



The Association of Prayer Frequency and Maslow's Hierarchy of Needs: A Comparative Study of the USA, India and Turkey

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Accepted: 18 August 2022 / Published online: 5 September 2022

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Abstract

This study explores whether Maslow's hierarchy of needs and Inglehart's values paradigm underlies associations between prayer frequency and happiness. Responses from a comparative analysis of wave six from the World Values Survey for India ($n=4078$), Turkey ($n=1605$) and the USA ($n=2232$) were used to examine associations between prayer frequency and happiness. Prayer frequency interacted with Maslow's model to associate with happiness in India and Turkey. The self-expression variables entirely supplant prayer and are associated with happiness in the USA. The implications are discussed for generating models that impact happiness.

Keywords Prayer · Happiness · The USA · India · Turkey

Introduction

Does Prayer Frequency Associate with Happiness?

This comparative study explores whether prayer frequency interacts with a sequence of human motivational development in associating with happiness. This is an important area of research, given that happiness may help alleviate the increase in mental health disorders and depression observed over the past two decades (see Johnson, 2018; Patel et al., 2018). Engaging often in prayer may allow people to move beyond ruminating on negative life experiences such as unemployment, unsanitary conditions, or lack of quality shelter. The ability to break the cycle of depression resulting from rumination has been reported in specific prayer-related treatments such as Benson and Klipper's (1992) relaxation response. Johnson's (2018) review of the

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relaxation response defined it as the use of prayer to trigger the release of chemicals in the brain that reduce stress. The frequency of using the relaxation response is important, with recommendations for individuals to practice it once or twice daily. Puchalska-Wasył and Zarzycka (2019) posit that the type of prayer is important to a therapeutic outcome. Specifically, that research identifies prayer aimed at communicating with God and for the sake of other people (e.g., outward prayer) as having a positive effect on mental health. Contrastingly, prayer focused on the self (e.g., inward prayer) may lead to further ruminating on adverse life events that inhibit well-being. Could it be the case that Puchalska-Wasył and Zarzycka's concept of "outward prayer" and "inward prayer" parallels societal development? For instance, individuals in developed countries, which heavily value individualism and the maximization of self-interest (e.g., self-actualization), may find it necessary to replace altogether inward prayer that would align most closely with their culture with other means to achieve well-being? This all raises the need to investigate whether the benefits of prayer in strengthening well-being or reducing poor mental health follow a pattern of societal development.

In addition to limiting excessive rumination, prayer may also enhance positive emotion that counteracts the effects of depression and poor mental health. Two separate studies on Muslims and Christians indicate positive mental health benefits can be gleaned from praying (see Saleem et al., 2021; Zarzycka & Krok, 2020). The Zarzycka and Krok study indicated that prayer of thanksgiving among Christian participants correlated positively with well-being, which is unsurprising given that the field of positive psychology has well-established the mental health benefits of practicing gratitude (Seligman et al., 2005). However, other research suggests that associations between prayer and happiness are relatively weak or that the social aspects of religion are more important than prayer frequency in associating with happiness among developed nations. In the USA, Denmark, and the Netherlands, only weak correlations were observed between prayer and happiness and that research concluded that the social aspects of church participation were more associated with happiness than prayer, meditation, or a belief in God (Snoep, 2007).

Comparatively, in a developing nation such as Turkey, Yorulmaz (2016) and Okulicz-Kozaryn (2010) note that poorer, older, and less educated people may benefit more from religion's social aspects, including praying as a group. Based on these assumptions, one might conclude that collectivist countries such as India and Turkey show a stronger relationship between prayer and happiness because collective prayer offers an opportunity for social cohesiveness. Investigating beyond the social aspects of prayer in a developing nation, Ijaz et al. (2017) conducted a study in Pakistan and observed that the frequency of Salah (prayer) in Islam is significantly associated with higher levels of mindfulness and mental health. The Ijaz and colleagues' study suggests that the socialization hypothesis explaining the mental health benefits of prayer may be premature, and the relationship between prayer and happiness is much more nuanced and relates to prayer frequency, at least in developing nations.

It is important to highlight that there is no consensus in the literature concerning prayer frequency serving as a buffer between negative life events such as unemployment and happiness (see Hastings & Roeser, 2020). Hastings and Roeser note that Maltby et al. (1999) found that prayer frequency contributed to

lower depressive symptoms and higher self-esteem. The findings in the Maltby et al. study are supported by the Lyubomirsky et al. (2005) research that indicated people with higher subjective well-being, a term used synonymously with happiness, are less likely to suffer depression if they become unemployed. However, Hastings and Roeser's findings indicated that prayer frequency did not serve as a buffer between unemployment and happiness in the USA. Conversely, Ngamaba and Soni (2018) found that individual religiosity and country-level development contribute to religious groups' happiness, although the study did not concentrate on cross-cultural prayer frequency. One reason that prayer may not have served as a buffer in the Hastings and Roeser study is that Americans may have supplanted other factors in place of prayer owing that serve as buffers when facing negative life events. The theory proposed in this study is that the association between prayer frequency and happiness follows a trajectory of human needs gratification. Put another way, prayer follows a pattern of development that interacts with intermediate human motivational concerns to associate with happiness in developing countries and is replaced by self-expression pursuits in post-industrial nations.

Although Yorulmaz (2016) emphasized belongingness as the key factor for higher happiness levels, the findings in that study conceded that increasing income also plays a role. The Yorulmaz study did not go far enough to examine the interaction of income and prayer frequency combined in associating with happiness. For this study, Maslow's (1943) model offers insights to explain Yorulmaz's initial findings other than relegating the importance of prayer in associating with happiness mainly to the social setting it provides. Maslow's pyramidal model described a sequence of needs achievement. He theorized that people psychologically advance based on decreasing percentages of satisfaction of human needs as follows: physical (e.g., food and water), security (e.g., housing), belongingness (e.g., friendships and marriages), self-esteem (e.g., affluence and acquiring expensive clothes, jewelry, and cars to increase self-confidence), and self-actualization (e.g., the maximization of full human potential).

The theory that prayer frequency may interact with a sequence of human motivational development associated with happiness raises the following inquiries: Does prayer frequency interact more with self-esteem concerns than belongingness in developing countries experiencing rapid economic expansion? Are developing countries that are less well-off economically showing stronger interactions between belongingness and prayer frequency in associating with happiness? In post-industrial economies where larger numbers of the population have satisfied a greater level of human motivational concerns, is prayer frequency no longer associated with happiness? It is theorized here that although prayer may no longer associate with happiness in well-off countries, this is not to suggest that it does not convey mental and physical health benefits. The literature indicates that prayer links with improved health outcomes (see Fingelkurts & Fingelkurts, 2009). The aim of this study is that prayer may be utilized and customized to a greater extent to interact with intermediate motivational pursuits to increase happiness in developing countries, whereas participation in the arts, music and other activities may contribute to greater aggregate well-being in developed countries.

To follow the trajectory of prayer frequency more thoroughly in associating with happiness, it becomes critical to revisit historical data from the Inglehart et al. (2014) World Values Survey. One reason for going back to the prior WVS data is that before the failed coup and devaluation of the currency in 2016, Turkey experienced significant economic expansion, according to data reported by the World Bank (2014). Given that prayer may be interacting with the sequence specified by Maslow's model, the higher incomes in pre-2016 Turkey offer an environment conducive to studying a developing country with a rapidly expanding economy where people may have been shifting to a higher percentage of self-esteem needs. In economically less well-off countries such as India, social needs theoretically interact with prayer frequency to associate with happiness more than income. Conversely, the USA has an advanced post-industrial economy and heavily values individualism and freedom of expression, and for this reason, motivational concerns that represent Maslow's (1943) concept of self-actualization, such as memberships in art, music, or educational organizations, should supplant prayer in associating with happiness.

There exists debate in the literature concerning whether people in developed countries are materially well-off but "spiritually poor." In reviewing the Easterlin et al. (2010) and Kahneman and Deaton (2010) studies, Helminiak (2019) argues that the "abundance of material goods cannot fulfil the needs of the soul" (p. 1459). This conclusion is made because wealth is associated with life satisfaction to a certain extent and then reaches a plateau. To summarize Helminiak's viewpoint, self-actualization parallels the characteristics of "spiritual people," but individuals who are financially secure in developed nations experience negative life events that lead to declines in mental health owing to what is phrased as "spiritual poverty," which contrasts with traditional societies where religiosity and religious routines bring about an effective catharsis for the soul. However, self-actualization is subjective and open to interpretation, as Helminiak envisages. Maslow (1987) states, "The human being is a wanting animal and rarely reaches a state of complete satisfaction except for a short time" (p. 7). A self-actualizer, by Maslow's definition, is an individual maximizing self-interest and human ability. Maslow (1987) wrote that self-actualizers are "simultaneously very spiritual and very pagan and sensual even to the point where sexuality becomes a path to the spiritual and 'religious' (p. 149). It was also observed that self-actualizers could be ruthless owing to 'surgical coldness' and can divorce or rapidly sever friendships, and these individuals are "not free of guilt, anxiety, sadness, self-castigation, internal strife and conflict" (Maslow, 1987, p. 146).

Given that self-actualizers are not perfect people, negative life events such as divorce, stress, and addiction often affect them for various genetic and epigenetic reasons that go beyond spirituality and the scope of this study's investigation. The point of this study is that self-actualizers are continually endeavoring for greater states of psychological development and personal happiness and that self-actualizers who plateau when it comes to the association between wealth and life satisfaction, or between prayer and well-being for that matter, may turn to other avenues to enhance life satisfaction in developed nations (e.g., art, music, poetry, and exercise to name a few). This is not to say that developed countries are somehow "spiritually poor," but rather, the focus on pursuing happiness changes in a different direction, and policy

makers could use this to focus attention where it is most needed to increase well-being and reduce poor mental health. An analysis of the data will show that studies on prayer frequency in associating happiness only scratch the surface of the phenomenon. There exists a discernible pattern for the development of prayer that social scientists could use to anticipate changes in happiness levels.

Toward a Prayer Development Model

The social sciences have established a precedent to anticipate value changes among Western publics using Maslow's model for the past fifty years. Inglehart (1971, 1977) initially used Maslow's needs hierarchy to propose a two-tiered system of value change. His model suggested that first tier needs such as physical and security pursuits represent 'materialist' concerns, whereas the second tier needs such as belongingness, self-esteem, and self-actualization characterize 'post-materialist pursuits'. Materialist type people favor a strong police force or lower taxes to increase safety and financial stability. Post-materialist type individuals want more freedom of speech, higher education, and beautification of the cities. By parity of reasoning, Giordan (2011) posited that prayer interacts with Inglehart's continuum, and as mass publics satisfy human needs, entire societies may shift from 'materialistic prayer' to 'post-materialist prayer' (p. 86).

Giordan states:

Following from what Ronald Inglehart said more than 30 years ago, we can speak of a 'silent revolution' even in the prayer ambit. We are witnessing the shift from prevailing orientation in a materialistic sense to a more and more post-materialist orientation – from the emphasis on physical and economic security toward a growing emphasis on meaning of life, on the sense of belonging, on the need of self-realization, on intellectual and aesthetic gratification. Obviously the worries of materialistic nature, such as physical sustenance and personal security, have not disappeared, even if at the moment exigencies of different nature, more linked to the quality of life, seem to be more important. And praying seems to have a relevant role in building a satisfactory life (pp. 86–87).

The post-materialist dimension identified by Giordan can be disaggregated based on the intermediate and higher-order motivational pursuits that underpin it. Thanks to globalization and economic growth, larger numbers of people worldwide have reached the intermediate order needs threshold to show interest in Giordan's envisaged post-materialist prayer dimension, which is a point when individuals place heavy importance on enhanced freedom of choice and expression and are assumed to be pursuing a combination of needs such as social, self-esteem, and base levels of self-actualization. The expansive scholarship on this topic is that religious groups promote freedom of expression and emotion as well as gratitude to enhance the subjective well-being of individuals (see Fischer et al., 2010; Jung, 2014; Kim-Prieto & Diener, 2009; as cited by Ngamaba & Soni, 2018). Ngamaba and Soni also mention the Inglehart et al. (2008) study

that religion is one factor that enhances individuals' well-being. To reiterate, one needs to subdivide self-actualization into baseline and pinnacle levels of psychological development. The baseline self-actualizers may derive well-being from freedoms offered by religious groups, whereas self-actualizers at higher states of development may start to view traditional religious groups as self-limiting and controlling and switch focus to derive happiness from the pursuit of self-expression in art, music, poetry, and volunteerism to achieve a greater sense of personal freedom.

It is important to mention that Inglehart “gradually attempted to replace Maslow’s ideas” with the concepts that scarcity and socialization drive value change (Inglehart, 1979, 1981; as cited by Van Deth, 1983, p. 64 and summarized by Babula & Muschert, 2021). These hypotheses are outlined as follows:

1. a scarcity hypothesis: an individual’s priorities reflect his socio-economic environment, where the greatest subjective value is placed on those things that are relatively short supply;
2. a socialization hypothesis: one’s basic values reflect the conditions that prevailed during one’s pre-adult years (Van Deth, 1983, p. 64).

Inglehart’s concepts were meant to provide the foundation for a unidimensional model of value change with materialism and post-materialism at opposite ends of the continuum. However, Hino and Imai (2019) argue that development along Inglehart’s model is multidimensional and follows Maslow’s original sequence of needs achievement than the unidimensional model. The Hino and Imai study argued a positive linear relationship between materialism and post-materialism as people show simultaneous interest in the next most pressing needs pursuits. Support for Inglehart’s ideas stems from the point that his theory observes large value shifts due to people having to make one of two choices at the ballot box. Considering the Hino and Imai study, a better approach is to identify that both unidimensional and multidimensional aspects of Inglehart’s model are of use (Babula & Muschert, 2021). Inglehart’s model is useful in anticipating broad value change preferences based on forced decisions. In the case of prayer, one needs to delve deeper and examine Maslovian changes within the post-materialism dimension, which entails exploring interactions between the sequence of Maslow’s human motivational development model and prayer frequency.

There is support in the literature that entire societies advance according to Maslow’s sequence of needs achievement. Hagerty (1999) tested Maslow’s theory across 88 countries and used variables such as daily caloric intake, homicide rates, divorce rates, women’s salaries, and educational enrollment to see if countries generally follow the pattern predicted by Maslow and, by extension, Inglehart. Hagerty found “...the sequence of actual need fulfilment is significantly correlated to Maslow’s hierarchical predictions” (p. 15). Taormina and Gao (2013) conducted psychometric testing on 386 participants in China to assess the expected correlation of needs and the ability of satisfaction levels to associate with the sequential order of need gratification and further found support for Maslow’s paradigm.

Given the literature's support for the sequence of human needs development, this research explores whether there is a sequenced interaction of prayer frequency and human needs that associates with happiness for individuals in developing nations such as Turkey and India and if other factors replace prayer in associating with happiness in post-industrial nations such as the USA. This study will help build models of prayer and human motivational development and advance toolkits for social scientists and public policy makers to customize practices that facilitate prayer where it is most needed to increase individuals' happiness and help curtail the rise of the global mental crisis.

Method

Wave six (2010–2014) of the World Values Survey (WVS) was used to address the objective of this study to explore the interaction of prayer and the satisfaction of human needs in associating with happiness (see Inglehart et al., 2014). The WVS contains items that measure the frequency of prayer, sociodemographic, socioeconomic, and memberships (e.g., art, music, or educational organizations) variables that approximate human needs development, and an item on self-reported happiness to be able to explore the questions raised by this comparative research.

Participants

The participating institutions that conduct the WVS worldwide recruit respondents who are 18 years of age or older. In Turkey, Bahcesehir University and Rasyonal Arastirma completed the fieldwork for the WVS administration. The resulting sample was 1605 individuals, and no one over 86 years of age completed Turkey's WVS. The data from Turkey contained slightly more males (50.7%) than females (49.3%), and most participants were married (68.4%) than unmarried (31.6%).

In India, the Centre for Research in Social Sciences & Education (CERRSE) at Jain University completed the fieldwork for the WVS administration. The resulting sample was 4078 individuals, and no one over 92 years of age completed India's WVS. The data from India contained slightly more males (56.2%) than females (43.8%), and most participants were married (85.5%) than unmarried (14.5%).

In the USA, Knowledge Networks conducted the WVS for the University of Michigan. The resulting sample was 2232 individuals, and no one over 93 years of age completed the USA's WVS. The data from the USA contained slightly more females (51.5%) than males (48.5%), and marginally more participants were married (54.4%) than unmarried (45.6%).

Procedure

In Turkey, a sample was selected using multi-stage full probability sampling that is weighted to be representative of age and education level. Within Turkish households selected for face-to-face interviews, the individual interviewed was determined

using a Kish grid, and the interviews took place from June 30, 2012, until August 25, 2012. In India, a sample was selected using a multi-stage stratified random sampling drawn from the latest electoral rolls of polling stations. The fieldwork dates for India were not reported via the online release notes. The sample for the WVS in the USA was selected from Knowledge Networks online research panel using probability-based sampling that is weighted to be representative of adults. The USA respondents were recruited using an address-based sampling methodology, and the survey was conducted from June 9, 2011, until July 5, 2011.

Prayer and Happiness Measures

The prayer item on the WVS forms part of a religiosity measure and is estimated to be reliable and valid. Hoogeveen et al. (2022) state that the WVS religiosity measure has high face validity and has been used in a number of other cross-cultural studies (see Stavrova, 2015, Lindeman et al., 2015, and Lun & Bond, 2013). The Hoogeveen et al. study also reported that a Bayesian reliability analysis showed good internal consistency for the WVS religiosity measure. Similar observations were made concerning the happiness measure. Deiner et al. (2012) described the robustness of the happiness measure for the WVS:

During the past 30 years, the World Values Survey have asked 400,000 people how happy they are. Across scores of countries, 98% of the people answered the question. This is an exceptionally response rate, which suggests that people understand the subjective well-being questions and can readily answer them (p. 500).

Prayer frequency was assessed using the question, “Apart from weddings and funerals, how often do you pray?” Original response categories were coded 1 = several times per day, 2 = once a day, 3 = several times each week, 4 = only when attending religious services, 5 = only on special holy days, 6 = once a year, 7 = less often, and 8 = never, practically never. This item was recoded as 0 = never pray, 1 = occasionally pray, and 2 = pray often. The WVS asked a general question on happiness, “Taken all things together, would you say you are” and the responses were coded 1 = very happy, 2 = rather happy, 3 = not very happy, and 4 = not at all happy. This item was recoded 0 = not happy and 1 = happy.

Demographic and Membership Variables

On the WVS, age was recorded as a numerical variable. The categorical variable gender was coded 1 = male and 2 = female. The participant’s marital status was originally coded as 1 = married, 2 = living together as married, 3 = divorced, 4 = separated, 5 = widowed, and 6 = single. Marital status was recoded as 1 = married and 2 = unmarried or living together as married. The WVS question on children asked, “Have you had any children?” and was coded 0 = no children, 1 = one child, 2 = two children, 3 = three children, 4 = four children, 5 = five children, 6 = six children,

7 = seven children, and 8 = eight children. This item was recoded as 0 = no children, and 1 = has at least one child or more.

Pertaining to employment status, the WVS asked, “Are you employed now or not” and the responses were initially coded 1 = full-time employee, 2 = part-time employee, 3 = self-employed, 4 = retired/pensioned, 5 = housewife otherwise not employed, 6 = student, 7 = unemployed, 8 = other. The categories 1 through 3 were coded as 1 = employed and 4 through 8 as 0 = unemployed or not in employment. Income was assessed using the question, “On this card is an income scale on which 1 indicates the lowest income group and 10 the highest income group in your country. We would like to know in what group your household is. Please, specify the appropriate number, counting all wages, salaries, pensions, and other incomes that come in.” The income variable was recoded as 1 = low income, 2 = medium income, and 3 = high income. The WVS education question is: “What is the highest educational level you have attained?” The education variable was originally assessed as 1 = no formal education, 2 = incomplete primary school, 3 = complete primary school, 4 = incomplete secondary school: technical/vocational type, 5 = complete secondary school: technical/vocational type, 6 = incomplete secondary school: university-preparatory type, 7 = complete secondary: university-preparatory type, 8 = some university-level education, without a degree, and 9 = university-level education, with a degree. This variable was recoded as 1 = high school or less, 2 = some college, 3 = bachelor’s degree or higher.

On the WVS, a question asked, “For each of the following, indicate how important it is in your life” with responses for “family” and “friends.” This variable was originally coded as 1 = very important, 2 = rather important, 3 = not very important, and 4 = not at all important. The friends and family variables were recoded as 0 = not important and 1 = important. A question was also asked concerning church or religious memberships, sport or recreational organization, and art, music, or educational organization memberships: “Now I am going to read off a list of voluntary organizations. For each organization, could you tell me whether you are an active member, an inactive member or not a member of that type of organization?” The original responses were coded as 2 = active member, 1 = inactive member, and 0 = don’t belong. A decision was made to compare individuals who are active members (recoded as 1) versus those who do not belong (recoded as 0), and inactive memberships were excluded as it is indeterminable if inactive members intend to reactivate or disengage entirely from voluntary organizations.

Data Analysis Plan

The categorical nature of most of the variables on the WVS limits analysis to using χ^2 to examine the relationship between demographic variables and whether participants self-report being happy. Four logistic regression models were formed where prayer was entered as the categorical explanatory variable, and self-reported happiness scores were entered as the outcome variable.

A decision was made to add confounding variables based on the sequence of needs achievements identified by Maslow. Demographic variables such as age and gender

were added to the first model to control for confounding variables. Variables that measure the need to belong, such as marriage status, membership in church-going organizations, and the importance of friends and family, were added to the second logistic regression model. The third model included items that satisfy self-esteem concerns, such as employment status and income. Tertiary education levels were added to the fourth model as a baseline measure for self-actualization. In addition, a follow-up logistic regression model was performed that included all the variables in model four and voluntary memberships in sports, recreational, art, music, or educational organizations to measure underlying self-actualization pursuits in associating with happiness.

Ethical Considerations

The ethics committee approved this study at Khalifa University (Project # H20-010) as part of a larger funded project (FSU 2019–06), and the WVS is approved by the Institute for Comparative Survey research institutional review board. As part of the procedure for administering the WVS, the interviewers read a script to respondents prior to obtaining oral consent in the countries under investigation in this study.

Results

Demographic Characteristics of Participants' Frequency of Prayer

Table 1 shows the number of people who often pray in the USA (1452), India (2765), and Turkey (1286).

In the USA, crosstabulations showed that participants who were significantly more likely to pray tended to be female, older, less educated, married, parents, and unemployed. In India, respondents who were significantly more likely to pray were male, married, employed, and had moderate income. In Turkey, participants who were significantly more likely to pray were older, married, parents, and those with less education.

Prayer Development and Happiness

The demographic and socioeconomic variables interact with prayer frequency to associate with happiness in India and Turkey, respectively. In India, the odds ratio for the second logistic regression model in Table 2 shows a detectable additive effect between intermediate order variables measuring the need to belong and prayer frequency in associating with happiness.

In Turkey, the odds ratio in the third logistic regression model in Table 3 shows that the effect of income interacting with prayer frequency in associating with happiness is stronger than belongingness and mirrors the interaction with confounding demographic variables in the first model.

The addition of tertiary education in the fourth logistic regression model in Table 3 did not have an additive effect in interacting with prayer frequency in

Table 1 World values survey (WVS) demographic characteristics of participants who pray often among selected countries (percentages)

| | USA | | | India | | | Turkey | | |
|-----------------------------|---------------------|------------------------------------|-----------------------|---------------------|------------------------------------|-----------------------|---------------------|------------------------------------|-----------------------|
| | Pray Often, No. (%) | Total Sample, No. (%) ^a | <i>P</i> ^b | Pray often, No. (%) | Total Sample, No. (%) ^a | <i>P</i> ^b | Pray often, No. (%) | Total Sample, No. (%) ^a | <i>P</i> ^b |
| Total number, no. (%) | 1452 (66.3) | 2232 (100) | | 2765 (69.1) | 4078 (100) | | 1286 (81.6) | 1605 (100) | |
| Gender, no. (%) | | | .000 | | | .009 | | | .297 |
| Male | 639 (44.0) | 1083 (48.5) | | 1520 (55.0) | 2290 (56.2) | | 644 (50.1) | 814 (50.7) | |
| Female | 813 (56.0) | 1150 (51.5) | | 1243 (45.0) | 1785 (43.8) | | 642 (49.9) | 791 (49.3) | |
| Age, y, (mean) | 48.07 | 46.37 | .000 | 41.47 | 41.22 | .237 | 40.34 | 40.80 | .007 |
| Education level, no. (%) | | | .024 | | | .056 | | | .000 |
| Bachelor's degree or higher | 505 (34.8) | 806 (36.1) | | 266 (9.8) | 430 (10.6) | | 134 (10.4) | 178 (11.1) | |
| Some college | 284 (19.6) | 441 (19.7) | | 76 (2.8) | 111 (2.7) | | 31 (2.4) | 51 (3.2) | |
| High school or less | 663 (45.7) | 986 (44.2) | | 2417 (87.6) | 3530 (86.7) | | 1122 (87.2) | 1376 (85.7) | |
| Marital status, no. (%) | | | .000 | | | .000 | | | .000 |
| Married | 846 (58.3) | 1213 (54.4) | | 2406 (87.0) | 3486 (85.5) | | 906 (70.5) | 1099 (68.4) | |
| Unmarried | 606 (41.7) | 1019 (45.6) | | 359 (13.0) | 592 (14.5) | | 380(29.5) | 506 (31.6) | |

Table 1 (continued)

| | USA | | India | | Turkey | |
|----------------------------|---------------------|------------------------------------|---------------------|------------------------------------|---------------------|------------------------------------|
| | Pray Often, No. (%) | Total Sample, No. (%) ^a | Pray often, No. (%) | Total Sample, No. (%) ^a | Pray often, No. (%) | Total Sample, No. (%) ^a |
| Children, no. (%) | | .000 | | .148 | | .000 |
| Yes | 1043 (72.1) | 1498 (67.6) | 2387 (92.1) | 3474 (91.5) | 904 (70.2) | 1091 (68.0) |
| No | 403 (27.9) | 719 (32.4) | 206 (7.9) | 322 (8.5) | 383 (29.8) | 514 (32.0) |
| Employment Status, no. (%) | | .000 | | .013 | | .568 |
| Employed | 778 (54.1) | 1247 (56.9) | 1097 (40.0) | 1608 (39.7) | 523 (40.6) | 653 (40.7) |
| Unemployed | 659 (45.9) | 943(43.1) | 1648 (60.0) | 2446 (60.3) | 764 (59.4) | 952 (59.3) |
| Household income, no. (%) | | .220 | | .000 | | .491 |
| Low | 334 (23.5) | 496 (22.9) | 838 (30.7) | 1347 (33.4) | 177 (14.0) | 218 (13.9) |
| Medium | 976 (68.5) | 1490 (68.7) | 1643 (60.2) | 2323 (57.6) | 883 (69.8) | 1083 (69.1) |
| High | 114 (8.0) | 182 (8.4) | 247 (9.1) | 362 (9.0) | 205 (16.2) | 266 (17.0) |

^aActual % reported for total sample, valid % for all other values. ^bSignificance for the χ^2 test for categorical variables examining significant differences between participants who pray and those who do not pray, ANOVA was used for the continuous variable (age)

Table 2 Logistic regression analysis associating happiness with prayer frequency, demographic, and belongingness variables

| Taking all things together, would you say that you are: "happy?" | Participants reporting that they often pray, No (%) | | Participants who pray occasionally, No (%) | | Participants who never pray, No (%) | | Model 1, exp b ^a (95% CI) | | Model 2, exp b ^b (95% CI) | |
|--|---|------------------|--|------------------|-------------------------------------|------------------|--------------------------------------|------|--------------------------------------|------|
| | No (%) | Sig ^a | No (%) | Sig ^a | No (%) | Sig ^a | exp b ^a (95% CI) | Sig | exp b ^b (95% CI) | Sig |
| USA | 1311 (66.5) | .240 | 335 (17.0) | .175 | 324 (16.4) | .175 | 1.29 (.89, 1.85) | .175 | .75 (.50, 1.12) | .163 |
| India | 2450 (70.1) | .000 | 904 (25.9) | .000 | 142 (4.1) | .000 | 2.14 (1.46, 3.13) | .000 | 2.22 (1.50, 3.27) | .000 |
| Turkey | 1096 (82.9) | .000 | 186 (14.1) | .003 | 40 (3.0) | .003 | 2.53 (1.38, 4.63) | .003 | 2.36 (1.28, 4.36) | .006 |

^aSignificance level for χ^2 that explored the association between prayer and happiness. ^bThe predicted change in the odds ratio, CI = confidence interval (rounded up to two decimal places). Model 1 was adjusted for age and gender. Model 2 was adjusted for age, gender, marital status, church membership, and the importance of family and friends

Table 3 Logistic Regression Analysis Associating Happiness with Prayer Frequency, Social, Self-esteem, and Self-actualization Variables

| Taking all things together, would you say that you are: "happy." | Participants reporting that they often pray, No (%) | Participants who pray occasionally, No (%) | Participants who never pray, No (%) | Sig ^a | Model 3 exp b ^b (95% CI) | Sig | Model 4 exp b ^b (95% CI) | Sig |
|--|---|--|-------------------------------------|------------------|-------------------------------------|------|-------------------------------------|------|
| USA | 1311 (66.5) | 335 (17.0) | 324 (16.4) | .240 | .84 (.56, 1.26) | .392 | .83 (.55, 1.25) | .365 |
| India | 2450 (70.1) | 904 (25.9) | 142 (4.1) | .000 | 2.14 (1.44, 3.18) | .000 | 2.16 (1.45, 3.22) | .000 |
| Turkey | 1096 (82.9) | 186 (14.1) | 40 (3.0) | .000 | 2.53 (1.35, 4.75) | .004 | 2.53 (1.34, 4.80) | .004 |

^aSignificance level for χ^2 that explored the association between prayer and happiness. ^bThe predicted change in the odds ratio, CI = confidence interval (rounded up to two decimal places). Model 3 was adjusted for age, gender, marital status, church membership, the importance of family and friends, employment status, and income. Model 4 was adjusted for age, gender, marital status, church membership, the importance of family and friends, employment status, income, and tertiary education

associating with happiness for India and Turkey. Tables 2 and 3 show that prayer frequency does not significantly associate with happiness in the USA. Tertiary education levels as a basic form of self-actualization did not significantly interact with prayer frequency to associate with happiness in the USA.

A follow-up analysis showed that memberships in organizations such as art, music, or education significantly associated with happiness in the USA (adjusted odds ratio (AOR)=2.97, 95% CI=1.46, 6.07). Memberships in sports or recreational organizations are associated with happiness in the USA with a detectably smaller size effect when compared with organizations that reflect self-expression (AOR=2.10, 95% CI=1.15, 3.82). Memberships in sports, recreational, art, music, or educational organizations did not significantly associate with happiness in India and Turkey.

Discussion

The variables associated with happiness follow a pattern consistent with the development of prayer frequency through interaction with the sequence of human needs gratification. A useful study that helps gain a perspective on this phenomenon stems from Kahneman and Deaton's (2010) research. That study observed that emotional well-being increased until the point when people earn approximately \$75,000 per year. Like income, prayer frequency appears to be significantly associated with happiness through a sequence of interactions with variables along Maslow's needs hierarchy up to the point of self-esteem concerns. In particular, the interactions are prevalent with belongingness in India and income in Turkey. The results from India and Turkey also show that significant interactions are observed between needs pursuits and prayer frequency in associating with happiness even when controlling for confounding variables.

In light of the findings in this study, previous research such as Okulicz-Kozaryn (2010) places too much emphasis on social cohesiveness to explain the relationship between forms of religiosity such as prayer and happiness. This is not to discount the role that belongingness plays in post-materialist prayer development, and it is evidently important in industrializing countries such as India. Suchday et al. (2018) conducted a survey on young people in Mumbai and found that "Identification with being Indian correlated with collectivism ($r=0.23$), religiosity ($r = 0.29$), spirituality/wellness ($r = 0.16$), and karma ($r = 0.23$) indicating strong association between self-perceived Indianness and traditional values" (p. 146). However, one might be tempted to assume that as a large democracy, India should be further along the post-material dimension compared with less democratic nations. Alexander et al. (2011) used Freedom House's popular rights ratings and the World Bank's rule of law scales and found, "India, for its part, scores poor in the rule of law (0.46), rendering its 75 percent score in popular rights largely ineffective" (p. 279). The Alexander et al. study indicates that "Unlawfulness and democracy create 'ineffective democracies'" (p. 278). The rise of global economic growth and trade might have brought elements of India's population to the cusp of post-materialism, but the sample in this study indicates

that India has not fully developed to the upper levels of the post-materialist prayer dimension. Conversely, pre-2016 Turkey, which had a stronger rule of law, witnessed advances to a stronger interaction between income and prayer frequency in associating with happiness, albeit fell short of developing to the stage where self-expression variables associated with happiness.

The results from India and Turkey contrast starkly with the USA, where prayer frequency does not significantly associate with happiness before or after controlling for confounding variables. In the USA, memberships in sports, arts, music, and educational organizations are significantly associated with happiness, although they do not do so in India and Turkey. The relationship between sports and happiness has been well documented in the literature, as exercise increases mood-enhancing neurotransmitters such as serotonin (Young, 2007). Surprisingly, organizations associated with free expression showed detectably larger odds ratios associated with happiness in the USA than memberships in sports or recreational organizations. Giordan (2011) had predicted the development of prayer to the point of post-materialism, where it would become intertwined with self-expression in producing a “satisfactory life,” but the pattern does not follow that direct route in associating with happiness. A disaggregation of the post-materialist dimension shows that prayer frequency interacts with intermediate human needs to associate with happiness but is supplanted by self-expression at higher levels of self-actualization development in post-industrial nations.

The USA’s shift to the pursuit of self-expression is associated with happiness, following a pattern observed in the literature. Babula (2007) analyzed survey results from 400 university students and compared the findings to Inglehart’s earlier research. Babula states, “Inglehart’s (1977) analysis of survey data from 1972 indicates that among the 18 to 28 aged cohort, 24% were materialist and 17% were post-materialist types” (p. 321). Babula’s results reported that the USA population had shifted considerably to post-materialism, with 51% selecting values associated with this political values dimension, and concluded that larger numbers of Americans were at the upper end of the post-materialist dimension. These data were collected before the global 2008 economic collapse, but there is an indication that people do not regress to lower order needs during difficult financial times. Maslow (1987) suggested that people obtain a sense of “functional autonomy” to deprivation of needs once gratified.

All of the focus in this discussion has concentrated on observing the patterns of needs development and prayer frequency in associating with happiness, but it is important to frame the impact of being able to model this phenomenon as we approach the next wave of the WVS. The Hossain et al. (2020) findings indicate that a psychiatric epidemic is occurring alongside the COVID-19 pandemic, which may exacerbate increases in mental ill-health globally. Suldo and Shaffer (2008) identify a dual-factor model of mental health with well-being and mental illness at opposite ends of the spectrum. The scholarship on prayer, especially for immigrants facing threatening stress or past trauma, suggests that it can serve as a coping mechanism (see Ikafa et al., 2021 for a review of the literature). In developing countries, prayer may similarly act as a coping strategy for the wider community to mitigate trauma and stress associated with poverty.

The emerging literature does show that meditation as one form of prayer offers protective mental health benefits. The O'Connor et al. (2012) study reported that people who were other-focused instead of self-focused during meditation had lower depressive symptoms, maladaptive guilt, anxiety, and empathetic distress. Fredrickson et al. (2008) conducted a research study on loving-kindness meditation (LKM) on depression and overall life satisfaction. Fredrickson et al. cite Salzberg (1995) to define LKM as “a technique to show feelings of warmth and caring for the self and others” (p. 3). The findings showed that LKM induced greater positive emotions, producing greater life satisfaction and lower depressive symptoms. The ability to create models examining prayer and intermediate human needs development while using self-expression variables to do the same in post-industrial countries may offer social scientists and policy makers a unique opportunity. Such customized models might facilitate better alignment between the populations' post-materialist prayer and human needs development and public policy initiatives to combat the global rise of mental illness.

Limitations and Future Research

There will always be some level of selection bias in the WVS because the surveys rely on self-reports. The respondents' recollections of events can change over time, and respondents in this survey data might have overrepresented or unrepresented the frequency of prayer, happiness levels, or both. LaPiere (1934) also indicated that behavior does not always reflect attitudes reported in a survey. While participants in this study have claimed to pray frequently, there is no way in hindsight to evaluate the accuracy of whether the participants' actual behavior corresponded with praying often. For this reason, further survey research on prayer associating with happiness should be confirmed by experimentation.

The findings in this study were also limited by the WVS asking a very general albeit easy to answer question items concerning prayer frequency and happiness. Positive psychology has identified two distinct forms of happiness (i.e., hedonistic versus eudaimonic well-being). The debate as to whether hedonistic or eudaimonic happiness produces greater mental health benefits continues, and further research is needed to examine prayer frequency and disaggregated forms of happiness. It might be assumed that people often pray to achieve a greater intrinsic meaning associated with God or faith, but it could easily be that people pray to receive some self-interested goal or to achieve pleasure in the afterlife. This distinction in prayer may also impact whether one derives greater hedonistic or eudaimonic happiness, which may benefit or detract from mental health.

One area for further research is whether development exists beyond self-actualization, where further motivational pursuits associate with happiness. Babula (2013) revised Maslow's pyramidal model and Inglehart's model based on it using a hyperbolic paradigm to describe human motivational development. The Babula model agreed with Maslow's initial sequence of human motivational development and the parallel development of self-interested forms of altruism, identified as endocentric altruism. Maslow's later transpersonal psychology is when a self-actualizer “might

metaphysically recognize that others share their meaning” and seek to reduce others’ suffering to reduce their own (Babula, 2013, p. 33). However, as the motivation behind transpersonal psychology is self-interested, Babula suggests that the concept folds back into the original notion of self-actualization. Babula’s revision of the hierarchy of needs hypothesizes that at self-actualization, people can turn to the negation of a built-up store of self-interest and progress to an even higher purely altruistic motivational state identified as exocentric altruism. Babula builds on the work of Smith (1976 [1759]) to define exocentric altruism as a point of cognitive development to empathize with others and use a third imagined station to help others from stations outside the self and that of the other person.

Babula further developed a political values measure that involved altruistic values such as redistributing wealth to the poor and giving away free medications to developing countries, and factor analysis confirmed a three-factor solution consistent with an exocentric dimension extending beyond post-materialism. The WVS rankings for political values and question items have not included the exocentric dimension or tested it over time. It is very probable that in advanced post-industrial countries, exocentric altruistic pursuits similar to activities that promote free expression might associate with happiness instead of prayer. Babula proposed that self-actualizers would simultaneously pursue exocentric altruism, and thus, there is sufficient scope to examine whether engagement with volunteer organizations, charities, and other activities directly associate with happiness along with an interaction of self-expression variables.

Funding The author disclosed receipt of the following financial support for this manuscript: This work was supported by Khalifa University’s Faculty Start-Up funds [project number: FSU 2019-06].

Declarations

Conflict of interest The author declares that they have no conflict of interest.

Ethical Approval The dataset is available online from World Values Survey database. The WVS is approved by Institute for Comparative Survey research institutional review board.

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