

# Always Look on the Bright Side of Life: Religiosity, Emotion Regulation and Well-Being in a Jewish and Christian Sample

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**Abstract** People who are more religious tend to experience more positive affect and higher levels of life satisfaction. Current explanations for this relation include social support, meaning in life, and more positive emotional experiences. Adding cognitive reappraisal as a new mechanism, we propose that religion consistently trains people to reappraise emotional events, making the devout more effective in applying this emotion regulation practice, which cultivates more positive affect and greater life satisfaction. In two studies, involving Israeli Jewish (N = 288) and American Christian (N = 277) participants, we found that more frequent use of cognitive reappraisal mediated the relationship between religiosity and affective experiences, which in turn, were associated with greater life satisfaction. Religiosity was associated with more frequent cognitive reappraisal (in both samples) and less frequent expressive suppression (in the Christian sample). Cognitive reappraisal mediated the link between religiosity and positive affect (in both samples) as well as negative affect (in the Christian sample). We discuss implications for understanding the link between religion and emotional well-being.

**Keywords** Religion · Emotion · Emotion regulation · Life satisfaction · Well-being

## 1 Introduction

People who are more religious tend to report higher levels of life satisfaction (Diener and Clifton 2002; Diener et al. 1999; Hackney and Sanders 2003), particularly in cultures that value religiosity (Gebauer et al. 2012) and dependent on the relative size of one's religious group (May and Smilde 2016). In this investigation, we propose a novel mechanism that

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might underlie the link between religiosity and life satisfaction—namely, cognitive reappraisal. Recent research suggests that religiosity is associated with more frequent cognitive reappraisal (Vishkin et al. 2016), which is considered an effective form of emotion regulation (Webb et al. 2012). We thus argue that such effective emotion regulation practices ultimately result in more desirable emotional experiences that, in turn, are linked to greater life satisfaction. Our hypothesis may point to one of the mechanisms by which religion contributes to well-being.

## 2 Religiosity and Life Satisfaction

Religion is a cultural system, characterized by rites, belief systems and worldviews, which relate humanity to presumed super-natural entities (for a review of definitions of religion in the social sciences, see Cohen 2009). Although there is much debate about the conceptualization and measurement of religion (Koenig et al. 2001; Zinnbauer et al. 1999), there has been general agreement that this concept is multidimensional, involving cognitive, emotional, behavioral and interpersonal elements (Hill and Pargament 2003). We refer to religiosity as involving three dimensions—*beliefs* regarding the transcendent and its connection with humans, *behaviors* that connect the individual to the transcendent, such as participation in public rituals and ceremonies, as well as prayer and meditation, and *belonging* to a specific religious tradition, congregation or sect (Ben-Nun Bloom et al. 2015; Smidt et al. 2009; Voas 2007).

A vast literature suggests that more religious people report greater levels of both hedonic well-being, such as more positive emotions and greater life satisfaction, and lower rates of depression and anxiety, as well as greater eudaimonic well-being, including more hope, optimism, and purpose, (e.g., Diener et al. 2011; Koenig et al. 2001, 2012). Several mechanisms have been proposed to account for the relationship between religiosity and well-being (e.g., George et al. 2002; Pargament 2002). These include social support, meaning in life, and more positive emotional experiences. We discuss each of these accounts below.

First, religion may promote well-being by providing a social support network (George et al. 2002; Lim and Putnam 2010; McIntosh et al. 1993; Salsman et al. 2005). Social support has been linked to lower psychological distress (Lepore 1992). To the extent that religion helps create a community of people with shared values (Durkheim 1915/1965; Graham and Haidt 2010), religious individuals may have more accessible social support than nonreligious individuals. Consistent with these ideas, social support has been found to mediate the relationship between religiosity and lower psychological distress (Salsman et al. 2005).

Secondly, religion may promote well-being by providing an opportunity to experience a sense of purpose and meaning in life (e.g., Diener et al. 2011; Krause 2003; Steger and Frazier 2005). Meaning in life has been linked to more adaptive outcomes, including greater life satisfaction (Zika and Chamberlain 1987) and self-esteem (Compton et al. 1996). By addressing fundamental questions relating to death, suffering, pain, and injustice (Yinger 1970), religion provides a comprehensive meaning-making framework (Baumeister 1991; Davies 2011; Pargament 1996; Watts 2007). Consistent with these ideas, a sense of meaning in life has been found to mediate the relationship between religiosity and life satisfaction (Steger and Frazier 2005).

Finally, religion may promote well-being by facilitating positive emotional experiences (Fredrickson 2002; Van Cappellen et al. 2016). People who are more religious experience more frequent positive affect (Diener and Clifton 2002; Diener et al. 2011). This may be because religion affords more positive emotional experiences than a life without it. For example, the ritual of prayer may induce gratitude (Lambert et al. 2009). In addition, there is some evidence that the association between religion and well-being is accounted for by cultivating self-transcendent emotions, such as awe, hope, love, and forgiveness (e.g., Ellison and Levin 1998; Van Cappellen et al. 2016). Religious appraisals of a benevolent divine agent may also induce positive emotional experiences (McCullough et al. 2002; Watkins et al. 2003) across different religions, including the three Abrahamic religions of Judaism (Schimmel 2004), Christianity, and Islam (Emmons and Crumpler 2000).

Thus, religiosity may induce positive emotional experiences. Emotional reactivity, however, may not be the only mechanism underlying the link between religiosity and positive affect. Whereas emotional reactions are shaped by the events that individuals experience, people can also actively contribute to their emotional experiences, through the process of emotion regulation. Whereas emotional reactions depend on spontaneous interpretations of external or internal events, emotion regulation is motivated by and depends on what people want to feel and on their ability to shape their emotional experiences accordingly (Mauss and Tamir 2014). Religion may shape emotional experience through emotion regulation, and this process might partly underlie the link between religiosity and well-being.

### 3 Religiosity and Emotion Regulation

Emotion regulation is a form of self-regulation, which involves changing one's current emotional state into a desired emotional state. People generally want to feel good and avoid feeling bad (Gross et al. 2006), but they differ in how effectively they can achieve these goals. To effectively regulate emotions, it is necessary to use effective emotion regulation strategies.

Emotion regulation strategies differ in their efficacy (Webb et al. 2012). A particularly effective strategy is cognitive reappraisal, which involves changing the meaning of emotional events so that they lead to desirable emotional experiences (Gross and John 2003). Training people to use cognitive reappraisal in the laboratory leads them to effectively increase their positive affect (e.g., McRae et al. 2011) and decrease their negative affect (e.g., Gross 1998; McRae et al. 2011), without carrying physiological (e.g., Gross 1998; Gross and Levenson 1993, 1997) or cognitive (e.g., Richards and Gross 1999, 2000) costs.

Cognitive reappraisal enables people to change the spontaneous meaning that is assigned to a situation and replace it with a meaning that is value- or goal-consistent. For example, contracting a serious illness can be viewed as a punishment or a test of resilience. Religion may facilitate effective cognitive reappraisal because it requires constant meaning-making (Baumeister 1991; Davies 2011; Pargament 1996; Watts 2007). By addressing fundamental existential concerns, such as death, suffering, and injustice (Yinger 1970), religion supplies broad schemas that can help people find meaning in difficult and stressful situations. For example, religions offer positive reappraisals of human suffering. The idea that suffering leads to salvation appears in both ancient Jewish sources (e.g., Genesis Rabbah 84:3; Ethics of the Fathers, 5:21) and Christian sources (e.g., Romans 8:17–21; see Hall and Johnson 2001).

To the extent that religion consistently trains people to reappraise emotional events, religious individuals may become more skilled in cognitive reappraisal. Supporting this prediction, we recently found consistent positive associations between religiosity and the use of cognitive reappraisal (Vishkin et al. 2016). Across three religions, individuals high (vs. low) in religiosity tended to use cognitive reappraisal more frequently. They were also more effective in using cognitive reappraisal upon instruction in a laboratory setting.

Are people higher in religiosity more satisfied with their lives because they use more cognitive reappraisal, in particular, or because they use any strategy of emotion regulation more often? Expressive suppression, which involves concealing the overt expression of emotions, is an emotion regulation strategy that is relatively less effective in regulating emotional experiences (e.g., Gross 1998; Webb et al. 2012). To test the specificity of our effects, we assessed whether either cognitive reappraisal, which is an effective strategy, or expressive suppression, which is a less effective strategy, mediate the link between religiosity and life satisfaction.

Expressive suppression may or may not mediate the relationship between religiosity and well-being. On the one hand, religion is a source of intense emotional experience, with strong emotions seen as being “the hallmark of strong religious life” (Watts 1996, p. 81). Some collective rituals, such as those celebrated by the charismatic movement in Christianity, seem to deliberately induce emotional arousal via music, dance and rhetoric (Watts 1996). Such rituals enable and arouse the public display of emotions as means of consolidating episodic memories and inducing religious motivation (McCauley and Lawson 2002). According to this view, religion is negatively related to expressive suppression. To the extent that religious individuals experience more positive and less negative affect, due to lower levels of suppression, expressive suppression can be expected to mediate the relationship between religion and well-being.

On the other hand, religions often advise asceticism, a lifestyle of abstinence from worldly pleasures (e.g., sexual abstinence, reduced intake of food), in order to pursue spiritual goals and maintain purity (on the expressive suppression of pain and fear in religious rituals, such as puberty rites, see Schjoedt et al. 2013). In addition to the repression of bodily needs, the devout are encouraged to exhibit self-control in dealing with their difficulties, practicing patience, serenity, and humility. To the extent that religious individuals are more likely to engage in expressive suppression, and that such suppression results in less positive and more negative affective experience, expressive suppression cannot be expected to mediate the relationship between religion and well-being.

Prior research, therefore, suggests that people who are more religious may use cognitive reappraisal more frequently. The frequent use of cognitive reappraisal, in turn, is associated with more frequent positive emotions and less frequent negative emotions, and with greater life satisfaction. This is primarily because people who use effective emotion regulation strategies are better able to change their emotions in a desired direction—which typically involves increasing positive emotions (e.g., Gross and John 2003; Nezlek and Kuppens 2008).

Based on these findings, we hypothesized that cognitive reappraisal would mediate the relationship between religiosity and affective experiences. We entertained the possibility that expressive suppression could be negatively linked to religiosity or positively linked to religiosity, and we did not have firm a priori hypotheses. We also expected more positive and less negative affect, in turn, to be associated with greater life satisfaction (e.g., Lucas et al. 1996).

## 4 The Current Investigation

In the current investigation, we tested the associations between religiosity, the frequency of using cognitive reappraisal and expressive suppression, the frequency of positive and negative affect, and life satisfaction. We predicted that people who are more religious would use cognitive reappraisal more frequently. This, in turn, would result in more desirable emotional experiences (Gross and John 2003) that would result in greater life satisfaction (Lucas et al. 1996). Thus, we tested a double-mediation model in which religiosity influences the frequency of cognitive reappraisal, which influences affective experiences, that contribute to life satisfaction. We tested our predictions in two religious samples (i.e., Israeli Jews and American Christians) in order to identify potential similarities and differences across religions. These samples were previously used to establish the association between religiosity and cognitive reappraisal in Vishkin et al. (2016). In this paper, however, rather than examining whether religiosity is linked to cognitive reappraisal, we assess the potential implications of such links to understanding religiosity and well-being. We suggest that more frequent use of cognitive reappraisal mediates the association between religiosity and life satisfaction. We expected to find some support for our proposed model in both samples because we expect it to apply across religions.

## 5 Study 1

Study 1 investigated the hypothesized three-path mediation in a sample of Jewish participants.

## 6 Method

### 6.1 Participants

Participants were 288 Israelis (51% female,  $M_{\text{age}} = 29.63$ ), who accessed the study via an online Israeli panel (<https://www.panel4all.co.il>). They were selected to represent different levels of religiosity in the general population.<sup>1</sup>

### 6.2 Materials

#### 6.2.1 Religiosity

We adapted the measure used by Ben-Nun Bloom et al. (2015). The measure included nine items that assess religious beliefs (e.g., ‘Do you believe in God?’) and behaviors (e.g., ‘How frequently do you go to the synagogue?’), and social identity (‘How frequently do you refer to the people who share your religion as “us” rather than “them”?’; see online

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<sup>1</sup> The sample is identical to the Jewish sample which appears in Vishkin et al. (2016, Study 1). The original sample size was 313, but 4% were excluded from the analyses because they were not Jewish, and 4% were excluded for providing the same response 90% of the time or more (see Schwartz and Rubel-Lifschitz 2009). The measures were collected as part of a larger survey that addressed additional unrelated questions. The sample size was determined based on the other research questions that were tested.

**Table 1** Descriptive statistics and pairwise correlations among study variables: Israeli Jewish sample (Study 1)

	Mean	SD	Scale	$\alpha$	1	2	3	4	5
1. Life satisfaction	4.763	1.159	1–7	.856	–				
2. Religiosity	4.241	1.673	0–7	.881	.202*				
3. Reappraisal	5.157	1.007	1–7	.834	.268*	.226*			
4. Suppression	4.005	1.282	1–7	.756	.043	.103	.160*		
5. Positive affect	3.668	.752	1–5	.902	.626*	.235*	.350*	–.030	
6. Negative affect	2.061	.829	1–5	.897	–.358*	–.083	–.101	.148*	–.462*

Table entries are means, standard deviations, ranges, reliability coefficients, and pairwise correlations. \* $p < .05$

appendix for complete scale).<sup>2</sup> A factor analysis including all the items assessing religiosity revealed two factors with eigenvalues greater than 1, with all items loading on their respective theoretical factors, and social identity loading with behaviors. Since the response scales of the items differed, each item was normalized on a scale of 0–1, two 0–1 scales (religious belief and religious behavior) were composed by averaging the corresponding items, and the two scales were then averaged ( $r = .67$ ).<sup>3</sup> The result was multiplied by 7 in order to set all the measures on comparable scales when reporting means and standard deviations (see Table 1).

### 6.2.2 Reappraisal and Suppression Frequency

The frequencies of reappraisal and suppression were assessed using the Emotion Regulation Questionnaire (ERQ; Gross and John 2003). Six items assessed cognitive reappraisal (e.g., ‘When I want to feel less negative emotion, I change the way I’m thinking about the situation’;  $\alpha = .83$ ) and four items assessed expressive suppression (e.g., ‘When I am feeling negative emotions, I make sure not to express them’;  $\alpha = .76$ ).

### 6.2.3 Positive and Negative Affect

Positive and negative affect were assessed using the Scale of Positive and Negative Experience (SPANE; Diener et al. 2010). Participants rated the extent to which they felt six positive feelings (e.g., pleasant, happy;  $\alpha = .90$ ) and six negative feelings (e.g., unpleasant, sad;  $\alpha = .90$ ) at the present moment on a scale of 1 (not at all) to 5 (to a great extent).

<sup>2</sup> The item assessing social identity was not included in Vishkin et al. (2016), but was included here because belonging to a religious community has been linked to well-being (e.g., Lim and Putnam 2010). When the analyses reported in Vishkin et al. (2016) were conducted with this additional item included in the religiosity measure, results remained unchanged. We now report all the items used to measure religiosity.

<sup>3</sup> We analyzed the models both by averaging across all religiosity items ( $\alpha = .88$ ) and by averaging across each scale. Results were equivalent.

### 6.2.4 Life Satisfaction

Life satisfaction was assessed using the Satisfaction with Life Scale (SWLS; see Diener et al. 1985; Pavot and Diener 1993). The scale consisted of five items (e.g. 'In most ways, my life is close to my ideal';  $\alpha = .86$ ) on a scale of 1 (strongly disagree) to 7 (strongly agree).

## 6.3 Procedure

The survey was conducted online using an Israeli online survey company (<http://www.panel4all.co.il/panel>), as part of a larger study.<sup>4</sup> Participants first rated their life satisfaction, then their positive and negative affect, then the frequency of their using cognitive reappraisal and expressive suppression, and finally their religiosity.

## 6.4 Statistical Analyses

Our main hypothesis concerns a three-path mediated effect, such that the effect of religiosity on life satisfaction is mediated by two variables acting in turn, emotions reappraisal frequency and affect (positive/negative). To assess this hypothesized mediation, we specified three structural equation models (SEM) with varying parameter restrictions (see panels I-III in Figure A1 of the online appendix), using Mplus version 6.12: (1) a model allowing direct effects from religiosity on positive affect, negative affect, and life satisfaction (Model I; see Panel I in Figure A1 of the online appendix); (2) a model allowing direct effects from religiosity on positive and negative affect, but not life satisfaction (Model II; see Panel II in Figure A1 of the online appendix); (3) a model allowing only indirect effects for religiosity (Model III; see Panel III in Figure A1 of the online appendix). We specified the three upper structural equation models when substituting reappraisal for suppression, as well as a model including a three-path mediated effect for both emotion regulation strategies (Model IV; see Panel IV in Figure A1 of the online appendix).

In calculating standard errors (e.g., in Table 2), we used the bias-corrected bootstrap approach based on 5000 bootstrap samples to account for asymmetric distributions (Taylor et al. 2008). Thus, we noted the coefficient for each effect as significantly different from zero at  $p < .05$ , where the 95% confidence interval of the effect does not include zero. Full path coefficients from all models are presented in Table A1 in the online appendix.

To evaluate the goodness of fit, we used the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), the Standardized Root Mean Square Residual (SRMR), and the  $\chi^2$  test of exact model fit ( $\chi^2$ ), presented in the lower panel of Table 2. A satisfactory global model fit is indicated by the following values: CFI > .95; RMSEA < .06; SRMR < .08; and  $p(\chi^2) =$  insignificant (Hu and Bentler 1999).<sup>5</sup> In comparing the relative goodness of fit of nested models, we used the Likelihood-Ratio test ( $-2LL$ ), as well as comparing the models' fit indices, including the Bayesian Information Criterion (BIC) values, which indicate better fit for lower values (Kline 2005).

<sup>4</sup> Some of the data collected in this study are also reported in Vishkin et al. (2016), Study 1.

<sup>5</sup> An insignificant Chi square test indicates that the model is acceptable; that is, the observed covariance matrix is similar to the predicted covariance matrix.

**Table 2** Indirect effects and bootstrapped standard errors for the mediation models with best fit (Studies 1 and 2)

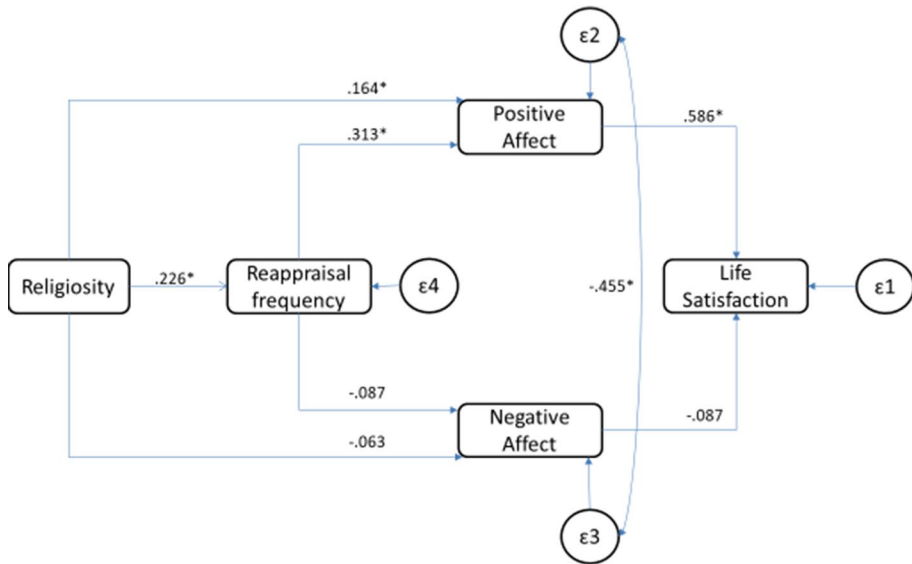
	Study 1, cognitive reappraisal (Model IIa)	Study 2, cognitive reappraisal (Model IIa)	Study 2, expressive suppression (Model IIb)
<i>Specific indirect effects</i>			
Religiosity → PA → life satisfaction	.096 (.033)*	.107 (.028)*	.107 (.029)*
95% CI	[.031, .162]	[.052, .162]	[.050, .164]
Religiosity → reappraisal → positive affect → life satisfaction	.041 (.013)*	.022 (.010)*	—
95% CI	[.016, .067]	[.001, .042]	—
Religiosity → suppression → positive affect → life satisfaction	—	—	.022 (.009)*
95% CI	—	—	[.005, .039]
Religiosity → negative affect → life satisfaction	.005 (.006)	.018 (.017)	.027 (.018)
95% CI	[−.007, .018]	[−.015, .052]	[−.009, .063]
Religiosity → reappraisal → negative affect → life satisfaction	.002 (.002)	.013 (.006)*	—
95% CI	[−.001, .005]	[.000, .026]	—
Religiosity → suppression → negative affect → life satisfaction	—	—	.004 (.004)
95% CI	—	—	[−.003, .011]
<i>Sum of indirect effects (total indirect)</i>			
Religiosity → PA → life satisfaction	.145 (.037)*	.160 (.039)*	.160 (.039)*
95% CI	[.073, .217]	[.084, .236]	[.084, .236]
<i>Direct effect of religiosity</i>			
Religiosity → life satisfaction	—	—	—
95% CI	—	—	—
<i>Total effect of religiosity</i>			
Religiosity → life satisfaction	.145 (.037)*	.160 (.039)*	.160 (.039)*
95% CI	[.073, .217]	[.084, .236]	[.084, .236]
<i>Goodness of fit</i>			
CFI	.997	1.000	1.000
RMSEA	.037	.000	.000
SRMR	.017	.013	.011
$\chi^2_{fit}$	2.786, n.s.	1.857 n.s.	1.298 n.s.
BIC	2894.948	3830.418	3987.742



**Table 2** (continued)

	Study 1, cognitive reappraisal (Model IIa)	Study 2, cognitive reappraisal (Model IIa)	Study 2, expressive suppression (Model IIb)
N	288	277	277

Table entries are indirect and total effects of religiosity on life satisfaction, with bootstrapped standard errors in brackets (5000 bootstrap samples). \*The 95% confidence interval of the effect based on 5000 bootstrap samples does not include zero (as per the bias-corrected bootstrap approach)



**Fig. 1** Path coefficients for the model with best fit for cognitive reappraisal (Study 1). \* $p < .05$

## 7 Results

Inter-correlations among latent factors, reliability coefficients, and descriptive statistics are presented in Table 1. Replicating prior findings, life satisfaction was positively correlated with religiosity. In addition, life satisfaction was positively correlated with positive affect and negatively correlated with negative affect, but more strongly with the former. Finally, as expected, religiosity was correlated with reappraisal frequency. Religiosity was not significantly linked with expressive suppression.

The model with best fit was Model II, which allows for 2-path effects from religiosity on positive and negative affect, as well as 3-path effects from religiosity to cognitive reappraisal and positive and negative affect, but does not allow for the one-path effect from religiosity to life satisfaction. Two of the four specified mediation paths yield statistical significance (see Table 2; for the fit of the other models, see Table A4 in the online appendix). First, and as hypothesized, religiosity was associated with life satisfaction through the three-path mediation (religiosity > cognitive reappraisal > positive affect > life satisfaction). In addition, religiosity was associated with life satisfaction through the two-path mediation (religiosity > positive affect > life satisfaction). Negative affect, on the other hand, did not mediate the effect of religiosity or reappraisal on life satisfaction.

Standardized path coefficients for the model of best fit appear in Fig. 1. Religiosity was positively related to reappraisal frequency ( $\beta = .226, p < .05$ ), as well as to positive affect ( $\beta = .164, p < .05$ ). Reappraisal frequency was then related to more positive affect ( $\beta = .313, p < .05$ ), while positive affect, in turn, was related to greater life satisfaction ( $\beta = .586, p < .05$ ). The only other significant effect was the covariance between the error terms of positive affect and negative affect.

## 7.1 SEM with Latent Variables and Maximum Likelihood Estimation

As a robust analysis, we re-estimated the data using SEM analyses with latent variables in a maximum likelihood framework (using Mplus Version 6.1). Following satisfactory fitting of the measurement model, we specified a model where the raw items served as indicators of latent factors for the five latent constructs (religiosity, frequency of emotion reappraisal, positive affect, negative affect, and life satisfaction), and integrated the paths suggested by our hypotheses. The models met the criteria for satisfactory global model fit (e.g., Model II: CFI = .955; RMSEA = .045; SRMR = .051; see Hu and Bentler 1999).<sup>6</sup> Results for the indirect and total effects of religiosity, presented in Table A2 in the online appendix, were robust to the altered specification.

## 7.2 Expressive Suppression

Is religiosity linked to greater life satisfaction, through cognitive reappraisal, in particular, or might the same patterns apply to other emotion regulation strategies, such as expressive suppression? We specified the three upper structural equation models (Models I–III) when substituting reappraisal for suppression, as well as a model including a three-path mediated effect for both emotion regulation strategies (Model IV). Results suggest that the effect of religiosity on life satisfaction is not mediated by expressive suppression, as indicated by the statistically insignificant three-path mediation effects (see Table A4 in the online appendix). The significant effect of reappraisal and the null effect for suppression hold when specifying both mechanisms as potential mediators for the effect of religiosity (Model IV).

## 7.3 Study 2

To test whether our model generalizes to samples from other religions, we conducted another study in which we tested our hypotheses in a Christian sample. Study 2 investigated the hypothesized three-path mediation in a sample of Christians recruited from the Amazon Mechanical Turk (MTurk.com) marketplace. Previous research has found that self-reports of individual differences on MTurk are psychometrically valid (Buhrmester et al. 2011).

# 8 Method

## 8.1 Participants

Participants were 277 Americans (48% female,  $M_{\text{age}} = 34.74$ ).<sup>7</sup>

<sup>6</sup> Factor loadings and the complete correlation matrix for all items are available from the authors.

<sup>7</sup> The sample is identical to the Christian sample which appears in Vishkin et al. (2016, Study 1). The original sample size was 368, 22% were excluded from the analyses for identifying with a religion other than Christianity and 3% were excluded based on the exclusion criteria used in Study 1. The sample size was set to be similar to that of Study 1.

## 8.2 Materials

### 8.2.1 Religiosity

Religiosity was assessed with a slightly shorter version of the multi-item measure included in Study 1, which included six items. A factor analysis on all the items assessing religiosity revealed one factor with an eigenvalue greater than 1. However, based on theoretical grounds and to be consistent with our scoring procedure in Study 1, we decided to divide the items into two subscales for belief and behavior. Therefore, the overall score was computed the same way as in Study 1 ( $r = .70$ ).<sup>8</sup>

### 8.2.2 Reappraisal and Suppression Frequency

Reappraisal and suppression were assessed using the same measures as in Study 1 ( $\alpha = .90$  and  $\alpha = .79$ , respectively).

### 8.2.3 Positive and Negative Affect

Positive and negative affect were assessed using Kuppens et al. (2008) measure for positive and negative emotions. Participants rated the extent to which they felt six positive feelings (e.g., pleasant, happy;  $\alpha = .90$ ) and eight negative feelings (e.g., unpleasant, sad;  $\alpha = .91$ ) in the past week on a scale of 1 (= not at all) to 9 (= all the time).

### 8.2.4 Life Satisfaction

Life satisfaction was assessed using the same measures as in Study 1 ( $\alpha = .94$ ).

## 8.3 Procedure

The survey was conducted online, as part of a larger study.<sup>9</sup> Participants first rated their positive and negative affect, then rated their life satisfaction, then rated the frequency of using cognitive reappraisal and expressive suppression, and finally rated their religiosity.<sup>10</sup>

## 9 Results

Table 3 presents the pair-wise correlations, reliability coefficients, and descriptive statistics for all variables. Generally, life satisfaction was positively correlated with religiosity. In addition, life satisfaction was positively correlated with positive affect and negatively correlated with negative affect, but more strongly with the former. Further, religiosity was correlated with positive, but not negative, affect. Both life satisfaction and religiosity were positively correlated with reappraisal and negatively correlated with suppression.

<sup>8</sup> We analyzed the models both by averaging across all religiosity items ( $\alpha = .89$ ) and by averaging across each scale. Results were equivalent.

<sup>9</sup> Some of the data collected in this study are also reported in Vishkin et al. (2016), Study 1.

<sup>10</sup> All data relevant to religiosity and well-being has been reported.

**Table 3** Descriptive statistics and pairwise correlations among study variables: American Christian sample (Study 2)

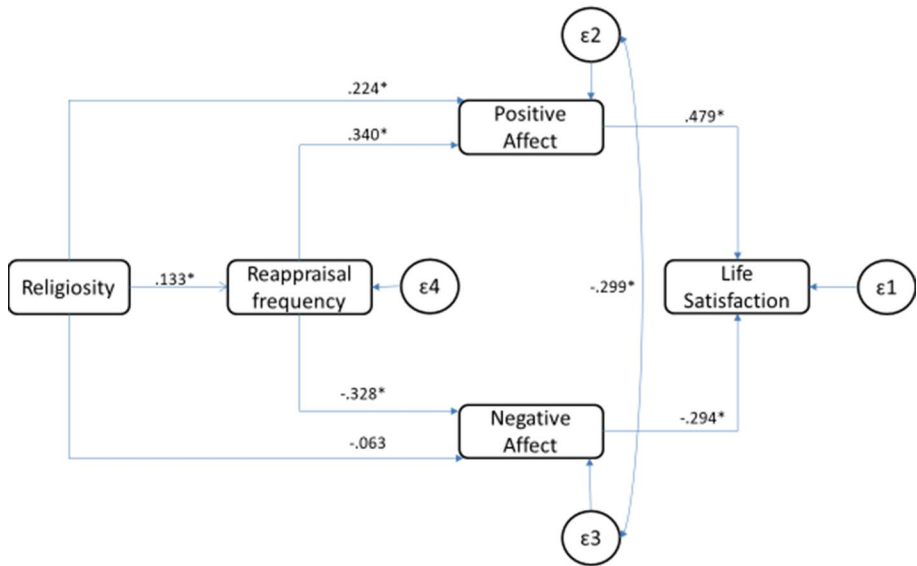
	Mean	SD	Scale	$\alpha$	1	2	3	4	5
1. Life satisfaction	4.380	1.664	1–7	.938	–				
2. Religiosity	2.428	2.070	0–7	.886	.210*				
3. Reappraisal	5.146	1.000	1–7	.896	.247*	.133*			
4. Suppression	3.831	1.263	1–7	.790	–.169*	–.187*	–.035		
5. Positive affect	5.911	1.766	1–9	.902	.594*	.269*	.370*	–.285*	
6. Negative affect	3.256	1.655	1–9	.912	–.482*	–.106	–.336*	.095	–.392*

Table entries are means, standard deviations, ranges, reliability coefficients, and pair-wise correlations. \* $p < .05$

We specified the same three models as in Study 1. Table A5 in the online appendix presents the total and indirect effects of religiosity on life satisfaction using the bias-corrected bootstrap approach, as well as the fit indices, for each of the three models. Model II appears to be the best fitting model. As in the Jewish sample, and as hypothesized, religiosity was associated with greater life satisfaction through more frequent use of cognitive reappraisal, and then through increased positive affect, as indicated by the statistically significant three-path mediation effect (for all indirect effects, see Table 2). As in the Jewish sample, the effect of religiosity on life satisfaction was also mediated by positive affect independently of reappraisal. Whereas in the Jewish sample, cognitive reappraisal mediated the link between religiosity and positive, but not negative affect, in the Christian sample, cognitive reappraisal mediated the link between religiosity and positive, as well as negative, affect. Standardized path coefficients for Model II appear in Fig. 2 (for path coefficients of all the models, see Table A3 in the online appendix). Religiosity was positively related to reappraisal frequency ( $\beta = .133, p < .05$ ), as well as to positive affect ( $\beta = .224, p < .05$ ). Reappraisal frequency was related to more positive affect ( $\beta = .340, p < .05$ ) and less negative affect ( $\beta = -.328, p < .05$ ). Positive affect, in turn, was related to greater life satisfaction ( $\beta = .479, p < .05$ ), while negative affect was related to lower life satisfaction ( $\beta = -.294, p < .05$ ). The only other significant effect was the covariance between the error terms of positive affect and negative affect.

## 9.1 SEM with Latent Variables and Maximum Likelihood Estimation

Next, we re-estimated the data using SEM analyses with latent variables in a robust maximum likelihood framework. Following satisfactory fitting of the measurement model, we re-specified model I-IIIa, where the individual items served as indicators of latent factors. Results for the indirect and total effects of religiosity, presented in Table A2 in the online appendix, were robust to the altered specification, and the models met the criteria for satisfactory global model fit (e.g., for Model II: CFI = .948; RMSEA = .053; SRMR = .052; see Hu and Bentler 1999).



**Fig. 2** Path coefficients for the model with best fit for cognitive reappraisal (Study 2).  $*p < .05$

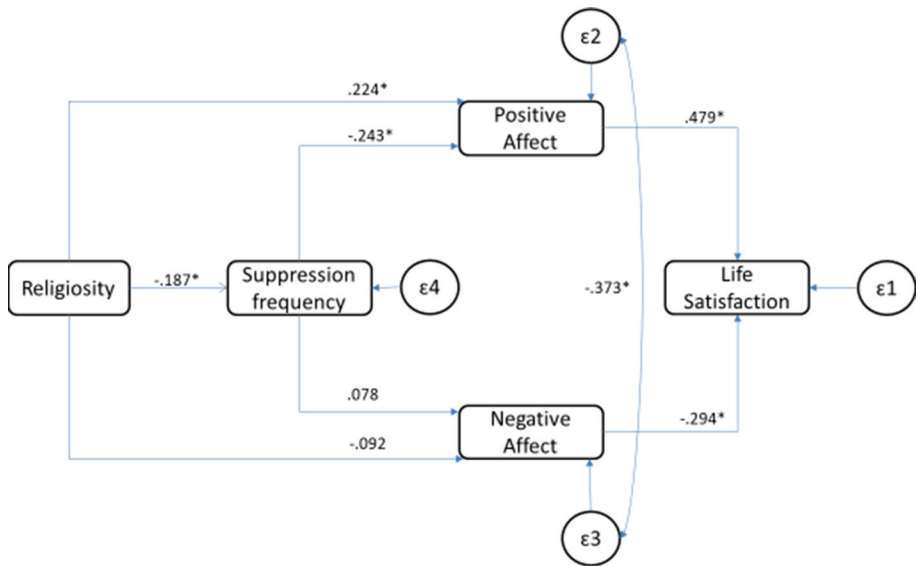
## 9.2 Expressive Suppression

We specified models I–III when substituting reappraisal for suppression. Contrary to the Jewish sample, results indicated that the three-path mediation effect of religiosity on life satisfaction is carried out both by reappraisal and by suppression.

Model II appears to be the best fitting model. The indirect effects between religiosity and life satisfaction (see Table 2) include the two-path mediation effect through positive affect (religiosity > positive affect > life satisfaction) as well as the three-path mediation effect through expressive suppression and positive affect (religiosity > expressive suppression > positive affect > life satisfaction). Model II is depicted in Fig. 3 with standardized path coefficients. Religiosity was negatively related to suppression frequency ( $\beta = -.187$ ,  $p < .05$ ) and positively related to positive affect ( $\beta = .224$ ,  $p < .05$ ). Expressive suppression was negatively related to positive affect ( $\beta = -.243$ ,  $p < .05$ ). Positive affect, in turn, was related to greater life satisfaction ( $\beta = .479$ ,  $p < .05$ ). The only other significant effects were between negative affect and life satisfaction ( $\beta = -.294$ ,  $p < .05$ ) and the covariance between the error terms of positive affect and negative affect.

## 10 General Discussion

Religious individuals are generally more satisfied with their lives (e.g., Diener et al. 1999; Hackney and Sanders 2003; Koenig et al. 2001). To our knowledge, we demonstrated, for the first time, that this relationship is partially mediated by the more frequent use of effective emotion regulation practices, which in turn shape emotional experiences. We were able to find support for our general hypothesis in two distinct religious samples. Cognitive reappraisal was a consistent mediator in both samples, whereas expressive suppression was a significant mediator in the Christian sample only. Expressive suppression may not have



**Fig. 3** Path coefficients for the model with best fit for expressive suppression (Study 2). \* $p < .05$

been a significant mediator in the Jewish sample because it did not correlate with life satisfaction. The findings for expressive suppression in the Jewish sample, therefore, need to be interpreted with caution. Furthermore, effect sizes were small, reflecting the small but consistent association between religiosity and life satisfaction previously found in meta-analyses ( $d = .12$ ; Hackney and Sanders 2003).

## 11 Theoretical Implications

We have previously found that religiosity was related to more frequent use of cognitive reappraisal (Vishkin et al. 2016). We extend this work by showing that the use of effective or ineffective emotion regulation strategies may partly contribute to affective experiences and well-being. We show that such emotional experiences are associated with life satisfaction and together reflect greater well-being. These findings carry implications for both emotion regulation research and for research on the psychology of religion, as discussed below.

Focusing on individual differences in well-being, our findings shed light on the mechanism that might underlie the link between well-being and religiosity. Whereas previous research has focused on social and cognitive mediators (e.g., Kortt et al. 2014), recent research has found that positive emotions play a larger role than either of these two mediators in accounting for the relationship between religiosity and well-being (Van Cappellen et al. 2016). Our findings add to this literature, by demonstrating that greater religiosity is linked to greater positive affectivity, in part, through more effective emotion regulation (i.e., cognitive reappraisal). Our findings also raise several important questions. First, our findings show that people who are more religious use cognitive reappraisal more frequently and tend to experience more positive affect in general, as well as greater life satisfaction. Why has religion developed cognitive reappraisal as an emotion regulation strategy? One

possibility is that religion facilitates the use of cognitive reappraisal as a culturally-valued skill, transmitting it from one generation to another through religious practices (Cavalli-Sforza et al. 1982; Schonpflug 2009). This skill, which involves an exercise in meaning making, may be particularly relevant to more religious individuals, given religion's concern with addressing existential questions (Yinger 1970). If more religious individuals are versed in reconstructing meaning in desirable ways, they are more likely to use this skill to regulate their emotions. Whether religiosity actively facilitates the use of cognitive reappraisal and how is an important question for future research.

Secondly, the present findings are consistent with the idea that cognitive reappraisal leads to more desirable patterns of emotional experiences. People are generally motivated to feel positive emotions and avoid negative emotions (e.g., Augustine et al. 2010; Kämpfe and Mitte 2009; Rusting and Larsen 1995). Nonetheless, although we did not examine it directly, it is also possible that the emotions that are considered desirable vary by religion (see Kim-Prieto and Diener 2009; Tsai et al. 2007; Vishkin et al. 2014). Furthermore, religiosity may shape preferences for self-transcendent emotions in particular (see Van Cappellen et al. 2016). Whether and how religions shape desired emotional experiences is another important question for future research.

Finally, the present findings highlight the importance of examining emotion regulation when considering affect as a cause of well-being. Whereas previous findings have found that more positive emotional experiences mediate the association between religiosity and well-being (e.g., Van Cappellen et al. 2016), they did not directly address the role of emotion regulation as a mechanism behind this process. The present findings provide support for the role of emotion regulation and underscore the need to examine emotion regulation strategies when considering affect as a cause of well-being.

## 12 Similarities and Differences Across Religious Samples

We found similarities and differences in the affective experiences linked with religiosity. Cognitive reappraisal mediated the relationship between religiosity and positive affect in both samples, whereas mediation of links with negative affect were inconsistent across samples. Even in the Christian sample, where cognitive reappraisal was mediated by negative as well as positive affect, the paths from religiosity to negative affect are weaker than the paths from religiosity to positive affect, and are statistically insignificant (see, e.g., Table A3 in the online appendix).

Religion may be linked more strongly to positive than to negative affect (see also Van Cappellen et al. 2016), because positive affect is more subject to social learning influences (Scollon et al. 2011). In a study on differences in emotionality among twins, negative emotionality was better accounted for by genetics, whereas positive emotionality was better accounted for by shared environments (Tellegen et al. 1988). In line with these findings, religion may influence the frequency of positive affect more than negative affect, through processes of social learning and cultural transmission. Future research should attempt to replicate our findings with an emphasis on explaining why negative affect is less affected by religion.

We also found similarities and differences in the emotion regulation strategies linked with religiosity. Expressive suppression mediated the link between religiosity and affective experience only in the Christian sample. Because samples differ both in religion and in country, we cannot confidently attribute the differences between the samples to religion in



particular. However, it is possible that expressive suppression may be sensitive to particular religious affiliations rather than religiosity more generally. For instance, it could be that the practice of confession in Catholicism and its more informal analogues in most Protestant denominations, may reduce Christians' need to suppress their emotions. In Judaism, repentance occurs less regularly (in particular, during the High Holidays; Maimonides, *Laws of Repentance*, 2:6–7) and is more demanding. Future research should examine whether expressive suppression is associated with Christianity and not Judaism, even when examined within the same cultural regions (e.g., the US).

### 13 Limitations and Future Directions

This study was a cross-sectional correlational study, and therefore did not allow us to test causal relationships between religiosity, emotion regulation, and well-being. Future research could begin to explore the mechanism underlying the effects we found, by conducting longitudinal studies and examining change over time. To the extent that religiosity contributes to the use of cognitive reappraisal, differences in emotion regulation, affect, and life satisfaction might become more entrenched with age. Such studies could also help address another limitation of our findings—namely, that our measures were based on retrospective self-report. Future research could examine affective experiences and life satisfaction over time, using online experience sampling methods.

A meta-analysis has found that variation in types of religiosity significantly accounts for variance in the association between religiosity and well-being (Hackney and Sanders 2003). Whereas the present study found that emotion regulation mediates the association between religiosity and well-being across several dimensions of religiosity (belief and behavior within studies and belonging between studies), there may be meaningful distinctions between the dimensions of religiosity. The differential association between types of religiosity and emotion regulation is an important avenue for future research.

It is also important to test whether the associations found in the present research might be subject to certain boundary conditions. For example, the adaptiveness of cognitive reappraisal is dependent on context. Cognitive reappraisal has been found to promote psychological health, but only when dealing with uncontrollable stressors (Troy et al. 2013). This distinction carries implications for coping, which is the collection of actions individuals use to deal with stressful experiences (Skinner et al. 2003). When dealing with controllable stressors problem-focused coping (e.g., removing the stressor from the environment) is more effective than emotion-focused coping (e.g., cognitive reappraisal). Since religiosity is related to frequent cognitive reappraisal, it may promote emotion-focused coping in contexts where problem-focused coping would be more adaptive. This is in line with findings that religiosity is associated with more passive forms of self-regulation (Laurin et al. 2012). Likewise, when choosing between emotion-focused coping and problem-focused coping, religion may favor the more passive emotion-focused coping, leading one to engage in cognitive reappraisal when the more adaptive response would be to control the stressor. For example, when dealing with controllable stressors (e.g., anxiety about getting a poor grade in an upcoming exam) it may be more adaptive to actively change the situation by studying than by down-regulating the anxiety via reappraisal. Future research should examine whether the mediatory role of cognitive reappraisal in the relationship between religiosity and well-being is moderated by the controllability of life stressors or by other contextual variables.

The present investigation focused almost exclusively on cognitive reappraisal. Future research should examine whether religiosity relates to other emotion regulation strategies, such as acceptance or rumination, and whether these relationships mediate the association between religiosity and well-being. It would be informative to examine other emotion regulation strategies in order to establish whether these associations are unique to cognitive reappraisal in particular, whether they are specific to adaptive emotion regulation strategies (e.g., acceptance; Aldao et al. 2010), and whether they generalize to emotion regulation strategies which involve cognitive elaboration (e.g., acceptance and rumination). It would also be informative to examine whether there are differences in emotion regulation strategies across religions. Finally, it would be informative to examine the facilitators of emotion regulation in religion at the group level, in order to examine which elements of religion (norms, rituals, traditions, or institutions) facilitate which emotion regulation strategies.

## 14 Conclusions

In the present work, we tested a novel mechanism to account for the relationship between religiosity and well-being, namely, more effective emotion regulation. Across two studies using distinct religious groups, we tested a series of models to examine this hypothesis, and found that more effective emotion regulation accounts for part of the relationship between religiosity and life satisfaction. These findings provide a first step in understanding the contribution of effective emotion regulation to life satisfaction among religious adherents.

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