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SHORT TITLE: Religion and Health

Religion and Health: The application of a cognitive-behavioural framework.

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ABSTRACT

The empirical examination of the relationship between religion and health has often lacked theoretical direction. The present aim was to examine the relationship between dimensions of religiosity and health within the context of James and Wells' (2003) cognitive-behavioural framework of religion. A community sample of 177 UK adults completed measures of religious orientation, religious coping, and prayer activity alongside the SF-36 Health Survey. Consistent with the cognitive-behavioural framework of religion, intrinsic religiosity and meditative prayer scores accounted for unique variance in both physical and mental health scores over a number of other religious measures. These findings suggest the potential usefulness and importance of a cognitive behavioural framework to understand the relationship between religion and health.

The idea that religion is beneficial to health is not a new one. For a long time researchers have been interested in the relationship between religion and health. Religion is thought to significantly influence a variety of health outcomes including heart disease, cancer, stroke, and health related behaviours such as smoking, drinking and drug use (for a review see Koenig, McCullough, & Larson, 2000).

Recent research confirms this. For example, Dedert et al. (2004) using the Duke University Religion Index found that religiosity may have a protective effect on the physiological effects of stress among women with fibromyalgia. Benjamins (2004) found that more frequent religious attendance is associated with fewer functional limitations, whereas higher levels of salience are associated with more limitations. Van Ness, Kasl, and Jones (2003) found that lack of religiousness was associated with poor breast cancer survival among women. Koenig, George, and Titus (2004) found that religious activities, attitudes, and spiritual experiences are prevalent in older hospitalized patients and are associated with greater social support and to some extent, better physical health.

Presently there is little theoretical guidance to such work. When religiosity is found to help individuals in their health, religiosity is often viewed as a general protective factor, a result of the ill-health, or simply helps health by its presence rather than its absence, rather than examined within a firm psychological context. Therefore, what is absent from this area of research is a clear theoretical context in which religious measures are clearly linked to psychological theory. It will be the main purpose of this paper to introduce a cognitive-behavioural framework to the examination of the relationship between religion and health. However, before such a framework is introduced, it is necessary to introduce two models of religious measurement that are useful in the religion and health literature; religious orientation and religious coping.

First is the research that concentrates on religious orientation and health. There are well-established findings that an intrinsic orientation towards religion (where religion is fundamental and deeply personal to the individual) is usually associated with better health, whilst an extrinsic orientation towards religion (where the emphasis lies on religion being a social communal activity) is usually associated with poorer health (Beit-Hallahmi & Argyle, 1997; Koenig, George, & Titus, 2004; Wulff, 1997). However, theorists have suggested there is little psychological theory surrounding these findings (Gorsuch, 1988; Koenig, George, & Titus, 2004; Wulff, 1997).

Attempts to provide a greater theoretical understanding of the role of religion has been provided by the theory of *religious coping* processes (Pargament, 1990, 1996, 1997; Pargament, et al, 1992; Pargament & Park, 1995). Within religious coping theory, religion is, in part, acting as a coping strategy. Pargament (1990, 1997) suggests that a religious coping model might better explain the relationship between religiosity and health. He argues that such a theoretical model would address the complex and continuous process by which religion interlocks with an individual's life and allows them to deal with stresses in life. Pargament (1997) uses and extends coping theory by arguing that religion may enter the coping process in a number of ways; with critical events, appraisals of situations, coping activities and outcomes, to which religion may be integral or external to these occurrences. Pargament and his colleagues have developed a number of measures of religious coping, ranging from those that concentrate on problem areas of religious coping (Pargament et al., 1998a), to identification of a number of dimensions of specific coping processes (Pargament, 1996; Pargament et al., 1992). However, Pargament, Smith, Koenig, and Perez (1998b) suggest a two-factor model of religious coping in response to stressful life events; *positive* and *negative* religious coping. This model of coping encompasses a number of positive and negative religious coping styles including religious forgiveness, collaborative religious

coping, spiritual connection, and religious purification. Pargament et al. (1998b) reports that positive religious coping is associated with better health, while negative religious coping is associated with poorer health.

There is an opportunity for the development of empirical research in religiosity and mental health by the application of a cognitive-behavioural framework (James & Wells, 2003). James and Wells propose two basic mechanisms, in the form of hypotheses that underlie the relationships between dimensions of religiosity and mental health that promote positive mental health: (a) a mental model that provides guidance for appraising life events, and (b) religious behaviours that provide self-regulation of cognitive, specifically thinking, processes.

The first cognitive-behaviour hypothesis is based on theoretical perspectives of Peterson and Roy (1985) and McGuire (1981) who suggest religiosity provides an interpretative framework that allows the individual to make sense of their existence and contributes to an individual's self-perception, their own importance within the world, and the meaning and purpose behind life events (James & Wells, 2003). James and Wells suggest that the distinction between intrinsic and extrinsic religiosity, and their corresponding relationship with well-being, is illustrated by this model. Therefore, within this model, intrinsic religiosity, which is characterised by these positive beliefs of self-perception and purpose, will be associated with better mental health, and extrinsic religiosity, where religion is not characterised by such beliefs, will be associated with poorer mental health.

The second cognitive-behavioural mechanism is religious behaviours that contribute to self-regulation, or meta-cognitions, by reducing self-focus, worry and stress, and therefore, lead to better subjective well-being. This hypothesis is based on the findings that some religious beliefs may increase, or be the result of attention to oneself, and that this is related to emotional disorder, obsessiveness, guilt, and worry (Salkoovskis, 1985; Wells, 1997;

Steketee, Quay, & White, 1991; Wells & Hackman, 1993). James and Wells have suggested that meditative prayer may enable individuals to reduce self-focus, to engage mentally with stress, and therefore, lower worry and rumination. Research notes that meditation can aid mental health by way of the individual spending time in quiet reflection, being allowed to spend time to understand a context to the world and deal effectively with daily occurrences (Monk-Turner, 2003; Bitner, Hillman, Victor, & Walsh, 2003). Further, James, and Wells point to the findings of Poloma and Gallup (1991) and Poloma and Pendleton (1991) who found that meditative prayer was associated with better well-being. The latter speculation may be important to the health context, as McCaffrey, Eisenberg, Legedza, Davis, and Phillips (2004) estimate that one third of adults used prayer for health concerns.

James and Wells' proposed cognitive-behavioural framework would suggest that across a number of religious variables, it would be intrinsic religiosity and meditative prayer that would best predict health. However, at present there is no empirical study that directly tests this model. Attention to the cognitive-behavioural framework and consideration of a number of elements within religiosity will provide a sounder theoretical context to understand why religion may help people, and as such, begin to describe the processes which aid health. Thus, such an examination will enable researchers and health professionals to have a better understanding of the possible psychological processes that may underlie improved health as it is related to religion.

Recently Maltby, Lewis and Day (2007) recently used the cognitive-behavioural framework to help explain the relationship between different dimensions of prayer and subjective well-being. This study found that meditative prayer, frequency of prayer and prayer experience all accounted for unique variance in predicting better subjective well-being, and these findings could be understood within a cognitive-behavioural framework. However, this previous work does not directly test some of the hypotheses arising from the James and

Wells' proposed cognitive-behavioural framework by including measures of intrinsic religiosity. Moreover, there is the opportunity to extend Maltby, et al's findings by examining the relationship between religious measures and indices of physical and mental health well-being rather than just well-being. The aim of the present study was to examine the relationship between a number of measures of religiosity and health, with the hypothesis that intrinsic religiosity and meditative prayer scores will account for unique variance in health scores.

METHOD

Sample

The sample comprised 177 United Kingdom adults (73 male and 100 female, and 4 did not identify gender) aged from 18 to 75 years, with a mean age of 48.99 years ($SD=14.2$ years). Respondents were sampled from a number of Anglican Churches in the United Kingdom. Of the sample, 164 of the respondents reported to be white. In terms of employment, 74 of the respondents were employed, 46 were unemployed, 35 were retired, and 22 were in full-time education.

Questionnaires

All respondents were administered the following measures.

1. The 'Age-Universal' I-E Scale – 12 (Gorsuch & Venable, 1983; Maltby, 1999). This scale is a derived, revised, and amended measure of the Religious Orientation Scale (Allport & Ross, 1967). Since the inception of the Religious Orientation Scale, a number of suggestions have been made to improve psychometric confidence in the

measurement of the intrinsic and extrinsic religious constructs. Suggestions have included item changes, changes in response format, and scoring methods (Gorsuch & McPherson, 1989; Gorsuch & Venable, 1983; Leong & Zachar, 1990; Maltby & Lewis, 1996). In the main, consideration of such changes suggest that the intrinsic orientation towards religion is a constant feature of religious orientation, while an extrinsic orientation towards religion represents two separate factors; extrinsic-social and extrinsic personal. The present scale administered is therefore a 12-item version of the 'Age-Universal' Religious Orientation Scale (Gorsuch & Venable, 1983), which adopts items suggested by Gorsuch and McPherson (1989), and implements changes to the response format (Maltby & Lewis, 1996). Maltby (1999) reports among 3300 USA, English and Irish adults, psychometric confidence in combining these suggestions to measure intrinsic orientation towards religion (6-items), an extrinsic-personal orientation towards religion (3-items), and an extrinsic social orientation towards religion (3-items).

2. The brief RCOPE (Pargamen, 1997). This religious coping measure is a 14-item indicator of a 2-factor model of positive and negative religious coping. This is a four-item scale and responses are scored on a four-point response format. Respondents are asked to identify how they respond to stress in accordance with a number of statements thought to reflect positive and negative coping. Positive coping items include; 'I looked for a stronger connection with God' [item 1], 'Focused on religion to stop worrying about my problems' [item 7], and negative religious coping items include 'Wondered whether God had abandoned me' [item 8], 'Questioned the power of God' [item 14].

3. A measure of prayer activity (Poloma & Pendleton, 1991). The scale was developed among 560 USA adults and contains 7 subscales. Each item is prefixed with a statement that refers to a frequency of a particular prayer behaviour or experience.

The 7 subscales are:

- **Colloquial Prayer (6 items):** Talking to God in own words, asking for guidance, blessings, forgiveness, lessening world suffering, and telling God how much he is loved. Responses for this scale are scored on a 4-point response format, with available responses being (1) Never, (2) Rarely, (3) Sometimes, and (4) Often.
- **Petitional Prayer (2 items):** Asking for material things for oneself and for friends or relatives. Responses for this scale are scored on a 4-point response format, with available responses being (1) Never, (2) Rarely, (3) Sometimes, and (4) Often.
- **Ritual Prayer (2 items):** Frequency of reading a book of prayer and reciting prayers that the individual has memorised. Responses for this scale are scored on a 4-point response format, with available responses being (1) Never, (2) Rarely, (3) Sometimes, and (4) Often.
- **Meditative Prayer (5 items):** 'Feeling' God, thinking quietly about God, spending time worshipping God, reflecting on the Bible, and listening to God for his answer to prayers. Responses for this scale are scored on a 4-point response format, with available responses being (1) Never, (2) Rarely, (3) Sometimes, and (4) Often.
- **Prayer Experience (5 items):** Being inspired or led by God, receiving a deeper insight into spiritual or biblical truth, receiving a definitive answer to a prayer request, feeling a strong presence of God and experiencing a deep sense of peace and well-being. Responses for this scale are scored on a 5-point response format,

with available responses being (1) Never, (2) Once or Twice, (3) Monthly, (4) Weekly, and (5) Daily.

- Frequency of Prayer (1 item): “On average how often do you pray?”. Responses for this item are scored on a 7-point response format, with available responses being (1) Never, (2) Less than monthly, (3) At least monthly, (4) At least weekly, (5) Several times a week, (6) Once a day, to (7) Several times a day.
- Pray with others (1 item): “On average how often do you meet others to pray?”. Responses for this item are scored on a 5-point response format, with available responses being (1) Never, (2) Occasionally, (3) At least monthly, (4) At least weekly, and (5) At least once a day.

The only psychometric data reported previously on the scales is that for the multi-item measures (Poloma & Pendleton, 1991). Internal reliability statistics were satisfactory for all the subscales of prayer, exceeding the criteria of .7 offered by Kline (1986) for scales with few items (Colloquial Prayer, $\alpha=.85$; Petitional Prayer, $\alpha=.78$; Ritual Prayer, $\alpha=.59$; Meditative Prayer, $\alpha=.81$; and Prayer experience, $\alpha=.87$).

4. The SF-36 Health Survey: Version 2 (Ware, Kosinski, & Dewey, 1994; 2000). This scale is a well-known and well-used multipurpose short-form measure of general health status. The SF-36 includes 36 items that are scored to produce eight multi-item scales measuring physical functioning, role limitations due to physical health problems, bodily pain, general health perceptions, vitality (energy/fatigue), social functioning, role limitations due to emotional problems, and mental health (psychological distress and well-being). In addition to the eight-scale SF-36 profile, summary physical and mental health scales can be scored (Ware, 2000).

RESULTS

Table 1 shows the rotated solution for the 8 subscales of the SF-36 using principal components analysis with oblimin rotations of the extracted factors, with the number of components determined by the Scree Test. The findings of a Physical Health factor (Factor 1 with Physical Role, Bodily Pain, Physical Functioning and General Health loading above .40 on this component) and a Mental Health factor (Factor 2 with Mental Health, Emotional Role, Vitality and Social Functioning loading above .40 on this component) are consistent with the reported psychometric properties of the scale. Consequently factor scores were computed for both these components; therefore a Physical Health Factor Score and a Mental Health Factor Score was computed.

- Insert Table 1 about here -

Table 2 shows the internal reliability statistic for all the subscales. The Cronbach's alpha coefficients for the multi-item scales are above .7 (Kline, 1986), suggesting that all the multi-item scales demonstrate adequate reliability among the present sample.

- Insert Table 2 about here -

Table 2 also shows mean scores and standard deviations for all the scales by sex. Females were found to score significantly higher than males on extrinsic-personal religiosity and negative religious coping. Males were found to score significantly higher than females on frequency of prayer and prayer with others.

- Insert Table 3 about here -

Table 3 demonstrates the Pearson product-moment correlation coefficients between all the variables. A number of significant positive correlations occur between a number of religiosity measures. In addition, a number of the religious measures share a significant positive association with both physical and mental health.

Due to the correlations and the inter-correlations between aspects of religiosity, and that a number of religious measures were related to both better physical and mental health factor scores, two multiple regression were performed. Physical and Mental Health factor scores were used as the dependent variable and all of the religious prayer measures were used as independent variables. The regression statistic (R) was significantly different from zero for Physical Health factor scores ($F_{(12,164)}=5.49, p < .01$) and Mental Health factor scores ($F_{(12,164)}=3.91, p < .01$).

- Insert Table 4 and 5 about here -

Tables 4 and 5 shows the full results for an unstandardised multiple regression. Included in this table is the unstandardized regression coefficient (B), standard error of the unstandardized regression coefficient ($SE B$), standardized regression coefficients (β), R , R^2 and adjusted R^2 . Among the present sample, intrinsic religiosity, frequency of meditative prayer and prayer experience account for unique variance in scores on the Physical Health factor score, and intrinsic religiosity and frequency of meditative prayer account for unique variance in scores on the Mental Health factor score.

DISCUSSION

The aim of the present study was to examine the relationship between religion and health using James and Wells' (2003) cognitive behavioural framework. The results of the multiple regression suggest intrinsic religiosity, frequency of meditative prayer, and prayer experience scores account for unique variance in Physical Health scores, and intrinsic religiosity and frequency of meditative prayer scores account for unique variance in Mental Health scores.

In terms of the main aim of the study, these findings are consistent with the cognitive-behavioural framework and a-priori predictions, that is, those religious individuals who have a strong cognitive structure around religion (intrinsic religiosity) and for whom religious

individuals who through their prayer, feel and think quietly about God in quiet reflection (meditative prayer) are likely to report better physical and mental health. This finding fits in well within the James and Wells' (2003) cognitive-behavioural framework set out for this suggesting these aspects of religiosity provide a basis for guiding appraisals of life events (intrinsic religiosity) and self-regulation of thinking processes (meditative prayer).

However, the findings from the Physical Health factor score multiple regression show that *prayer experience* also predicts unique variance in physical health. However, this particular variables is consistent with the cognitive behavioural framework model. Poloma and Pendleton's (1991) measurement of prayer experience contains items that reflect the frequency with which prayer leads to inspiring thoughts, provides answers to questions, and deeper insight to life. Therefore, within Poloma and Pendleton's model, prayer experience would seem to reflect James and Wells' (2003) first mechanism that suggests religiosity provides an interpretative framework that allows the individual to make sense of their existence and contributes to an individual's self-perception.

Together the present findings suggest strong empirical support for a James and Wells' cognitive behavioural framework, and should present an exciting and dramatic shift in the religion and health literature. Researchers should not only begin to pay attention in their findings to possible explanations within such a framework, but should begin to employ multi-dimensional measures of religiosity that reflect cognitive structures (intrinsic religiosity, prayer experience) and behavioural practices (meditative prayer), rather than one dimensional measures of religiosity. As such James and Wells' framework provides a crucial basis for future religion and health research and, given its consideration in the present study against the theories of religious orientation and religious coping, it is too important to ignore.

Future research should begin to apply such a model to applied settings. Religion has shown to be useful to understanding remission in a number of health contexts, and given that

the present findings suggest the importance of religion in health in a large community sample, aged from 18 to 75 years, researchers, health professionals, and practitioners should have some confidence in applying these ideas in applied settings.

In summary, the present findings suggest that a cognitive-behavioural framework of religiosity can be used to understand higher scores in physical and mental health. Therefore, the present study provides a reliable and valid model that may aid health practitioners to understand why religion may be crucial to better health.

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TABLES

Table 1

Principal Components Analysis with Oblimin Rotation of the SF36 subscales.

	Component	
	1	2
Physical Role	.905	-.095
Bodily Pain	.767	.198
Physical Functioning	.718	-.167
General Health	.686	.264
Mental Health	.135	.858
Emotional Role	.139	.802
Vitality	.395	.584
Social Functioning	-.131	.460

Table 2

Mean (standard deviation) scores by sex and Cronbach's alpha coefficient for all the multi-item scales.

Scale	(α)	Males		Females		<i>t</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Physical Health Factor Score	N/A	-.09	1.1	.04	.97	-.82
Mental Health Factor Score	N/A	.02	.76	-.05	1.2	.42
Intrinsic religiosity	.87	15.51	3.8	15.39	3.6	.20
Extrinsic-personal religiosity	.74	5.05	1.9	5.71	1.9	-2.20*
Extrinsic-social religiosity	.72	4.30	1.5	4.36	1.8	-.22
Positive religious coping	.91	18.48	5.0	18.42	4.8	.08
Negative religious coping	.85	8.23	1.2	10.08	3.3	-4.39*
Colloquial prayer	.78	20.69	3.8	20.302	4.1	.62
Petitional prayer	.71	4.64	1.6	4.54	1.5	.43
Ritual prayer	.75	5.84	2.0	5.29	1.8	1.85
Meditative prayer	.72	15.70	4.0	15.01	4.6	1.02
Frequency of prayer	N/A	4.71	1.0	4.37	1.1	2.14*
Prayer with others	N/A	3.56	1.4	3.03	1.4	2.51*
Prayer experience	.73	15.05	7.3	13.96	6.0	1.08

* $p < .05$; **, $p < .01$

Table 3

Pearson moment correlations coefficients between all the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Physical Health Factor Score	-	.23**	.42**	-.17*	.02	.01	-.17*	.24**	.01	.14	.38**	.16*	.17*	.30**
Mental Health Factor Score		-	.38**	-.08	-.07	.25**	-.20*	.34**	.23**	.33**	.39**	.22**	.27**	.24**
Intrinsic religiosity			-	-.05	.14	.44**	-.27**	.60**	.15	.31**	.56**	.42**	.35**	.65**
Extrinsic-personal religiosity				-	.31**	.19*	.06	.01	.04	-.13	-.05	-.01	-.08	.01
Extrinsic-social religiosity					-	.05	-.02	-.08	-.19*	-.01	.03	.03	.01	.11
Positive religious coping						-	-.01	.55**	.38**	.44**	.47**	.53**	.44**	.52**
Negative religious coping							-	-.34**	.22**	-.10	-.31**	-.39**	-.14	-.19*
Colloquial prayer								-	.40**	.46**	.63**	.58**	.41**	.56**
Petitional prayer									-	.33**	.27**	.24**	.29**	.29**
Ritual prayer										-	.47**	.39**	.69**	.44**
Meditative prayer											-	.60**	.45**	.52**
Frequency of prayer												-	.45**	.41**
Prayer with others													-	.44**
Prayer experience														-

* $p < .05$; **; $p < .01$

Table 4

Regression analysis for Physical health factor scores with all the religious variables used as predictor variables.

Variables	Mental Health		
	<i>B</i>	<i>SE B</i>	β
Intrinsic religiosity	.07	.03	.26*
Extrinsic-personal religiosity	-.05	.04	-.11
Extrinsic-social religiosity	-.04	.05	-.08
Positive religious coping	-.04	.02	-.17
Negative religious coping	.03	.03	.08
Colloquial prayer	.02	.03	.06
Petitional prayer	-.11	.07	-.16
Ritual prayer	-.01	.06	-.02
Meditative prayer	.06	.03	.25*
Frequency of prayer	-.16	.11	-.17
Prayer with others	-.09	.08	-.12
Prayer experience	.07	.02	.37**

R = .59, R² = .35, Adj R² = .28

* $p < .05$; **; $p < .01$

Table 5

Regression analysis for Mental health factor scores with all the religious variables used as predictor variables.

Variables	Mental Health		
	<i>B</i>	<i>SE B</i>	β
Intrinsic religiosity	.09	.04	.32*
Extrinsic-personal religiosity	-.03	.05	-.05
Extrinsic-social religiosity	-.05	.06	-.08
Positive religious coping	.03	.02	.13
Negative religious coping	-.04	.04	-.11
Colloquial prayer	-.05	.03	-.18
Petitional prayer	.12	.07	.16
Ritual prayer	.10	.06	.18
Meditative prayer	.07	.03	.29*
Frequency of prayer	-.12	.12	-.12
Prayer with others	-.11	.09	-.14
Prayer experience	-.01	.03	-.06

R = .52, R² = .27, Adj R² = .20

* $p < .05$; **; $p < .01$