respondents met all criteria.

The final sample included 84 men, 55 women, and one participant who opted not to indicate gender. Ages ranged from 19 to 68, with a mean of 32.39 ($SD = 8.69$). Although the sample was overrepresented by Euro-American or White respondents (82.9%), it also included Latina/o or Hispanic (7.1%), Asian-American (7.1%), African-American (4.3%), Native American (2.1%), Middle Eastern and North African (0.7%), Hawaiian and Pacific Islander (0.7%), and Other (0.7%) respondents, as well as a participant who opted not to indicate race or ethnicity. Although 32.1% of the sample self-identified as Christian, other participants self-identified as Agnostic (29.3%), Atheist (23.6%), Nothing in Particular (11.4%), Other (2.1%), Jewish (0.7%), and Muslim (0.7%). The affiliations of the Christian subsample included Catholic (33.3%), Baptist (26.7%), Nondenominational (15.6%), Other Christian (6.7%), Lutheran (6.7%), Presbyterian (4.4%), Church of Christ (2.2%), Episcopal (2.2%), and Methodist (2.2%).

Materials and Procedure. We created an online survey to be administered within the MTurk platform. The survey began with informed consent information, followed by demographic items and the same attention-check item used in Study 2. Next, the survey presented respondents with each item from the BVST and asked respondents to indicate whether a Christian who attends church on a regular basis would perceive one of the two response options as more desirable than the other; the instructions provided to the respondents were the same as those used in Study 3. Each item was presented with response options ranging from 1 (i.e., “A Christian would consider it VERY DESIRABLE to select Option A”) to 7 (i.e., “A Christian would consider it VERY DESIRABLE to select Option B”), with a neutral response of 4 (i.e., “A Christian would consider it equally desirable to select Option A or Option B”). Finally, the survey ended with the same Opt-In/Opt-Out question used in Study 2.

Prior to data collection, a pilot focus group completed the survey and found it to be clear and understandable; specifically, they understood that the respondent was not being asked to answer the BVST questions, but to rate the relative Social Desirability of the options from the forced-choice pairs. Based on the speed with which the focus group completed the survey, a 3-minute completion time was expected; therefore, we set a \$0.50 payment rate and all respondents were paid, regardless of whether or not they met inclusionary criteria for the following analyses.

Results

Social Desirability ratings were reverse-coded for the BVST items that presented a lower-fundamentalism verse before a higher-fundamentalism verse. Mean social desirability ratings ranged from 3.04 (Item 10) to 4.81 (Item 5); item rating means are presented in Online Supplementary Table 5. A summed Social Desirability score was created using all item ratings ($M = 38.97, SD = 6.88$).

A single-sample t -test contrasted this mean with a hypothetical score of 59.11; this value was obtained by adjusting the mean score from Study 3 (i.e., 70.93, which had been obtained for a 12-item scale) for a 10-item scale. This allowed a comparison between the Social Desirability ratings for the BVST with the Social Desirability level previously rated for the RRFS. The difference was statistically significant at the level of $p < .001$ ($t = -34.65$, $df = 139$, $d = -2.93$). A second single-sample t -test was performed to contrast the BVST social desirability mean with a hypothetical score of 40.00, which would be the score for a 10-item scale with neutral item ratings. As predicted, the difference was not statistically significant ($t = -1.77$, $df = 139$, $p = .08$, $d = -0.15$).

The analyses were repeated for the subsample that self-identified as Christian. The mean score ($M = 37.98$, $SD = 7.81$) was significantly lower than the prorated RRFS Social Desirability score obtained in Study 3 ($t = -16.54$, $p < .001$, $df = 44$, $d = -2.46$). A single-sample t -test was performed to contrast this mean with a hypothetical score of 40.00. As predicted, the difference was not statistically significant ($t = -1.74$, $df = 44$, $p = .09$, $d = -0.26$).

Conclusion

This study demonstrated that the responses to the BVST may be less likely to be impacted by social desirability response styles than responses to the RRFS are, and this was observed both for the full sample and for the subset identifying as Christian.

Study 5: Criterion-Related Validity for the Bible Verse Selection Task

Because BVST items were originally identified and confirmed through relationships with the RRFS, this study was conducted to evaluate correlations between BVST scores and other measures of fundamentalism.

Method

Participants. An initial sample of 200 MTurk workers living in the United States completed an online survey. Of these, 198 respondents met an inclusionary criterion of correctly answering an attention check item, and 193 met an inclusionary criterion of opting in for an Opt-In/Opt-Out question, resulting in a final analyzable sample of 191 respondents.

The sample included 111 men, 77 women, and three participants who chose not to identify their gender. Ages ranged from 18 to 68, with a mean of 34.23 ($SD = 10.01$). Although the sample was overrepresented by Euro-American or White respondents (78.0%), it also included Latina/o and Hispanic (8.4%), African-American (8.4%), Asian-American (6.8%), Native American (3.1%), and Middle Eastern and North African (0.5%) respondents and one who opted not to self-identify race or ethnicity. The religious identifications included Christian (41.9%), Agnostic (24.1%), Atheist (16.2%), Nothing in Particular (11.0%), Buddhist (2.1%), Muslim (1.6%), Hindu (1.0%), Jewish (0.5%), Unitarian (0.5%), Other (0.5%), and one respondent did not self-identify religious affiliation. The religious affiliations of the self-identifying Christians included Catholic (27.5%), Baptist (21.3%), Nondenominational (18.8%), Other Christian (13.8%), Presbyterian (7.5%), Lutheran (3.8%), Church of Christ (2.5%), Methodist (2.5%), Mormon (1.3%), and Orthodox (1.3%).

Materials and Procedure. We created an online survey to be administered within the MTurk platform. The survey began with informed consent information, followed by demographic questions and an attention-check item similar to the one from Study 2. Next, participants completed the BVST and four other research measures. The BVST was presented in the format seen in Appendix A. The Likert-type items for the other scales were presented on a five-point scale, with options ranging from 1 (i.e., “Strongly disagree”) to 5 (i.e., “Strongly agree”).

The Multidimensional Fundamentalism Inventory (MFI; Liht et al., 2011) was developed to be a measure of fundamentalism that could be applied to a wide variety of faith groups and that could provide more specific subscales to measure nuanced elements of fundamentalism. Comprised of 15 Likert-type items, the MFI provides a general score as well as three subscale scores: External vs. Internal Authority (MFI-EA; e.g., “Human reason, and not religious belief, is the best guiding light for human action”), Fixed vs. Malleable Religion (MFI-F; e.g., “My religion should adapt to the conditions of the modern world”), and Worldly Rejection vs. Worldly Affirmation (MFI-WR; e.g., “It is important to distance oneself from movies, radio, and TV”). Liht et al. (2011) reported internal consistency estimates of .85 for the MFI, .77 for the MFI-EA, .68 for the MFI-F, and .66 for the MFI-WR.

The Intratextual Fundamentalism Scale (IFS; Williamson et al., 2010) was developed to measure beliefs about the divine nature and origin of a sacred text. It is comprised of five items (e.g., “Everything in the Sacred Writing is true without question.”) which are presented in a Likert-type format. Williamson et al. provided an internal consistency estimate of .88. Because this study was concerned about attitudes relating specifically to the Bible, the term “Sacred Writing” was changed to “Bible” for the present study.

The Morality Founded on Divine Authority scale (MFDA; Simpson, Piazza, & Rios, 2016) was developed to assess the meta-ethical belief that moral rules are issued by God. The five-item scale (which uses a Likert-type format) includes questions such as “What is morally good and right is what God says is good and right.” Simpson et al. (2016) reported an internal consistency estimate of .94.

The Christian Orthodoxy Scale (COS; Hunsberger, 1989) is a six-item Likert-type scale for which respondents indicate the degree to which they ascribe to traditionally conservative

Christian doctrinal beliefs, such as “Jesus was the divine son of God.” Hunsberger (1989) reported an internal consistency estimate of .94.

The survey ended with the same Opt-In/Opt-Out question used in Study 2.

Prior to data collection, a pilot focus group completed the survey and found it to be clear and understandable. Based on the speed with which the focus group completed the survey, a 10-minute completion time was expected, and a \$1.70 payment rate was set. All respondents were paid, regardless of whether or not they met inclusionary criteria.

Results

Internal consistency estimates for the entire sample were .86 (BVST), .88 (MFI), .91 (MFI-EA), .65 (MFI-F), .65 (MFI-WR), .96 (IFS), .94 (MFDA), and .95 (COS). For the subset of self-identified Christians, the internal consistency estimates were .77 (BVST), .90 (MFI), .86 (MFI-EA), .77 (MFI-F), .76 (MFI-WR), .94 (IFS), .90 (MFDA), and .90 (COS). Pearson correlation coefficients were calculated both for the entire sample (presented above the diagonal in Supplementary Online Table 6) and for Christians (presented below the diagonal). All correlations between BVST scales and other measures of fundamentalism yielded coefficients at or above .52 ($p < .001$ for all).

Conclusion

The results of Study 5 provide initial psychometric support for the use of the BVST as a measure of CF. Internal consistency estimates were in ranges that bolster confidence in this measure for research purposes, and substantial covariance was observed with a collection of extant fundamentalism measures.

Study 6: Convergent Evidence of Construct Validity for the Bible Verse Selection Task

Although Study 5 demonstrated that BVST scores were substantially correlated with other measures of fundamentalism, additional evidence was needed to determine whether BVST scores also predict different constructs -- e.g., authoritarianism, traditionalism, and political conservatism -- that have been observed to covary with CF in past research.

Method

Participants. An online survey was completed by 200 MTurk workers living in the United States. An attention-check inclusionary criterion was met by 188 respondents, and an Opt-In inclusionary criterion was met by 198 respondents, resulting in a final analyzable sample of 187 respondents who met both criteria.

The full sample ranged in age from 20 to 70 ($M = 35.87$, $SD = 11.66$), and included 110 men, 76 women, and one respondent who opted not to self-identify gender. Although the majority (75.4%) self-identified as Euro-American or White, the sample included individuals who self-identified as Asian-American (10.2%), African-American (8.5%), Latino/a or Hispanic (7.0%), Native American (2.1%), Middle Eastern or North African (1.1%), as well as one participant who selected "Other" and one participant who opted not to respond. Although the most common religious affiliation was Christian (46.5%), the sample also included individuals who self-identified as Agnostic (20.9%), Atheist (17.1%), Nothing in Particular (5.9%), Other (3.2%), Buddhist (2.7%), Hindu (1.1%), Jewish (1.1%), Muslim (1.1%), and Unitarian (0.5%). The religious affiliations of the self-identifying Christians included Non-denominational (29.9%), Catholic (28.7%), Baptist (10.3%), Other Christian (8.0%), Methodist (6.9%), Presbyterian (6.9%), Episcopalian (3.4%), Lutheran (3.4%), and Church of Christ (2.3%).

Materials and Procedure. An online survey was developed to be hosted on the MTurk platform. The survey began with questions regarding demographic information, along with an

attention-check question comparable to the one used in Study 2. Next, the survey included the BVST and other research measures. Although the BVST was presented in the format seen in Appendix A and one of the following measures of authoritarianism used a forced-choice format, the Likert-type items for the remaining scales were presented on a five-point scale, with options ranging from 1 (i.e., “Strongly disagree”) to 5 (i.e., “Strongly agree”). Finally, the survey concluded with the same Opt-In/Opt-Out question used in Study 2.

The Right-Wing Authoritarianism scale (RWA; Zakrisson, 2005) is a 15-item measure that includes items such as “Our country needs a strong leader, in order to destroy the radical and immoral currents prevailing in our society today”. Zakrisson (2005) reported an internal consistency estimate of .78 and demonstrated that scores on the scale were correlated with scores on measures of racism, sexism, intolerance for ethnic outgroups, and social dominance orientation.

A second measure of Authoritarianism (AUTH; Brandt & Reyna, 2014) is a four-item scale that presents four pairs of options, asking “Which is the more important quality for children to have?” with pairings such as “Independence” and “Respect for Elders”. Brandt and Reyna reported internal consistency estimates ranging from .59 to .61 for three samples.

The measure of Traditionalism (TRAD; Brandt & Reyna, 2014) is comprised of two items: “The newer lifestyles are contributing to the breakdown of society” and “This country would have many fewer problems if there were more emphasis on traditional family ties.” Because this measure is comprised of only two items, Brandt and Reyna did not report internal consistency estimates but reported correlations between the two items ranging from .44 to .59 across three different samples.

A 15-item measure of Political Conservatism (PC; Terrizzi, Shook, & Ventis, 2010) includes items such as “The government should restrict stem cell research”, all of which are coded such that high scores represent traditionally conservative sociopolitical attitudes. Terrizzi et al. (2010) reported an internal consistency estimate of .79.

Based on feedback from a pilot group, the survey was considered clear and comprehensible. A 10-minute completion time was typical for the pilot sample, so a payment rate of \$1.70 was set for the MTurk workers to align with the local minimum wage rate. Payment was given to all respondents, regardless of whether or not they met the inclusionary criteria

Results

The internal consistency estimates calculated for this data set were in a range that would bolster confidence in the use of these measures for research purposes. For the full sample, alpha coefficients were .83 (BVST), .94 (RWA), .76 (AUTH), .90 (TRAD), and .85 (PC). For the Christian subset, alpha coefficients were .77 (BVST), .91 (RWA), .74 (AUTH), .88 (TRAD), and .81 (PC). Pearson correlation coefficients were calculated both for the full sample and for the subset that self-identified as Christians; the full-sample results are presented above the diagonal in Online Supplementary Table 7, and the results for the Christian subset are below the diagonal. The correlation between the BVST and AUTH was .46 ($p < .001$) for the full sample and .37 ($p < .001$) for Christian subsample. The correlations between the BVST and the remaining validation measures were all at or above .57 ($p < .001$) for the full sample and at or above .53 for the Christian subsample.

Conclusion

Reliability estimates for the BVST were in an appropriate range for a research measure. As anticipated, the BVST was positively correlated with measures of authoritarianism,

traditionalism, and political conservatism; each of these validity coefficients was at or above $r = .37$, with the majority above $.53$.

Discussion

A series of six studies provided initial psychometric evidence for the Bible Verse Selection Task (BVST) as a measure of Christian fundamentalism. In Study 1, when Christian participants were asked to rate the centrality of 100 Bible verses to their personal faith systems, twelve Bible verses shared substantial variance with Revised Religious Fundamentalism Scale (RRFS) items, while many others shared little or no variance. In Study 2, the twelve Bible verses identified in Study 1 were paired with twelve Bible verses that were not associated with Christian fundamentalism, and Christians were asked to endorse the verse from each pair that was most central to their faith. The choice of Bible verse was significantly related to RRFS scores for ten of the twelve pairs; these ten pairs, associated with CF in both student and MTurk samples, comprise the newly created BVST. Study 3 demonstrated that Social Desirability concerns may exist for the RRFS, but Study 4 suggested that Social Desirability concerns may be less salient for the BVST. Study 5 provided criterion-related validity evidence for the BVST in the form of correlations with extant measures of Christian fundamentalism while Study 6 provided initial construct validity evidence in the form of correlations with measures of political conservatism, authoritarianism, and traditionalism. Studies 2, 5, and 6 yielded BVST internal consistency estimates at or above $.77$. Thus, the initial psychometric evidence described in this series of studies suggests that the BVST provides valid and reliable Christian fundamentalism scores using a format that differs from standard Likert methods which may be more prone to Social Desirability biases; however, the process of validating a measure is a lengthy one

requiring additional research (as described below), and the research presented here is only the first step.

These findings do not suggest that the BVST should replace the RRFS or other extant measures. Whereas the extant measures carry the strength of face validity (which may be beneficial for some research purposes), the forced-choice format of the BVST allows respondents to affirm the Biblical basis of their belief systems while simultaneously allowing them to choose between more and less fundamentalist versions of that belief system. Although the BVST would not be conceptualized as an implicit measure of Christian fundamentalism, it may serve as a useful alternative to the more common Likert-based self-report measures, providing a behavioral measure that allows for a multimethod assessment.

We acknowledge limitations of the BVST and of the present studies. First, although the patterns of correlations were the same for the full samples and the Christian subsamples, the nature of the BVST makes the test only meaningful as a measure of Christian fundamentalism; whereas other measures (such as the MFI) can be applied to other types of religious fundamentalism, the BVST uses the Christian Bible as a source for items, and is only meaningful within that family of religions. Future researchers who use this measure are urged to regard it exclusively as a measure of Christian fundamentalism, without applying it to other religious frameworks. Second, at this point we do not have evidence that the BVST provides incremental information above and beyond that provided by the RRFS and extant measures. Our focus in the present set of studies was to provide the type of psychometric evidence specified as necessary for a new research measure by the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014), and the present data suggests that the BVST meets these criteria. However, given the existence of other research measures, evidence of incremental validity would

help clarify the BVST's utility. Third, although the convergent evidence provided in Study 6 suggests construct validity, discriminant evidence would bolster confidence in the construct validity of the BVST; for example, the present study did not include a self-report measure of social desirability. To this end, future studies should specify constructs (including but not limited to social desirability) that would be expected to be unrelated to Christian fundamentalism, and then determine whether the correlations are, in fact, nonsignificant.

Aside from the ongoing psychometric analyses, additional research is necessary to examine the utility of the BVST as a measure of Christian fundamentalism. Although the present studies showed reasonably strong correlations with other measures of fundamentalism and a net of interrelated constructs, future research should explore the extent to which the BVST is sensitive to behaviors that have been previously associated with Christian fundamentalism, such as anxiety reduction in the face of existential threat (Vess et al., 2012) and denigration of out-group members (Maynard et al., 2014).

Future research should also continue to explore the concept of social desirability and related response sets within the context of the assessment of religious fundamentalism. It is plausible that social desirability as originally described by Edwards (1957) may have a limited effect on the response pattern of religious fundamentalists when answering questions about their religious beliefs; these individuals may be less concerned about the opinions of other people and more concerned about how their beliefs and behaviors are viewed by God. Nevertheless, their answers to a Likert-based measure of fundamentalism might still be affected by a comparable response set, not addressed in the assessment literature. For example, if presented with traditional doctrinal statements or Christian beliefs (such as "To lead the best, most meaningful life, one must belong to the one, fundamentally true religion"), there may be a pressure for some

Christians to respond “Strongly Agree” even if they have personal doubts about the veracity of that statement. This may not represent a “social desirability” response set but instead a “doctrinal desirability” response set which might, for some religious respondents, be even more influential. By assessing fundamentalism with forced-choice Bible verses (as is true in the BVST), however, that pressure may be mitigated.

These studies suggest that the BVST holds promise as a tool for studying an important source of differences among Christians—the strength of fundamentalist beliefs. By using Biblical texts as items for a forced-choice measure, the BVST seeks to allow both fundamentalist and nonfundamentalist Christians to communicate their worldviews using the passages that resonate most with their beliefs.

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Appendix A
The Bible Verse Selection Task.

Administration instructions:

“For each of the following pairs of Bible verses, please choose the one that is more central in your belief system, religious faith, or worldview. Some people may agree with both statements, and some may disagree with both statements. However, even if that is the case, please consider which one is the most central to your beliefs.”

Item 1

- A. Jesus said, “I am the way and the truth and the life. No one comes to the Father except through me.
- B. This is how we know what love is: Jesus Christ laid down his life for us. And we ought to lay down our lives for our brothers.

Item 2

- A. God has given us his very great and precious promises, so that through them you may participate in the divine nature and escape the corruption in the world caused by evil desires.
- B. One night the Lord spoke to Paul in a vision: “Do not be afraid; keep on speaking, do not be silent.”

Item 3

- A. All Scripture is God-breathed and is useful for teaching, rebuking, correcting and training in righteousness.
- B. He has shown you what is good. And what does God require of you? To act justly, to love mercy, and to walk humbly with him.

Item 4

- A. Finally, brothers, whatever is true, whatever is noble, whatever is right, whatever is pure, whatever is lovely, whatever is admirable—if anything is excellent or praiseworthy—think about such things.
- B. If you confess with your mouth, “Jesus is Lord,” and believe in your heart that God raised him from the dead, you will be saved.

Item 5

- A. For God did not give us a spirit of timidity, but a spirit of power, of love and of self-discipline.
- B. If we confess our sins, God is faithful and just and will forgive us our sins and purify us from all unrighteousness.

Item 6

- A. Jesus said, “Therefore go and make disciples of all nations, baptizing them in the name of the Father and of the Son and of the Holy Spirit.”
- B. Now faith is being sure of what we hope for and certain of what we do not see.

Item 7

- A. Jesus said, “Come to me, all you who are weary and burdened, and I will give you rest.”

- B. Jesus said, “For God so loved the world that he gave his one and only Son, that whoever believes in him shall not perish but have eternal life.”

Item 8

- A. Salvation is found in no one else but Jesus, for there is no other name under heaven given to men by which we must be saved.
- B. Blessed is the man who perseveres under trial, because when he has stood the test, he will receive the crown of life that God has promised to those who love him.

Item 9

- A. God made him who had no sin to be sin for us, so that in him we might become the righteousness of God.
- B. You know that the testing of your faith develops perseverance.

Item 10

- A. Jesus said, “I tell you the truth, whoever hears my word and believes him who sent me has eternal life and will not be condemned; he has crossed over from death to life.”
- B. Always be prepared to give an answer to everyone who asks you to give the reason for the hope that you have. But do this with gentleness and respect.

Scoring instructions:

Give the respondent 1 point for selecting each of the following; otherwise, score the item as 0:

- Item 1—Option A
- Item 3—Option A
- Item 4—Option B
- Item 6—Option A
- Item 7—Option B
- Item 8—Option A
- Item 10—Option A

Give the respondent -1 point for selecting each of the following; otherwise, score the item as 0:

- Item 2—Option B
- Item 5—Option A
- Item 9—Option B

Final raw scores range from -3 to 7, with higher scores representing higher associations with Christian fundamentalist beliefs.
