The Emotional Toll of Hell: Cross-national and experimental evidence for the negative well-being effects of Hell beliefs

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Abstract

Though beliefs in Heaven and Hell are related, they are associated with different personality characteristics and social phenomena. Here we present three studies measuring Heaven and Hell beliefs’ associations with and impact on subject well-being. We find that a belief in Heaven is consistently associated with greater happiness and life satisfaction while a belief in Hell is associated with lower happiness and life satisfaction at the national (Study 1) and individual (Study 2) level. An experimental priming study (Study 3) suggests that these differences are mainly driven by the negative emotional impact of Hell beliefs. Possible cultural evolutionary explanations for the persistence of such a distressing religious concept are discussed.
Introduction

Though the psychology of religion has tended to treat religion as a single construct, evolutionary theories of religion have argued that religion is instead a multifaceted family category—comprising of different beliefs, teachings and rituals that have emerged for different reasons at different times, to serve different cultural purposes. ‘Religion’ is many things.

Supporting this argument, new evidence demonstrates that these different aspects of religions have systematically distinct psychological effects. For example, recent research has explored the divergent impact of benevolent aspects of religion, such as beliefs in Heaven and comforting, forgiving gods, versus more malevolent religious beliefs, such as those in Hell and punitive supernatural agents [1], [2].

Compared to the benevolent aspects, supernatural malevolence has been found to be associated with stronger rule-following and group coordination at the national level. For instance, in developing countries (where secular institutions tend to be weaker), a higher proportion of citizens who believe in Hell is associated with higher GDP growth [3]. Similarly, controlling for the belief in heaven as well as obvious third variables such as wealth and wealth inequality, a higher rate of belief in hell is associated with lower national crime rates [2]. These studies suggest that belief in supernatural punishment may curb unethical behavior, allowing for greater social stability and economic success.

However, belief in supernatural malevolence may not be without its costs. Research has shown that people with more malevolent views of God tend to show lower self-esteem, psychological coping and health resiliency [4], [5]. Thus, beliefs in religious malevolence may have emotional costs, even as they have norm-following benefits.
Here we present three studies testing the divergent emotional correlates and consequences of Heaven and Hell beliefs. Specifically, we examine whether these beliefs differentially affect subjective well-being. Although religiosity is consistently tied to greater well-being [6], [7], little research has examined which elements of religious belief offer mood benefits, which do not, and which may in fact be detrimental. In Study 1, we used a similar method as Shariff & Rhemtulla [2] to measure the relationship between Heaven and Hell belief and subjective well-being at the cross-national level. In Study 2, we used data from the World Values Survey [8] to test these relationships at the individual level. In Study 3, we turned to an experimental priming method in order to test the causal relationships between Heaven and Hell beliefs and subjective well-being.

**Study 1: Cross-national Comparisons**

We compared differences in subjective well-being between 63 countries against national rates of Heaven and Hell beliefs. In order to discount obvious alternative explanations, we controlled for economic (wealth and wealth inequality), religious (belief in God and religious attendance), and social (civil liberties and socio-political stability) differences.

**Materials and Methods**

We used national subjective well-being data from the 2005-2009 Gallup World Poll [8], a survey of 455,104 respondents across 154 nations (minimum 1,000 per nation), conducted via telephone and face-to-face interviews. These responses produced two national variables of interest: *happiness rank* and *daily experience well-being*. National happiness rank was based on responses regarding overall life satisfaction—measured on a Cantril [9] scale ladder 0 (*worst possible life*) to 10 (*best possible life*)—for both present circumstances and what people expect in the five years time. From these future and present ratings, respondents were categorized as
‘thriving,’ (those who scored 7 or higher on present circumstances, and 8 or higher on future circumstances), ‘suffering’ (those who scored 4 or below on both categories), or ‘struggling’ (those in between the other two categories). The proportion of each category within a nation determined that nation’s happiness ranking. Togo, for example, was ranked lowest with 1% of its respondents categorized as ‘thriving’ and 31% as ‘suffering.’ On the other hand, in Denmark, the highest ranked country, 82% of respondents were ‘thriving’ and only 1% ‘suffering.’

Daily experience well-being was calculated using a different set of questions which asked respondents about their affect and experience during the prior day (example items: “Did you smile or laugh a lot yesterday?”, “Did you experience sadness during a lot of the day yesterday?” (reverse-scored), “Would you like to have more days just like yesterday?”). Respondents answered “Yes” or “No” and responses across this set of questions were combined to form a single overall score for each country, ranging from a low of 5.0 (in Togo) to a high of 8.4 (in Panama).

The two national variables—happiness rank score and daily well-being—were only marginally correlated across nations, $r(155) = .14, p = .085$. The Gallup World Poll, and other broad surveys of happiness like it, have been shown to be valid, reliable and cross-culturally comparable [10].

Data on Heaven belief and Hell belief were extracted from fives waves of the World Values Survey (WVS) and European Values Survey (EVS) [8] collected between 1981 and 2007. In total, there were 146,562 participants from 63 countries (mean $n$ per country = 2326, range = 387 (Dominican Republic) – 9569 (South Africa)). Values report the percentage of respondents endorsing belief in either Heaven (item f054) or Hell (f053). Belief in Heaven, Hell and God was assessed with the question, “Which, if any, of the following do you believe in?”,
followed by a list of concepts including “Heaven,” “Hell,” and “God.”. Accepted answers were “Yes” and “No”. In order to succinctly visualize the relationship, Figures 1 and 2 use a difference measure created by subtracting the proportion of a nation’s Hell believers from the nation’s proportion of Heaven believers. Since nearly every nation has more people endorsing Heaven than Hell, this value is nearly always positive.

To discount alternative explanations, we included several covariates in our analyses which could be associated with various religious beliefs and happiness. Belief in God (f050) and religious attendance (f028) were drawn from the WVS and EVS. Religious attendance was assessed with the question, “Apart from weddings, funerals, and christenings, about how often do you attend religious services these days?”; response options were 1 = More than once a week, 2=Once a week, 3=Once a month, 4=Only on special holy days/Christmas/Easter, 5 = Other specific holy days, 6=Once a year, 7=Less than once a year, 8=Never or practically never.

Gross Domestic Product per capita (logged) and the Gini index of income inequality—both often linked to well-being [11], [12]—were taken from the 2011 CIA Factbook [13] (for nations where 2011 data were not available, the most recent data were used). Estimates of Political Stability and Absence of Violence and Terrorism from 2010 were drawn from the World Bank’s Worldwide Governance Indicators [14]. All data are publicly available.

All variables were entered into a linear regression. Following recommendations by Simmons, Nelson & Simonsohn [15], results were calculated both with and without covariates (see Table 1). Listwise deletion was employed, thus there are 63 nations included in the beliefs-only analysis, and 58 included in the analysis with covariates.

Results
When controlling for each other and potential third variables, Heaven and Hell both emerged as significant, but divergent predictors of happiness. This is true regardless of whether happiness was assessed with the national happiness ranking or the daily experience measure. Belief in Hell predicted lower happiness ranking ($\hat{\beta}_{\text{hell}} = -1.50, p < .001$) and lower daily experiences of well-being ($\hat{\beta}_{\text{hell}} = -1.60, p < .001$), whereas Belief in Heaven predicted higher happiness ranking ($\hat{\beta}_{\text{heaven}} = 1.76, p < .001$) and daily experience well-being ($\hat{\beta}_{\text{heaven}} = 1.93, p < .001$). These emerged as the strongest of all included predictors. Indeed, the two variables of specific religious beliefs—a belief in Heaven and Hell—alone predicted 53% of the cross-national variance as measured by happiness rank and 35% of the cross-national variance in daily experiences well-being (see Figures 1 and 2). We note that the predictive ability of these measures remained when additional controls were entered in the model, suggesting that the relationship between beliefs in Heaven, Hell, and well-being is robust. Furthermore, the other measures of religiosity—belief in God and religious attendance—did not significantly predict well-being when questions about specific Heaven and Hell beliefs were included in our regression model. This underscores the importance of assessing the divergent benevolent and malevolent aspects of religion, which when combined may mask important differences.

These data indicate that beliefs in Heaven and Hell are strong and opposite predictors of well-being at the national level. However, while the cross-national comparison in Study 1 is illustrative, it is based on a relatively small sample size and allows us only to control for national level variables such as per capita wealth. Examining individual data, though often noisier, provides a larger sample and allows us to control for individual variables such as sex,
age and education level. In Study 2 then, we sought to test whether this pattern of cross-national results is detectable at the individual level as well.

**Study 2: Large-scale correlational study**

Using the WVS and EVS, we measured the association between life satisfaction and Heaven/Hell belief, again controlling for a number of associated variables.

**Materials and Methods**

All variables were drawn from the same waves of the WVS and EVS as were used in the first study. Here, though, individuals’ responses were used, rather than aggregating them into a national average.

Because individuals living in the same country may respond to survey questions in a similar way, we used multi-level modeling to account for the possibility of within-country dependence. Heaven belief, Hell belief, God belief and religious attendance were the same as those used in Study 1. Our dependent measure, subjective well-being, was assessed using a life satisfaction item (a170) asking “All things considered, how satisfied are you with your life as a whole these days? Using this card on which 1 means you are “completely dissatisfied” and 10 means you are “completely satisfied” where would you put your satisfaction with your life as a whole?” Age (x003), Sex (dummy coded, 1=male, 2=female; x001), Education Level (x025) and relative Income Level (1=low, 2=medium, 3-high; x047r) were also included as covariates.

The fitted model equation was

\[
\text{lifesat}_{ij} = \gamma_{00} + u_{0j} + (\gamma_{10} + u_{1j})\text{heaven}_{ij} + (\gamma_{20} + u_{2j})\text{hell}_{ij} + \gamma_{30}\text{age}_{ij} + \gamma_{40}\text{sex}_{ij} + \gamma_{50}\text{ed}_{ij} + \gamma_{60}\text{inc}_{ij} + e_{ij},
\]

where $\gamma_{00}$, $\gamma_{10}$, ..., $\gamma_{60}$ are fixed effects representing the mean intercept and regression coefficients at the individual (within-country) level, and $u_{0j}$, $u_{1j}$, and $u_{2j}$, are a random intercept and random
effects of heaven and hell. The variance of these random effects ($\tau_{00}$, $\tau_{11}$, and $\tau_{22}$) reveal the variability of the individual-level effects across countries. The software package lme4 in R was used to run the model [16], [17].

Results:

Fixed effects analyses reveal the extent to which heaven beliefs and hell beliefs predict life satisfaction at the individual level (within countries), controlling for the effects of age, sex, relative income, religious attendance, and belief in god. Mirroring the pattern of results seen in Study 1, the belief in Heaven is associated with greater life satisfaction ($\gamma_{10} = .21, p < .001$), but the belief in Hell is associated with less ($\gamma_{20} = -.23, p = .004$). While our focus was on the impact of heaven and hell beliefs on life satisfaction across countries, we note that random effects analyses did reveal that this relationship varied little for heaven beliefs ($\tau_{11} = .02$) and a small to moderate amount for hell beliefs ($\tau_{22} = .10$).

These findings complement the pattern seen in Study 1; Heaven and Hell beliefs have sizable, but divergent effects on well-being. The individual-level effects of belief in Heaven and Hell on happiness in this study are smaller here than the country-level effects in Study 1. However, the individual-level values are larger or comparable in size to other important predictors of life satisfaction, such as education level ($\gamma_{40} = .03, p < .001$) and sex ($\gamma_{40} = .20, p < .001$), though smaller than the effect of income ($\gamma_{60} = 0.54, p < .001$).

Though we tried to discount obvious third variable explanations in Studies 1 and 2, both use correlational designs, which are limited in their ability to determine causation. While we suggest that a belief in Hell leads to lower levels of well-being, these data cannot rule out the possibility that individuals with low levels of well-being are more likely to adopt the belief in Hell or that some third variable is responsible for this pattern. In order to clarify the specific
causal relationships, in Study 3, we conducted an experimental priming study in which we
assigned participants to think about Heaven, Hell, or a control topic before reporting their
current happiness. If Heaven and Hell beliefs have divergent well-being consequences, we
should observe happiness differences between participants in these two experimental conditions.

**Study 3: Experiment**

Methods

Four hundred and twenty-two American participants ($M_{age} = 28.9$, $SD = 10.1$, Range =
18-71; 53.5% female\(^1\)) completed a survey on Amazon’s Mechanical Turk survey site in
exchange for $0.35 each. Fifty-seven percent reported being religious believers, of which 82%
were Christian, 8% indicated Other, and Jewish, Muslim, Hindu and Buddhist participants made
up the remaining 10%.

Participants were randomly assigned to one of three conditions. In the Hell condition,
participants were asked to write 100-200 words about their conception of Hell, including its
purpose and description. In the Heaven condition, participants were similarly asked to write
about Heaven. In the control condition, which was designed to be neutral and non-religious,
participants were asked to write about what they did yesterday.

Subsequently, participants were asked to rate the extent to which they were experiencing
seven emotions—happiness, sadness, guilt, security, shame, fear and calmness—on a scale from
1 (“Very slightly or not at all”) to 5 (“Extremely”). Finally, participants completed a series of
demographic questions, a suspicion probe, questions about their religious beliefs, and a
manipulation check, in that order. The suspicion probe revealed that five participants (1% of
sample) who correctly guessed the hypothesis; these respondents were dropped from analyses,

\(^1\) Not all participants reported their sex and age.
leaving a final sample of 417 participants. A manipulation check queried participants on the degree to which they thought about the primed topics throughout the experiment. The check confirmed that participants in each of the three conditions thought more about the topic they were primed with, than the topics they were not (neutral condition: $t(253) = 6.76, p < .001$; Hell condition: $t(252) = 589, p < .001$; Heaven condition: $t(254) = 3.95, p < .001$). Importantly, the manipulation check also confirmed that the degree to which participants reported thinking about their respective primed topic did not differ between conditions ($F(2,412) < .25, ns$). That is participants who wrote about Hell did not think about Hell more than participants who wrote about Heaven thought about Heaven. This suggests that all three primes were equally engaging and that effects cannot be attributed to artifacts of certain primes being more effective than others.

Following Studies 1 and 2, we predicted that participants assigned to think about Heaven would report higher levels of positive emotion and lower levels of negative emotion than those in the control condition. Similarly, we expected participants assigned to think about Hell to report lower levels of positive emotion and higher levels of negative emotion than those in the control condition.

Results

Individual one-way ANOVAs were conducted to examine the effect of the priming manipulations on Happiness ($F(2, 412) = 6.14, p = .002$), Sadness ($F(2, 388) = 3.32, p = .037$), an aggregated average of the three Positive Emotions minus the four Negative Emotions ($F(2, 349) = 4.95, p = .008$).

Breaking these initial results down with planned contrasts revealed that the emotion differences were driven entirely by the Hell prime. Participants who wrote about Hell reported

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2 Including these five participants did not significantly change the pattern of results.
significantly less happiness and more sadness than those who wrote about Heaven ($t_{\text{happiness}}(407) = 2.60, p = .010$; $t_{\text{sadness}}(384) = 2.29, p = .023$), or those in the neutral writing condition ($t_{\text{happiness}}(407) = 3.44, p = .001$; $t_{\text{sadness}}(384) = 2.32, p = .021$) (see Table 2 for all means and SDs). Notably, and supporting Shariff & Rhemtulla [2] and others’ suggestion about the Supernatural Punishment Hypothesis, those writing about Hell also reported more fear than those in the Heaven ($t_{\text{fear}}(361) = 2.62, p = .009$) and control conditions ($t_{\text{fear}}(361) = 2.63, p = .009$). In total, subtracting the average of all negative emotions from the average of all positive emotions, those who wrote about Hell reported more emotional negativity than those in the Heaven ($t_{\text{all_emo}}(344) = 2.44, p = .015$) and control conditions ($t_{\text{all_emo}}(344) = 3.08, p = .002$).

Those writing in the Heaven and control conditions did not significantly differ on any of these measures ($t < 1.0$, $p > .35$).

What relationship does dispositional religious affiliation have with emotion ratings?

Collapsed across condition, those who identified as religious believers reported higher levels of happiness ($M = 3.40, SD = 1.07$) than those identifying as religious non-believers ($M = 3.04, SD = 1.01, t(407)=3.46, p = .001$), replicating a consistent finding regarding the self-reported mood benefits of religious identification [18]. However, there was no significant interaction between religious identification and condition ($F(2,198) = .19, p = .824$); religious believers and non-believers both showed more emotional negativity when writing about Hell compared to the control condition ($t_{\text{believers}}(150) = 2.35, p = .02$; and $t_{\text{non-believers}}(190) = 1.99, p = .049$). It is notable that reflecting on Hell negatively affected well-being, regardless of whether the participant identified as a religious believer. There are numerous interpretations for this, and it is a ripe avenue for future investigation.
General Discussion

Three studies showed that heaven and hell beliefs are associated with markedly divergent well-being outcomes. Two large-scale correlational studies conducted with international data sets showed that, controlling for each other, Hell beliefs were associated with lower well-being at the national level and individual level, whereas Heaven beliefs were associated with higher well-being. Furthermore, an experiment shows that priming participants with Hell leads to lower levels of positive emotion and higher levels of negative emotion, compared to controls.

While Studies 1 and 2 provide compelling evidence for a link between these religious beliefs and well-being around the globe, the correlational nature of our investigations preclude causal conclusions regarding the impact of either Heaven or Hell beliefs. However, Study 3’s results suggest that the well-being differences between the two types of beliefs are primarily driven by the negative effects of thinking about Hell. This interpretation should be taken with some caution, though, considering the entirely American and predominantly Christian and non-religious sample. Though Amazon’s Mechanical Turk has been shown to be somewhat more representative than undergraduate samples [19], it can by no means be taken to be globally representative.

Nevertheless, our finding that certain religious beliefs are consistently related to lower levels of well-being adds nuance to the general finding that religion is tied to greater well-being [18]. Although we replicate this general finding in Study 3, where religious believers reported higher positive affect and lower negative affect than did non-believers, all aspects of religion do not seem to be created equal in this regard. In fact, in our experimental test, neither Hell nor Heaven belief contributed to an increase in mood above what was found in our control
condition. Though the heaven writing task likely did not capture the whole spectrum of mood
and security benefits that a long-standing belief in heaven may actually afford, the absence of an
effect lends support to the possibility that the well-being benefits of religiosity derive from its
social aspect, not its beliefs [7]. Diener, Tay & Myers [20], for instance, showed that religiosity
only relates to well-being in those areas with religious majorities.

If the belief in Hell has reliably negative effects on well-being, why has it persisted? In
the introduction, we cited evidence for the association between Hell beliefs and ethical behavior.
Thus, the belief in Hell, and religious malevolence more generally, may contribute to the
encouragement of rule following, through the deterrence value of supernatural punishment, but
may do so at the cost of well-being. This creates an intriguing trade-off between the interests of
the group, which benefit from the ethical behavior of the group’s members, and the interest of
the individual, who shoulders the emotional costs of a society that follows norms out of fear.

From a cultural evolutionary perspective, different societal circumstances could shift the
balance of this tradeoff. For example, where rule-following is well organized by secular
institutions, supernatural punishment may provide less added value on this front [21]. In these
societies, one might expect religions to shift towards a more benevolent tone—especially in a
competitive religious market where such a benevolent tone may be more attractive to potential
converts than fire, brimstone and other aspects of supernatural malevolence. Future research
could investigate this possibility by examining conversion rates among religious sects that differ
on these dimensions.

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3 This hypothesis is further supported by the observation that in our cross-national analyses, after controlling for
wealth, wealth inequality and political stability/absence of violence, the rate of religious attendance in a nation
emerged as a significant predictor of daily experienced well-being ($\beta = .35$, $p = .040$), but the rate
of belief in God did not ($\beta = .03$, $p = .864$).
In sum, the current findings join a growing literature examining the different psychological impact of different concepts often conflated together as ‘religion’ [2], [22], [23]. Though certain of these religious concepts may be associated with greater well-being, the belief in Hell appears not to be one of them.
Acknowledgment

We gratefully thank Mijke Rhemtulla for her comments and consultation on this manuscript.
References


Figure Legends

Figure 1: National Happiness Rank as a function of how much higher the proportion of a nation that believes in Heaven is compared to the proportion that believes in Hell. Ranking is inverted such that nations higher up on the y-axis are happier. $R^2 = .53$.

Figure 2: Daily Experiences Well-being as a function of how much higher the proportion of a nation that believes in Heaven is compared to the proportion that believes in Hell. $R^2 = .35$. 
Table 1: Predicting national happiness rank and daily experiences of well-being from heaven and hell beliefs.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Happiness Rank (inverted)</th>
<th>Daily Experience Well-being</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>R²</td>
</tr>
<tr>
<td>Model (no covariates)</td>
<td>26.41***</td>
<td>.53</td>
</tr>
<tr>
<td>Heaven Belief</td>
<td>1.64***</td>
<td></td>
</tr>
<tr>
<td>Hell Belief</td>
<td>-1.86***</td>
<td></td>
</tr>
<tr>
<td>Model (with covariates)</td>
<td>17.06***</td>
<td>.71</td>
</tr>
<tr>
<td>Heaven Belief</td>
<td>1.76***</td>
<td></td>
</tr>
<tr>
<td>Hell Belief</td>
<td>-1.50***</td>
<td></td>
</tr>
<tr>
<td>God Belief</td>
<td>-.20</td>
<td></td>
</tr>
<tr>
<td>Religious Attendance</td>
<td>-.07</td>
<td></td>
</tr>
<tr>
<td>GDP per capita (log)</td>
<td>.45**</td>
<td></td>
</tr>
<tr>
<td>Gini Coefficient</td>
<td>-.12</td>
<td></td>
</tr>
<tr>
<td>Stability &amp; Absence of Violence</td>
<td>.08</td>
<td></td>
</tr>
</tbody>
</table>

* denotes p<.05, ** denotes p<.01, *** denotes p<.001
Table 2: Means and standard deviations for the experimental conditions in Study 3.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Condition</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happiness</td>
<td>Control</td>
<td>3.35&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.06</td>
</tr>
<tr>
<td></td>
<td>Heaven</td>
<td>3.25&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td>Hell</td>
<td>2.91&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>1.03</td>
</tr>
<tr>
<td>Sadness</td>
<td>Control</td>
<td>1.65&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>Heaven</td>
<td>1.65&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>Hell</td>
<td>1.92&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>1.00</td>
</tr>
<tr>
<td>Fear</td>
<td>Control</td>
<td>1.46&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>Heaven</td>
<td>1.46&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>Hell</td>
<td>1.75&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>0.96</td>
</tr>
<tr>
<td>Positive Emotion</td>
<td>Control</td>
<td>3.50&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>Heaven</td>
<td>3.43&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.89</td>
</tr>
<tr>
<td></td>
<td>Hell</td>
<td>3.24&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.87</td>
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<tr>
<td>Negative Emotion</td>
<td>Control</td>
<td>1.89&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.76</td>
</tr>
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<td>Heaven</td>
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<td>0.94</td>
</tr>
<tr>
<td></td>
<td>Hell</td>
<td>2.29&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>1.05</td>
</tr>
<tr>
<td>Positive minus</td>
<td>Control</td>
<td>1.56&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.43</td>
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<tr>
<td>Negative Emotion</td>
<td>Heaven</td>
<td>1.44&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.58</td>
</tr>
<tr>
<td></td>
<td>Hell</td>
<td>0.93&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>1.63</td>
</tr>
</tbody>
</table>

Note: Means with the same superscript values are significantly different from one another.