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Testing the existential reach of gratitude:  
An analysis of the effects of gratitude on  
religiosity and spirituality

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## **ABSTRACT**

Research has consistently found a significant positive correlation between gratitude and spirituality, and gratitude and intrinsic religiosity, but currently no study has established the directionality of this relationship (McCullough, Tsang & Emmons, 2002; McCullough, Emmons & Tsang, 2004; Watkins, Woodward, Stone & Kolts, 2003). Since religious and spiritual individuals tend to attribute positive occurrences to the work of a higher power, it was hypothesised that heightened awareness of positive occurrences through a gratitude intervention would result in heightened levels of spirituality and intrinsic religiosity (Gorsuch & Smith, 1983). The current study sought to examine whether a gratitude intervention increased self-identifying religious or spiritual participants' self-reported daily levels of spirituality and their change in religious orientation (intrinsic vs. extrinsic) from pre- to post-intervention as compared to a control group (Allport & Ross, 1967). Aside from replicating the baseline correlation between intrinsic religiosity and gratitude, no other significant results were found. Methodological constraints in the form of a ceiling effect in measures and a resistance effect due to the characteristics of the sample are discussed along with general limitations in researching religion and spirituality. Broader implications for the positive psychology movement and its relations to religious practices are also discussed.

## **INTRODUCTION**

Gratitude is claimed to be the perpetuator of happiness by proponents of positive psychology yet also constitutes the predominant way by which spiritually-minded people reach out to a higher power (Emmons & McCullough, 2003; Emmons & McCullough, 2004). Rooted in the practices of many different religions, does the exercise of gratitude delve beyond the realm of wellbeing into the experience of spirituality? With consistent findings of correlations between gratitude and intrinsically motivated religiosity, or the practice of religion for its own sake rather than a self-serving purpose, it appears that the concept of gratitude may be more religiously or spiritually oriented than previously thought (McCullough, Tsang, Emmons, 2002; McCullough, Emmons, Tsang, 2004; Watkins, Woodward, Stone, Kolts, 2003; Allport & Ross, 1967). However, this relationship remains to be explored beyond correlational measures. It is possible that gratitude facilitates the development of intrinsic religiosity and spirituality. Alternatively, it is also possible that intrinsic religiosity leads to an increase in gratitude. Even further, gratitude and

intrinsic religiosity may be in a mutually facilitative relationship, or connected by a third variable highly correlated with both. As of yet, the directionality of this relationship remains unknown. The current study aims to investigate the effect a gratitude intervention has on intrinsic religiosity and spirituality.

Before fully examining the relationship between gratitude, religiosity, and spirituality it is worth considering firstly the significance the direction of this relationship could hold, specifically with regard to the general relationship between positive psychology and religion. Secondly, the manner in which gratitude, spirituality, and religiosity are defined and have been examined within psychology will be discussed in order to provide a more thorough understanding of the variables and measures chosen in the current study.

### **Positive Psychology and Religion**

Positive psychology is a recent movement in psychology that seeks to research the promotion of wellbeing and resilience against mental illness, as opposed to the current focus on mental illness and treatments. However, there appears to be a common undercurrent of much of the topics researched in positive psychology – religious roots. Zagano and Gillespie (2006) outline similarities between a vast range of positive psychology practices and Ignatian spiritual practices, a branch of Catholic spirituality, ranging from gratitude exercises to signature strengths to the seemingly nonreligious experience of flow. The commonalities with Ignatian spirituality alone emphasise the idea that there is a large overlap of ideas and practices between positive psychology and religion without even addressing the directly derived practices such as Buddhist mindfulness (Wynne, 2007). These practices within religions typically intend to put practitioners into a spiritual or transcendent state of mind, or enhance a follower's relationship or connection with a higher power (e.g. Wynne, 2007; Matthew 6:14, New International Version). Therefore, it is possible that the similar practices adapted by researchers in the positive psychology movement influence self-transcendence, spirituality, or religiosity. Extending this potentiality, it may be the case that whatever form this influence may take is also relevant to the wellbeing increases found within positive psychology exercises (e.g. Emmons & McCullough, 2003; Brown & Ryan, 2003). The mechanism influenced by both religious and positive psychology practices may be the same mechanism that has found religious and spiritual people to exhibit higher levels of wellbeing even after factors such as the beneficial effects of belonging to a social community are taken into

account (Wnuk & Marcinkowski, 2014). Wnuk and Marcinkowski (2014) found that religious people have heightened levels of wellbeing as a result of spiritual experiences, mediated by meaning of life and hope. Although it could be argued that positive psychology attempts to cultivate meaning of life and hope outside of the realm of spirituality or religiosity, there is also the possibility that the religious nature of the practices instil some form of self-transcendence or spirituality which, in turn, cultivates these items. Overall, the relation between positive psychology, spirituality and religion, and wellbeing remains to be examined in greater depth.

## **Gratitude**

Gratitude within psychology is simply defined as “the positive recognition of benefits received” (Emmons & McCullough, 2004, p. 5). Stemming historically from philosophical and religious perspectives, gratitude is by no means a recent concept. Gratitude is involved in a large proportion of Judaic religious teachings, instructing followers to express gratitude in their relationships with one another as well as with God (Emmons & McCullough, 2004). With the rise of positive psychology, gratitude has become a popular topic of research, with researchers seeking to understand the experience of gratitude as well as what other psychological and physical variables it is related to.

Beyond the simple definition of gratitude, researchers have sought to determine whether gratitude is a personal disposition, mood, or affect. McCullough et al. (2004) concluded that gratitude can take any of these three forms with there being evidence for the effects of each. McCullough et al. (2002) investigated the grateful disposition and found that there is evidence for a stable trait involved in individual differences in the average levels of gratitude experienced distinct from the Five-Factor personality traits (McCrae & Costa, 1999). The mood and affective types of gratitude are more interrelated since gratitude-inducing experiences elicit affective gratitude, and high levels of affective gratitude result in mood-type gratitude (McCullough et al., 2004). It is important to distinguish between these types of gratitude since the type chosen within a study determines how gratitude is operationalised as a variable.

The study of gratitude has focussed largely on methods by which affective and mood-type gratitude can be increased with only very recent studies investigating the mechanisms by which dispositional gratitude can be changed (see Wood, Froh & Geraghty, 2010 for a review of studies attempting to increase affective and mood-type gratitude; Froh et al., 2010). The most common

method utilised within research for increasing affective and mood-type gratitude is counting one's blessings. Emmons and McCullough (2003) pioneered the 'counting one's blessings' method which involves participants writing either nightly or weekly about things for which they are grateful. Drawing upon these memories is intended to elicit high levels of affective gratitude, generating a grateful mood. When compared to a hassles condition where participants list annoying occurrences or a control condition where participants list any memorable event across the same time period, Emmons and McCullough (2003) found modest to large effect sizes depending on the condition with which the gratitude condition was compared (control vs. hassle) and the time period across which the study was conducted (daily vs. weekly), indicating that this method is overall successful in increasing gratitude. However, the larger concern within the movement of positive psychology is how increased gratitude influences wellbeing.

In relating gratitude to secondary variables, research has focussed on relating gratitude to measures of psychological and physical wellbeing. Emmons and McCullough (2003) found a significant effect of a 'counting one's blessings' gratitude intervention on positive affect, with participants in the intervention group experiencing significantly higher levels of positive affect than participants in the control group. Participants experiencing this intervention also showed more optimism for the upcoming week, viewed their lives more favorably in general, and reported higher levels of prosocial behaviour than control group participants. In terms of the physical effects of this gratitude intervention, Emmons and McCullough (2003) found that participants in the intervention group reported fewer symptoms of physical illness and exercised for a greater amount of time per week than control group participants. Recent studies have found an effect of a gratitude intervention on other positive outcomes such as reducing workplace absence due to illness in university employees and increasing life satisfaction in school teachers (Kaplan et al., 2013; Chan, 2011). It is clear from these studies that gratitude has widespread effects on people psychologically and physically. Beyond these variables, recent research has also found a strong relationship between gratitude and spirituality (McCullough et al., 2002; McCullough et al., 2004; Watkins et al., 2003).

### **Spirituality and Religiosity**

Measuring spiritual and religious constructs is an evolving area in research and has been the basis for much debate regarding definitions, reliability and validity of proposed measures.

According to Koenig (2008), traditional definitions of spirituality used to be synonymous with religiosity or refer to a particular facet within religiosity of heightened commitment and adherence to religious teachings. However, Koenig (2008) claims that the modern understanding of spirituality distinguishes a religious spirituality from a nonreligious spirituality that is experienced outside of the structure of an organised religion, with the term 'spiritual' extending to include anyone who is after a “search for the sacred” (Pargament, 1999, p. 12). This is the sense in which 'spirituality' will be referred to within the current study – a “search for the sacred” extending beyond oneself but not necessarily constrained by the bounds of a religious organisation (Pargament, 1999, p. 12).

Religiosity is also a broad construct with much disagreement about what it encompasses. To many people, religiosity is an affiliation to a religious organisation regardless of a person's adherence or agreement with the organisation's teachings or general beliefs. It can be merely a traditional affiliation interlinked with familial or ethnic ties. Alternatively, others who would call themselves 'religious' understand religion to be an active engagement with the teachings and beliefs of their organisation. Allport and Ross (1967) first elaborated on the heterogeneity of religious orientations, distinguishing intrinsic religious motivation from extrinsic religious motivation. They claimed that “the extrinsically motivated person *uses* his religion, whereas the intrinsically motivated *lives* his religion” (Allport & Ross, 1967, p. 434). Extrinsically motivated people are members of a religious community for self-serving purposes such as social interests or a sense of security or comfort. Intrinsically motivated people find motivation for their behaviour in their religious beliefs. This distinction has lasted within research into the psychology of religion with researchers further testing the validity and reliability of Allport and Ross's (1967) Religious Orientation scale across different cohorts as well as a greater set of religions, and relating these dimensions of religiosity to additional variables (Gorsuch, Mylvaganam, Gorsuch, Johnson, 1997; Johnson, Cohen & Okun, 2013). Although there are criticisms of the theoretical basis of Allport and Ross's (1967) Religious Orientation scale, many researchers have retained the intrinsic and extrinsic distinction to create alternative scales that are more widely applicable across time, cultures, and religions (Kirkpatrick & Hood, 1990; Gorsuch & McPherson, 1989). These separate constructs have played a large role in a variety of research, being distinctively correlated with countless variables ranging from personality traits to consumer attitudes to dietary choices (Henningsgaard & Arnau, 2008; Vitell, Paolillo & Singh, 2005; Hart, Tinker,

Bowen, Satia-Abouta & McLerran, 2004).

Many studies have involved religious orientation and spirituality as factors influencing a response variable, but relatively little research has sought to determine factors involved in influencing religious orientation and spirituality. The development of religious and spiritual beliefs has been researched in a longitudinal manner, and it has long been assumed that religious and spiritual beliefs are relatively stable within the short-term, only changing gradually over long periods of time (Koenig, McGue & Iacono, 2008). However, there is evidence to suggest that religiosity and spirituality are malleable in the short-term. Burris, Batson, Altstaedten, and Stephens (1994) found that self-reported levels of intrinsic religiosity increased after participants engaged in a loneliness-inducing writing task. Li, Cohen, Weeden, and Kenrick (2010) found that heterosexual participants who viewed pictures of attractive people of their own sex reported higher levels of religiosity due to the presumption of a competitive mating pool. Therefore, it is reasonable to assume that aspects of religiosity and spirituality may be malleable in the short-term and could be open to the influence of other variables as is presumed in the current study.

### **Gratitude, Spirituality, and Religiosity**

An assortment of recent research on gratitude has found a link between gratitude, spirituality, and specific dimensions of religiosity. McCullough et al. (2002) found highly significant moderate to large positive correlations between dispositional gratitude and a variety of religious and spiritual constructs. Similarly, Watkins et al. (2003) found significant moderate correlations between dispositional gratitude and religious orientation with gratitude being positively correlated with intrinsic religiosity and negatively correlated with extrinsic religiosity. In terms of daily mood-type gratitude, McCullough et al. (2004) found significant moderate positive correlations between the amount of mood-type gratitude experienced daily, on average, and self-reported religious interest, general religiosity, intrinsic religiosity, and self-transcendence.

It is not surprising that there is a connection between gratitude and religiosity – the concept of gratitude occurs frequently in religious texts and forms an apparent basis for people's response to a benevolent higher power (Emmons & Crumpler, 2000). However, it is unclear how these variables interact with one another beyond their correlation. It is possible that people with a grateful disposition are also inclined towards intrinsic religiosity, seeking an object for their

gratitude when it is not directed towards a specific person. Alternatively, it may also be the case that intrinsically religious and spiritually-oriented people may develop a grateful disposition through practices relevant to their religion or spirituality such as prayer, meditation, or singing songs of thanksgiving. There may also be an outside variable that is related to both gratitude and intrinsic religiosity or spirituality. Additionally, the relationship between gratitude and intrinsic religiosity or spirituality may be reciprocal with an increase in either variable affecting the other.

Few studies have attempted to examine these relationships further. Rosmarin, Pirutinsky, Cohen, Galler, and Krumrei (2011) found that gratitude towards God mediated the relationship between religious commitment and general gratitude, suggesting that religious commitment may increase the amount of opportunities one has to express gratitude. However, this evidence is still correlational in nature, making it difficult to infer directionality from this finding. Lambert, Fincham, Brathwaite, Graham, and Beach (2009) investigated this relationship by assigning participants to one of either two different types of increased prayer conditions or two different reflective journaling conditions across two weeks. They tested dispositional gratitude before and after the intervention and found that participants in the prayer conditions showed increased levels of gratitude as compared to those in the journaling conditions. These findings are unsurprising considering prayer itself tends to involve a gratitude component and thus may be mimicking a gratitude intervention. Therefore, it is unclear whether the religious elements of prayer or the presence of gratitude in the prayers influenced the dispositional gratitude scores in the prayer conditions.

A study investigating this relationship by Tsang, Schulwitz, and Carlisle (2012) experimentally tested whether a religious prime influenced future behavioural gratitude towards another participant. They found that a religious prime did not influence participants to behave in a more grateful manner or report higher levels of affective gratitude as a result of a gratitude-inducing event. Furthermore, participants' levels of intrinsic religiosity did not significantly affect their likelihood to respond gratefully or report feelings of gratefulness but did influence their feelings of appreciation. These findings suggest that although intrinsic religiosity is linked with dispositional gratitude, intrinsic religiosity may not directly influence feelings or behaviours related to affective or mood-type gratitude, but instead any higher levels of affective or mood-type gratitude correlated with intrinsic religiosity may simply be the result of a high level of dispositional gratitude. These findings lead to the notion that perhaps intrinsic religiosity or even



general religiosity is not influencing gratitude, but rather gratitude may affect feelings of spirituality or intrinsic religiosity.

In support of the opposite directionality for the relationship between intrinsic religiosity, spirituality, and gratitude, it is possible that wellbeing also plays a role in the relationship. It may be the case that in recognising a greater amount of good occurrences in the world, people seek an object for their gratitude. Alternatively, as people have the natural tendency to identify cause-effect relationships, it may be that people look for an explanation for the greater amount of positive occurrences they perceive as a result of attending to positive events in the gratitude exercise (Kelley, 1967). For nonreligious people, this may manifest in the form of prosociality as was found in Emmons and McCullough's (2003) study or other grateful acts directed towards a non-specific cause. For religious and spiritual people, a higher power may be attributed with the occurrence of positive events or may be seen as responsible beyond the proximate cause, thus increasing people's belief in a higher power and motivation to practice their respective religions (Gorsuch & Smith, 1983).

The current study attempts to investigate this hypothesis by exploring the effect a gratitude intervention has on daily spirituality levels and intrinsic religiosity. The aims of this study are not to conclusively establish directionality but rather to explore whether this is an area where religiosity and spirituality can be affected by a nonreligious intervention. The hypotheses within this study are as follows: 1) People within the gratitude intervention group will show greater average levels of daily mood-type gratitude than people within the control group. 2) People within the gratitude intervention group will show greater average levels of daily spirituality than people within the control group. 3) People within the gratitude intervention group will show a greater increase in intrinsic religiosity on average than people within the control group.

## **METHOD**

### **Participants**

Religious or spiritually identifying participants were recruited through online postings within social media, the University of Glasgow School of Psychology online experimental recruitment webpage, and through contact with religious student societies and organisations in Glasgow. Participation was voluntary, and no participants received any form of payment as reimbursement.

First year psychology students received course credits for participating.

Forty-six religious or spiritually identifying people took part in this study, completing the minimum amount of daily responses (7 out of 14 days) and providing full pre-and post-intervention measurements. The mean number of days completed was 11.4. Out of the remaining participants, 80.4% were female and 19.6% were male. The majority of participants were in the 16-24 age range (76.1%), with only 13.0% in the 25-34 age range, 6.5% in the 35-44 age range, and 4.4% in the 45-54 age range. A host of nationalities were represented in this sample: British (46.7%), USA (17.8%), Bulgarian (6.7%), Irish (4.4%), Finnish (4.4%), Malaysian (2.2%), Chinese (2.2%), Hong Kong (2.2%), Spanish (2.2%), Lithuanian (2.2%), Singaporean (2.2%), Slovenian (2.2%), Nepalese (2.2%), Swedish (2.2%) (2.2% failed to specify nationality). Participants were recruited from both the USA and the UK, with 89.1% residing in the UK, and 10.9% residing in the USA. Participants were from a wide variety of religious backgrounds: Christian (69.6%), Islamic (6.5%), Hindu (2.2%), Sikh (2.2%), Jewish (2.2%), Pagan (2.2%), Kabbalah (2.2%), Yumaic (2.2%). A further 10.9% of the sample identified as spiritual.

## **Design**

This study utilised a between-groups design. Participants were randomly divided into a control group ( $N = 22$ ) and a gratitude intervention group ( $N = 24$ ). The independent variable was the type of intervention administered (gratitude vs. control). The dependent variables were the median scores on the Gratitude Adjective Checklist, the daily spiritual adjective measures, the change in Gratitude Questionnaire-6 (GQ-6) scores and the change in subscales of the Intrinsic/Extrinsic – Revised scale (I/E-R) from pre- to post-intervention (McCullough et al., 2002; Gorsuch & McPherson, 1989). Other relevant variables measured were demographic information (age, gender, nationality, country of residence), religious and denominational affiliation, frequency of prayer/meditational practices, and daily wellbeing measures.

## **Measures of Gratitude**

Dispositional gratitude was measured using the well validated GQ-6 (McCullough et al., 2002). Daily mood-type gratitude was measured using the Gratitude Adjective Checklist, which is participants' ratings of the adjectives 'grateful', 'thankful', and 'appreciative' embedded within the daily mood rating list of commonly felt emotions (McCullough et al., 2002). Participants rated

the extent to which they experienced each feeling during the past day on a 5-point scale ranging from 1 = 'never' to 5 = 'a great deal', omitting options that were not meaningful or applicable to them. This is the most common way in which daily mood-type gratitude levels are measured and has been shown to have high levels of internal consistency (e.g. Emmons & McCullough, 2003; Emmons & Kneezel, 2005; Froh et al., 2009). Within the current study, the gratitude adjectives had high internal consistency with a reliability estimate (Cronbach's alpha) of 0.92.

### **Measures of Religiosity and Spirituality**

Intrinsic (I/E-R-I), extrinsic-social (I/E-R-Es), and extrinsic-protection (I/E-R-Ep) religiosity were measured using the I/E-R scale (Gorsuch & McPherson, 1989). This scale is an updated version of Allport and Ross' (1967) original Religious Orientation scale which improved upon the religions to which the scale would be applicable and increased the reliability of the extrinsic subscale by differentiating between social and protectional motivations for religiosity through separate extrinsic subscales. Socially extrinsic religious people take part in religion for the purpose of belonging to a community and forming social relationships within their religious group. Protectional extrinsic religious orientation refers to people's motivation to practice religion for feelings of comfort or safety.

Due to the design and intent of the current study, it was important that the daily measure of spirituality was not time-consuming or noticeable within the daily mood ratings so that participants accurately reported their spirituality levels without being primed to remember a greater amount of instances than would normally be noted. Furthermore, this measure was intended to better measure the responses of participants who identified as spiritual or as part of a religion that did not necessarily follow a singular God since many items on the I/E-R scale were not necessarily applicable to these participants. It was felt that due to the length, detail, and lack of broad applicability of some items of the commonly used Daily Spiritual Experience Scale, this scale would not be satisfactory within the current study (Underwood & Teresi, 2002). The researcher attempted to shorten and simplify many of the constructs within this scale as well as the Spiritual Transcendence Scale into three daily measures of a similar length to the other adjectives in the daily mood rating scale (Piedmont, 1999). The items chosen were the following: 'spiritual', 'connected to a higher power', 'fulfilled spiritually'. Participants rated the extent to which they experienced each during the past day on a 5-point scale ranging from 1 = 'never' to 5

= 'a great deal', omitting options that were not meaningful or applicable to them. These items had high internal consistency with a reliability estimate (Cronbach's alpha) of 0.92.

### **Additional Measures**

To measure participants' typical levels of prayer, meditation, mindfulness, or similar practices, the question 'How often do you engage in prayer, meditation, mindfulness, or similar practices?' was used. Participants rated their engagement on a 5-point scale ranging from 1 = 'never' to 5 = 'a great deal'. Since heightened wellbeing is typically a result of gratitude interventions, it was necessary to test whether a change in religiosity or spirituality was confounded with a change in wellbeing (Emmons & McCullough, 2003). Wellbeing was measured using the adjectives 'happy' and 'joyful' in line with Emmons and McCullough's (2003) study. Participants rated the extent to which they experienced each feeling during the past day on a 5-point scale ranging from 1 = 'never' to 5 = 'a great deal', omitting options that were not meaningful or applicable to them. These items showed high internal consistency with a reliability estimate (Cronbach's alpha) of 0.85.

In order to obscure the full intent of the study, further adjectives were included in the daily mood ratings, balanced for valence (positive/negative) of the affect. These were based on Emmons and McCullough's (2003) study which included 27 additional adjectives in the daily mood ratings section. In order to limit the length of the nightly exercise and mood rating portion of the study, only 16 adjectives were included in addition to the three gratitude-relevant, three spiritual-relevant, and two wellbeing-relevant adjectives. These distractor adjectives were the following: 'distressed', 'ashamed', 'hopeful', 'enthusiastic', 'excited', 'stressed', 'guilty', 'active', 'angry', 'calm', 'upset', 'sad', 'irritable', 'forgiving', 'energetic', 'afraid'. Participants rated the extent to which they experienced each feeling during the past day on a 5-point scale ranging from 1 = 'never' to 5 = 'a great deal', omitting options that were not meaningful or applicable to them.

### **Apparatus/Data Source**

This experiment was largely carried out via the internet. The online survey-hosting website SurveyMonkey was used to administer the information and consent forms, the pre- and post-intervention questionnaires, and the daily exercises and mood ratings. A paper form of the daily exercises and mood questionnaires was also provided to participants who had limited access to

internet across the fourteen days.

## **Procedure**

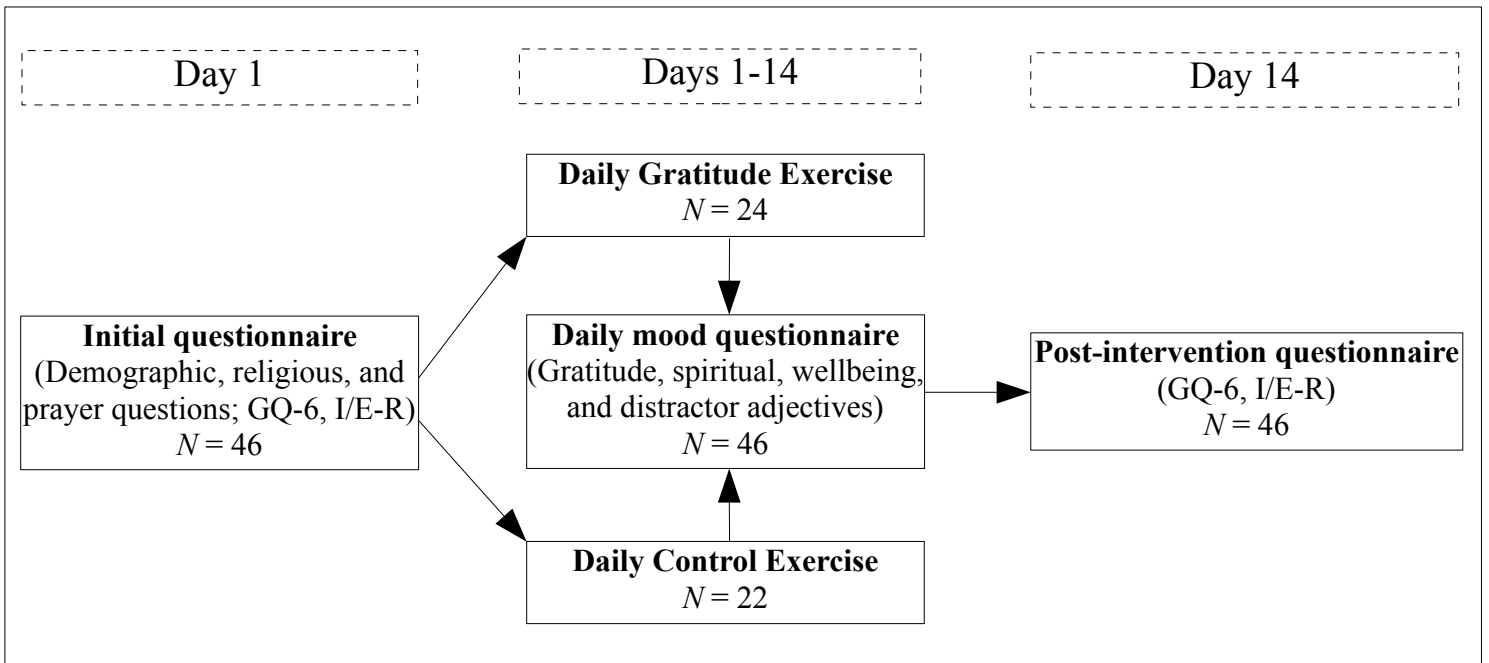
Participants were sent an email informing them of the conditions of participating, what participation would involve, how they would be reminded nightly, and instructions for completing the study. Participants were able to be reminded to complete the nightly exercise and questionnaire by text messages rather than emails by replying to the email with their mobile number. Participants were informed that in order to be eligible for the study, they needed to identify as spiritual or religious and be above the age of 16. Within the instructions for completing the study, participants were assigned a participant number and given links and a password for the questionnaires on SurveyMonkey. Participants within the control group received a link to the control nightly exercise and questionnaire; participants within the intervention group received a link to the gratitude nightly exercise and questionnaire.

To begin the study, participants followed the link for the initial questionnaire, entered the provided password included in the initial email, and began the initial questionnaire. The first page of the questionnaire involved an explanation of the purpose of the research, what participation involved, how long participation would take, and to whom questions or concerns should be addressed. This was followed by detailed assurances made to the participants regarding participants' freedom to omit any questions or completely withdraw from the study with no penalty, the confidentiality of their responses, the ethical nature of the research being carried out, and their opportunity to seek further information about the study upon completion. These assurances were followed by the option to consent to participate in the study or to withdraw oneself from the study. Upon the expression of consent, participants progressed to the next page of the questionnaire, requiring them to enter and confirm their unique participant number. Participants were then asked about their age, gender, nationality with which they identify, current country of residence, religious/spiritual affiliation, denominational affiliation (if applicable), and frequency of engagement in prayer, meditation, mindfulness or similar practices. Following this, participants answered the GQ-6 and the I/E-R scales.

Upon completion of the initial questionnaire, participants were sent a reminder email or text message each night for the following fourteen nights. The reminder emails included the same link provided in the initial email, which directed them to enter their participant number, followed

by either the gratitude exercise or the control exercise, depending on their assigned group. Participants in the gratitude intervention group were given the following instructions: “There are many things in our lives, both large and small, that we might be grateful about. Think back over the past day and list below up to five things in your life that you are grateful or thankful for.” (as devised by Emmons & McCullough, 2003, p. 379). Participants in the control group were given the following instructions: “What were some of the events or circumstances that affected you in the past day? Think back over the past day and list below five events that had an impact on you.” (as devised by Emmons & McCullough, 2003, p. 379). Following their completion of this exercise, all participants received identical daily mood questionnaires randomly ordering the gratitude, spiritual, wellbeing, and distractor items.

After fourteen days from the date of the completion of the initial questionnaire, participants were informed in their reminder email or text message that it was their final night of the study, and the link for the post-intervention questionnaire was included in the email message. If a participant failed to complete the post-intervention questionnaire, they were sent reminder messages for a further three nights. No participant failed to complete the post-intervention questionnaire within this time frame. The post-intervention questionnaire asked for a participant number and included the GQ-6 and I/E-R scales. Participants were asked a final question regarding whether they were a first year psychology student expecting to receive experimental course credits for their participation. Upon completion of the post-intervention questionnaire, participants received a debriefing email summarising in greater detail what the study was investigating, were given the option to receive a copy of the findings upon completion of the study, and were informed again regarding to whom further questions about the study should be addressed. See Figure 1 for a visual representation of the procedure.



**Figure 1: Visual Representation of Procedure**

## RESULTS

Baseline differences in the distribution of demographic variables across the control and intervention groups were tested using a chi-square test. There were no significant differences in the distribution of any of the demographic variables across the control and intervention groups. Nonparametric tests were used due to the ordinal type of responses used in both the daily scales as well as the I/E and GQ-6 scales. The control group and the intervention group also did not differ in terms of participants' frequency of engagement in prayer, meditation, mindfulness or similar practices at baseline. Differences in baseline I/E-R subscale scores and GQ-6 scores between the control group and the intervention group were also not found to be significant. Baseline GQ-6 scores were significantly correlated with baseline I/E-R-I scores (Spearman's  $\rho(46) = 0.32, p = 0.029$ ) but not I/E-R-Es or I/E-R-Ep scores. There were no significant correlations between any of the baseline I/E-R subscales.

**Table 1*****Baseline Medians and Ranges for I/E and GQ-6 Scores***

	<b>Median</b>	<b>Range</b>	<b>Score Range</b>
<b>I/E-I</b>	3.56	3.25	1-5
<b>I/E-Es</b>	2.00	2.67	1-5
<b>I/E-Ep</b>	3.33	4.00	1-5
<b>GQ-6</b>	6.17	3.83	1-7

Median daily gratitude and spiritual scores were calculated excluding scores from the first completed day since this was considered a practice trial. Changes in I/E and GQ-6 scores were calculated by subtracting the pre-intervention score from the post-intervention score. For both scales, since participants were encouraged to omit questions they deemed irrelevant to themselves, scores were divided by the total number of questions answered so that scores remained consistent.

To test the hypothesis that the intervention group will demonstrate higher levels of daily gratitude than the control group, a Mann-Whitney U test was conducted with participants' median daily gratitude scores as the dependent variable and allocated group as the independent variable with the intervention condition and the control condition as the levels of the allocated group variable. There was no significant difference between the median daily gratitude scores of the control group ( $Mdn = 4.0$ ,  $Rng = 4.0$ ) and the intervention group ( $Mdn = 4.0$ ,  $Rng = 3.0$ ),  $U = 217$ ,  $p = 0.28$ ,  $r = 0.16$ . With regards to changes in dispositional gratitude across the two week intervention period, a Mann-Whitney U test was conducted on change in GQ-6 scores between the control and intervention group. No significant difference was detected between the control group ( $Mdn = -0.08$ ,  $Rng = 3.50$ ) and the intervention group ( $Mdn = 0$ ,  $Rng = 2.16$ ),  $U = 313$ ,  $p = 0.28$ ,  $r = 0.16$ . Neither of the measures of gratitude showed evidence of any influence of the gratitude intervention on gratitude levels within the intervention group as compared to the control group.

To test the hypothesis that the intervention group would show higher levels of daily spirituality than the control group, a Mann-Whitney U test was also conducted with participants' median daily spiritual scores as the dependent variable and allocated group as the independent variable. There was no evidence of a significant difference between the median daily spiritual



scores of the control group ( $Mdn = 4.0$ ,  $Rng = 4.0$ ) and the intervention group ( $Mdn = 3.0$ ,  $Rng = 4.0$ ),  $U = 191$ ,  $p = 0.093$ ,  $r = 0.25$ . Mann-Whitney U tests were run using the change in I/E-R-I, I/E-R-Es, and I/E-R-Ep scores as the dependent variable in separate tests with group allocation as the independent variable. No significant differences were found between the control group and the intervention group for any of the changes in I/E subscales (see Table 2). No evidence was found to support any of the hypotheses.

**Table 2**

*Medians and Mann-Whitney U Tests Comparing I/E Scores across Groups*

	<b>Control Median</b>	<b>Control Range</b>	<b>Intervention Median</b>	<b>Intervention Range</b>	<b>Mann-Whitney U Test</b>
<b>I/E-I Change</b>	0	1.73	0	1.25	$U = 249, p = 0.73, r = 0.050$
<b>I/E-Es Change</b>	0	2.97	0	3	$U = 269, p = 0.35, r = 0.14$
<b>I/E-Ep Change</b>	0.17	2.83	0	1.67	$U = 203, p = 0.17, r = 0.20$

Due to the robust nature of the general linear model, factorial ANOVAs were run with daily median gratitude, spirituality, and wellbeing levels, change in I/E subscales and change in GQ-6 scale each as response variables in separate tests. Group, the demographic and prayer frequency variables, and their interactions with group comprised the factors. No significant main effects or interaction effects were found in any of the tests run.

## **DISCUSSION**

Although the correlation between intrinsic religiosity and dispositional gratitude was replicated in this study, there were no further significant results found to support the replication of previous findings and the new hypotheses proposed in this study. Contrary to prediction, the gratitude intervention did not elicit (1) heightened levels of daily mood-type gratitude, (2) heightened levels of daily spirituality, or (3) increases in intrinsic religiosity to a greater extent than the control exercise. The most surprising result was that the gratitude intervention failed to increase daily levels of mood-type gratitude in the intervention group above the levels of the control group. This is in direct contradiction to the findings of Emmons & McCullough (2003) upon whose methods the current study was partially based. In addition, there was no difference

between the intervention and control group with regards to dispositional gratitude. This finding is less surprising due to the fact that scales intending to measure dispositional gratitude are designed to capture the stable trait type of gratitude rather than the affective type, but this measure was included as a secondary measure of gratitude due to its use as a repeated measure (pre- and post-intervention) in other similar studies (e.g. Lambert et al., 2009).

### **Constraining Effects**

It is possible that there was insufficient power to detect small effect sizes due to the low sample size in each of the group comparisons. This may have been exacerbated by the possibility that there was a ceiling effect in the measure of daily mood-type gratitude due to the tendency for spiritual and religious people be higher in dispositional gratitude (McCullough et al., 2002). This is shown in the median daily gratitude scores resting at 4.00 for both the control and intervention group (on a scale of 1-5). These medians contrast with Emmons & McCullough's (2003) previous study that found intervention groups completing identical exercises to have mean daily gratitude scores of 3.26 (Study 2; standardised for comparison purposes). This difference is likely to be due to the exclusion of non-religious and non-spiritual subjects from the current study. Further replications of Emmons & McCullough's (2003) study as well as the additional studies within the Emmons & McCullough (2003) study have also found scores centered around 3.00, but due to differing sample characteristics, time frames, and measurements of mood-type gratitude these may not be directly comparable to the current study's findings (Martinez-Marti, Avia, Hernandez-Lloreda, 2010; Kaplan et al., 2013). It should be noted as well that statistical comparisons between the current study's findings and the findings of the previously mentioned studies would be problematic given the current study's treatment of the daily gratitude data as ordinal as compared to all similar studies' treatment of this data as continuous. Therefore, even though a significant difference between the current study's median daily gratitude scores and the mean daily gratitude scores from other similar studies' findings cannot be established, this does demonstrate that it is possible that there was a ceiling effect restricting the measurement of the full variability of daily gratitude levels within the current study's sample stemming from the fact that religious and spiritual people tend to experience more affective gratitude on a daily basis.

However, it is also possible that affective gratitude itself reaches a ceiling point at which point a person reaps the maximum benefits from heightened levels of gratitude. This idea is in

line with the resistance hypothesis, which states that people high in dispositional gratitude experience high levels of mood-type gratitude regardless of the amount of gratitude-inducing events they experience. Gratitude interventions are ineffective in increasing their already high levels of mood-type gratitude. By this logic, people low in dispositional gratitude benefit the most from a gratitude intervention (McCullough et al., 2004). This hypothesis was supported by McCullough et al. (2004) who found evidence that people who scored higher on scales measuring dispositional gratitude reported higher levels of mood-type gratitude on a daily basis, but their levels of mood-type gratitude were not highly correlated with their reported number of gratitude-inducing events experienced or the number of people to whom they felt grateful each day. With regards to the current study, it is possible that the gratitude intervention was largely ineffective on the majority of participants in the intervention group due to their high levels of dispositional gratitude. This may have also extended beyond the effects of the intervention to the secondary variables hypothesised to be affected by the gratitude intervention. With gratitude levels remaining uninfluenced by the intervention, it is in line with the proposed theoretical basis for the relationship between gratitude, religiosity and spirituality that the religious and spiritual response variables would remain unaffected. It is likely that both a ceiling effect and a resistance effect were present in the responses of participants in the current study, leading to the insignificant results found. These combined effects may have substantially reduced the effect size of the group factor (intervention vs. control), making it difficult for any differences to be apparent without a much larger sample size.

All in all, the combination of the possible ceiling effect and resistance effect within the current study poses problems for future research into this area. Since the ultimate goal of this research area is not to find a difference in the effects of a gratitude intervention on a religious or spiritual population but rather to determine whether gratitude increases religiosity and spirituality in the general population, the lack of significant findings in the current study suggest that this effect may be better researched in samples with low dispositional gratitude and low reported levels of spirituality and religiosity. Practically speaking, it would also be of more use to show that a gratitude intervention increases religiosity or spirituality in those low in religiosity or spirituality. Regardless of the fact this is unlikely to be generalisable to populations higher in religiosity and spirituality, those who would desire to increase their religiosity or spirituality would be likely to already be low in this measure.

## Further Limitations

It is likely that the sample in the current study was more diverse in their backgrounds due to the fact that the study specifically aimed to recruit people from a diverse set of religious and spiritual affiliations for between-group comparison purposes. For this reason, uncontrolled individual differences pertaining to differing backgrounds may have played a larger role in the current study than they would have in other studies with more homogenous samples, such as Emmons & McCullough's (2003) university student sample. This claim would be better addressed by comparing the variability within the current study to the variability in similar studies with less of a focus on recruiting a diverse sample. However, this is problematic due to the previously mentioned treatment of the data as ordinal when all other studies on this topic treated their data as continuous. The variability in the current study is measured using range whereas in similar studies the variability is quantified by standard deviation. As a result, there is no adequate way to directly compare the variability within the current study to the variability within similar studies since the raw data from similar studies is inaccessible and no similar study reports a range. Nonetheless, it is worth considering that a greater amount of individual differences may have made it more difficult to find a significant effect for the gratitude intervention.

Another limitation within the current study was the use of self-report measures for all of the variables involved in the study. This type of measure was necessary within the context of the current study due to the fact that it is difficult to measure items such as spirituality and dimensions of religiosity as well as emotional states in non-self-report measures. Nonetheless, the nature of the measures used makes the study vulnerable to social desirability bias. It is possible that participants inflated reports of gratitude and positive affect because these are desirable attributes. Studies have found religious people, and particularly those high in intrinsic religiosity, to be especially susceptible to social desirability bias in a self-protective manner so that their expressed morality is reported to be in line with their feelings and behaviours (Chung & Monroe, 2003; Burris & Navara, 2002). However, this is difficult to address within research when there are no objective ways of measuring certain variables, such as feelings of spirituality. Research has found correlations between intrinsic religiosity and social desirability measures, but this relationship is confounded by the fact that many of these desirable variables are highly related to the concept of intrinsic religiosity beyond the potential effects of impression

management (Trimble, 1997).

Furthermore, in line with the religion-forgiveness discrepancy in which religious people report a higher likelihood of forgiving than they actually act upon, it is possible that religious people may feel that gratitude is especially socially desirable due to its relevance to religious practices, causing them to report higher levels of gratitude than they actually experience (McCullough & Worthington, 1999). In the most severe manifestation of this possible discrepancy between beliefs and actions, it may be the case that heightened levels of intrinsic religiosity, and possibly heightened levels of spirituality, may increase a person's likelihood to view gratitude as especially socially desirable, causing them to report higher levels of gratitude than they actually felt. In this instance, a religion-gratitude discrepancy could be the sole reason behind the frequent finding of a significant positive correlation between gratitude and intrinsic religiosity as well as gratitude and spirituality – intrinsic religiosity and spirituality do not cause higher levels of gratitude but instead increase the feeling that gratitude is a socially desirable trait, mood, and affect. Further research is needed to determine whether this religion-gratitude discrepancy actually exists or if it particularly affects a certain type of religion or spirituality.

The recruitment methods for this study are also a limitation that must be noted. As with any study seeking volunteers for subjects, there is potential for a sample bias. This is particularly relevant in the current study due to the widespread feelings of sensitivity towards discussing religion and similar subject matter. For this reason, it is possible that the sample was biased towards those confident in their sense of spirituality or religious affiliation. This may have influenced the amount of change seen in the I/E subscales since people secure in their beliefs and opinions about their religion or spirituality may have been less likely to show change across as short of a period as two weeks. Although there is no simple way to surmount this limitation, increased levels of anonymity can be helpful in extending the sample to people less comfortable or secure in their religious affiliation or spirituality. The administration of the questionnaires via the internet was used in the current study in the hope that it would increase the anonymity of participants, making people less insecure about their responses to some of the sensitive religious and spiritual issues addressed in the study.

Despite these limitations and the lack of significant findings within the current study, the issues identified as a result of this study may inform future research into this area. As detailed previously, the current study helped to shed light on the issues of a ceiling and resistance effect

that could be combatted by screening the sample to include only those with average or low levels of dispositional gratitude. Further investigation into confounding individual differences, social desirability effects and a possible religion-gratitude discrepancy are also important topics for future research into this subject area.

### **The Bigger Picture: Positive Psychology and Wellbeing**

In the broader scope of this topic, ideas such as the ones hypothesised in the current study could add substantially to the literature on positive psychology and its relations to spirituality and religion. Within a movement that seeks to investigate phenomena such as gratitude, forgiveness, and meaning in life, it is not surprising that many of these relate to existentialistic, spiritual, or religious perspectives (McCullough et al., 2002; Wnuk & Marcinkowski, 2014; McCullough & Worthington, 1999). If topics within positive psychology are found to increase spirituality or religious interest in nonreligious and nonspiritual individuals, perhaps positive psychology is nothing more than a pathway to a transcendent spiritual state, possibly resembling the concept of self-actualisation at the top of Maslow's (1943) hierarchy of needs. Furthermore, if positive psychology topics are found to be causally related to increased religion or spirituality, it remains possible that the concept of wellbeing, according to those involved in positive psychology, is somehow intertwined with a spiritual or self-transcendent notion. Whether this is an accurate conceptualisation of wellbeing beyond the confines of positive psychology in the broader world and across a range of cultures is a question that remains to be answered.

### **Summary**

Taking all of these considerations into account, the state of this research area remains unclear. Although the findings of the current study were statistically insignificant, there is reason to suspect that this may have been due to methodological constraints in the form of a ceiling effect in the measures and a resistance effect in the characteristics of the sample. Overall, the current study may be useful in informing future research of the constraints and limitations involved in this research area. Although there is no evidence currently that gratitude increases spirituality or religiosity, it is worth considering the common ground these concepts hold and the potential implications a finding such as this could bring about for concepts such as happiness or life satisfaction within positive psychology.

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