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Measuring Intrinsic Religiosity: scales for use in mental health studies in China – a research report

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While Hoge Intrinsic Religiosity Scale and the Duke University Religion Index have gained popularity in the field of religion and mental health, it remains unknown whether these scales are optimal measures of religiosity in the Chinese culture. This study is to provide some evidence to support the use of the Chinese versions of Hoge Intrinsic Religiosity Scale and the Duke University Religion Index. The data were from a community-based sample of 1039 Chinese women, 18–34 years old, in rural China. Reliability tests were performed on the two religiosity scales. Internal consistency analysis showed excellent correlation coefficients for most of the items. In addition, factor analysis produced two factors for the Hoge Intrinsic Religiosity Scale, a result consistent with previous findings in the Western, predominantly Christian cultures and societies. Moreover, our findings showed statistically significant correlations between the two religiosity scales and mental health outcomes, even though the strength of correlation between the Hoge Intrinsic Religiosity Scale and mental health outcomes appeared to be stronger. In sum, this study suggests that both the Hoge Intrinsic Religiosity Scale and the Duke University Religion Index should be appropriate instruments for detecting and measuring religiosity in the Chinese context.

Keywords: Hoge Intrinsic Religiosity Scale; Duke University Religion Index; mental health

Recent research has shown a rapid resurgence of religion in China. National surveys from 2001 to 2007, for instance, have revealed that within a short period of six years there has been a large decline in the percentage of Chinese who claim to have no religion (Stark & Liu, 2011). As a result of this religious revival, the influence of religion has increased in all major societal domains within China (Chan, 2005). Indeed, this is particularly true of China's mental health area, where religion has assumed an increasingly important role (Liu, 2011; Zhang & Liu, 2012). Nevertheless, despite the increasing interest in religion and the growing body of literature, the relationship between religion and mental health in the Chinese context has been understudied. As will be discussed below, this is due largely to the fact that prior research has been built on the Western tradition that lacks culture-specific measures that can be readily applied to non-Western, non-Christian societies (Liu, 2011). The goal of this study is to assess two popular measures of religiosity within the

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Chinese context: the Hoge Intrinsic Religiosity Scale (Hoge IR) and the Duke University Religion Index (DUREL).

A large body of empirical research on religion and mental health has been based on the conceptualisation and assessment of religiosity (for a comprehensive review, see Francis, 2007). In particular, the Allport-Ross Intrinsic-Extrinsic scales remain one of the most influential measures of religiosity (Koenig, King, & Carson, 2012). The scales, which contained a total of 20 items, were developed by Allport and Ross (1967) to measure two forms of religiosity: intrinsic religiosity and extrinsic religiosity. Individuals with extrinsic religious orientation tend to use religion for their own purposes (e.g., to obtain security and solace, sociability, status, and self-justification). By contrast, individuals with intrinsic religious orientations tend to see faith as a supreme value in its own right (Allport, 1966).

Although the Allport-Ross Intrinsic-Extrinsic scales have provided a useful tool for studying religiosity and its influences on mental health, the scales have been criticised for conceptual diffuseness, questionable validity, and limited applicability (Batson & Schoenrade, 1991; Donahue, 1985; Hunt & King, 1971; Kirkpatrick & Hood, 1990). For instance, Batson and Ventis (1982) argued that the Allport-Ross scales failed to take into account the quest orientation, which is conceptualised as a dimension of religiosity that embraces characteristics of complexity, doubt, tentativeness, and honesty in facing existential questions. In addition, some items of the Allport-Ross scales also failed to pass the general test of item simplicity and clarity (see Francis, 2007). Finally, the use of Allport-Ross Intrinsic-Extrinsic scales was limited to the institutional Christianity (Maltby & Lewis, 1996).

In view of the concerns about the Allport-Ross Intrinsic-Extrinsic scales, Hoge (1972) developed and validated a new version of the scale focusing on the intrinsic dimension. The 10-item Hoge IR was originally derived from the Allport-Ross scales, taking items from the original scales that factored most closely together. In his original study, Hoge found a strong correlation between the Hoge IR Scale scores and ministers' judgements ($r = 0.585$). In a second study, the scale was administered to 85 ministers representing 18 Christian denominations and two Jewish groups. The ministers were asked to predict the response they felt an intrinsically religious person would make to each item. A total predicted score of 50 would indicate perfect scale validity. The mean score predicted by ministers was 46.5 (*SD* 5.1). The scale was also strongly correlated with Allport's original intrinsic subscale (0.86) and Feagin's Intrinsic Scale (0.87). When the 10-item scale was administered to 458 patients in the Duke Hospital Study, it demonstrated acceptable internal reliability (Cronbach's alpha 0.83) and predicted a faster speed of remission in 87 depressed patients (Koenig, George, & Peterson, 1998). While the Hoge IR remains conceptually associated with the motivational aspect and the intrinsic/extrinsic religious orientation scheme of Allport and Ross (1967), the Hoge IR has two significant advantages: (1) it is closer to the lived reality of religiosity which often functions within a tension between intrinsic and extrinsic orientations on the daily basis; and (2) it tends to overcome the limitation common to other religiosity measures that are specific to the Christian tradition (Bellu & Fiume, 2004).

Despite the wide popularity of the Hoge IR Scale, the DUREL has been developed to present a more comprehensive, brief, non-offensive, and low burden measure of religiosity that may be easily included in large cross-sectional and longitudinal studies of mental health (Koenig & Bussing, 2010; Koenig, Meador, & Parkerson, 1997). In addition to the three IR items (taken from the Hoge IR Scale) that focus on assessing the degree of personal religious commitment or motivation, the DUREL includes two other dimensions of religiosity: organisational religious activity (ORA) and non-organisational religious

activity (NORA). ORA measures frequency of religious attendance or frequency of participation in group-related religious activities. NORA assesses frequency of private religious activities such as prayer and scripture study. Nevertheless, both the Hoge IR and the DUREL are limited to assessing religiosity within a monotheistic belief system. Thus, adaptations are needed if these scales are to be used for research on religion and mental health in China, India, and other polytheistic cultures and societies.

Methods

Subjects

Participants were included in this study if they were women, ages 18–34, and lived in the rural villages of Xinle, Hebei Province, China. Participants were asked to complete a self-administered questionnaire in February 2010. Prior to the study participation, a consent form was read and signed by each of the participants. Cluster sampling procedures with probability proportional to size were applied to recruit 1200 participants from 10 randomly sampled villages of Xinle. The participants were divided into two groups: depressed and non-depressed. The depressed group consisted of participants with a CES-D score higher than 20. The rest of the participants formed the non-depressed group. Response rate was 86.6%.

Instruments

Hoge Intrinsic Religiosity Scale

The Hoge IR contains 10 statements about religious belief or experience (Hoge, 1972). In order to adapt the Hoge IR for Chinese religions, two modifications were necessary: (1) "God" was replaced by "god(s), Buddha(s), Bodhisattvas, ancestral spirits, deities or ghosts"; and (2) "Bible" was replaced by "religious texts."

Duke University Religion Index

The psychometric properties of the DUREL have been examined in previous studies, showing high reliability and validity in the West (Koenig et al., 1998; Storch, Roberti, et al. 2004; Storch, Strawser, & Storch, 2004). It consists of items that capture three dimensions of religious involvement: ORA, NORA, and IR. The first two items (ORA and NORA) were obtained from large National Institutes of Health supported community and clinical studies conducted in North Carolina. The other three items from the Hoge IR based on their loading on the intrinsic factor, correlation with the total score, and relationship with health outcomes (Koenig & Bussing, 2010). This three-item subscale was combined with the two items that assess ORA and NORA to form the final five-item index. Like Hoge IR, the items of DUREL were adapted for the Chinese context.

Suicidal Ideation

The Beck's Scale for Suicide Ideation (SSI) measures the presence and intensity of specific attitudes, behaviours, and plans to commit suicide (Beck, Kovacs, & Weissman, 1979). The Chinese version of SSI has been validated for non-psychiatric adolescents and young adults in rural China (Zhang & Brown, 2007). Nineteen items assess psychometric characteristics such as "wish to die", "desire to make an active or passive suicide

attempt", "duration and frequency of ideation", "sense of control over making an attempt", "number of deterrents", and "amount of actual preparation for a contemplated attempt". Each of these individual items is rated on an ascending scale, with 0 indicating non-ideation and 2 indicating strong ideation. The total score of the summed items ranges from 0 to 38.

Depression

The Center for Epidemiologic Studies-Depression Scale (CES-D) is a self-report scale for assessing depression levels in the general population (Radloff, 1977). Respondents were asked to report how often (from 0 to 7) during a general week they felt sad, lonely, restless, bothered, or depressed. The Chinese version of CES-D has been validated and shown to have good reliability and validity (Lin, 1989; Zhang & Norvilitis, 2002; Zhang et al., 2003).

Life Satisfaction Scale

Life satisfaction (L-S) is assessed by a five-point Likert scale. Respondents were asked "In general, how satisfied are you with your life as a whole these days? Would you say you are very satisfied (5), somewhat satisfied (4), so-so (3), somewhat dissatisfied (2), or very dissatisfied (1)?" It is a standard practice in previous literature to focus on this single global measure of life satisfaction in the absence of measures of domain-specific life satisfaction (Ellison & Gay, 1990).

State-Trait Anxiety Inventory (STAI)

The STAI was originally conceptualised as an instrument for studying adult anxiety (Spielberger, Gorssuch, Lushene, Vagg, & Jacobs, 1983). It is a psychological inventory based on a 4-point Likert scale that differentiates anxiety from depression. Higher scores indicate higher levels of anxiety. This is a 20-item self-report assessment device that consists of separate measures of state and trait anxiety. State anxiety reflects a transitory emotional state or condition. In contrast, trait anxiety indicates relatively stable individual differences in anxiety proneness and a general tendency to respond with anxiety to perceived threats in the surroundings. As the STAI has been adapted in more than 30 languages for cross-cultural research and clinical practice (Sesti, 2000), its Chinese version has been shown to have sufficient validity and reliability for studying anxiety among the Chinese populations (Shek, 1988, 1993).

Translation and back-translation procedures were performed on all of the study measures by bilingual scholars. To ensure the precise Chinese translation of the original meaning of the measures, native English-speaking scholars were consulted to resolve discrepancies that were detected during the translation and back-translation procedures.

Statistical analysis

Data are analysed using the latest version of Statistical Analysis Software (SAS 9.2). Descriptive statistics are computed to examine the distribution of the data. Reliabilities of Hoge IR and DUREL are examined from the internal consistency, computation of Cronbach's coefficient alphas (Cronbach, 1951), and factor analysis. The Hoge IR and DUREL are also closely examined by computing their correlations with SSI, CES-D, STAI, and L-S.

Table 1. Descriptive statistics.

Variable names	N	Mean	SD	Range
Age	1032	25.88	4.65	18–34
Marital status	1033	0.68	0.47	0–1
Youth league/party	1033	0.46	0.50	0–1
Education level	1016	2.58	0.78	1–5
Number of friends	915	4.86	2.79	0–10
Negative life events	1033	1.27	1.89	0–7
Social support	1032	45.22	7.10	0–57
ORA (first item of DUREL)	1026	0.31	0.80	0–5
NORA (second item of DUREL)	1026	1.25	0.81	0–5
3-item DUREL (3–5 items of DUREL)	1009	10.03	2.82	0–12
Hoge IR	1032	36.07	7.41	0–46
Depression	1033	27.29	8.75	0–74
Anxiety	1033	39.90	6.68	0–63
Life satisfaction	1030	3.66	0.79	1–5
Suicide ideation	977	0.75	1.11	0–8

Results

General description of the data

Table 1 summarises our initial descriptive analyses of the data sample from the rural Chinese villages. Age ranges from 18 to 34, and the average age of the sample is around 26. Nearly 70% of these rural young women are currently in the wedlock. Almost half of the sample self-claims themselves as members of Chinese Youth League or Chinese Communist Party. Education levels are generally low, with the mean level being somewhere between the middle school education and high school education. On average, every young Chinese woman has five friends. At least one negative life event has recently occurred. Levels of social support are substantial.

Reliability of the scales

Table 2 displays the mean, standard deviation of each item and total score, r value between each items and the Hoge IR. All of the items are significantly correlated with the total score ($p < 0.001$). The Cronbach's coefficient alpha is 0.72 and the standardised Cronbach's coefficient alpha is 0.83.

Table 2 also shows the mean, standard deviation of each item and total score, r value between each items and the three-item DUREL. All of the items are highly correlated with the three-item DUREL total score ($p < 0.001$). The Cronbach's coefficient alpha is 0.84 and the standardised Cronbach's coefficient alpha is 0.90.

In addition, we check for the correlation between the DUREL items and the 10 Hoge IR items. DUREL and Hoge IR Scales are highly correlated with one another ($r = 0.80$, $p < 0.001$). The Cronbach's coefficient alpha is 0.73 and the standardised Cronbach's coefficient alpha was 0.89. Moreover, we find that DUREL and Hoge IR each are positively correlated with private religious practices (NORA) and frequency of religious attendance (ORA). These correlations all are statistically significant ($p < 0.001$).

We also conduct a common factor analysis of the Hoge IR to extract the factors in the data sample. The criterion value for item inclusion is a loading of 0.60. Our factor analyses produce two factors. There are no items that load on more than one factor. The results

Table 2. Hoge IR and DUREL item scores and correlation with total score.

Variable names	Mean	Std Dev	r between items & total score	Cronbach alpha
Hoge1 My faith involves all of my life	4.27	1.06	0.65	0.70
Hoge2 In my life, I experience the presence of the Divine (i.e., God)	4.24	1.15	0.54	0.70
Hoge3 Although I am a religious person, I refuse to let religious considerations influence my everyday affairs	3.12	1.64	0.28	0.73
Hoge4 Nothing is as important to me as serving God as best as I know how	4.52	0.98	0.64	0.70
Hoge5 My faith sometimes restricts my actions	4.25	1.18	0.65	0.69
Hoge6 My religious beliefs are what really lie behind my whole approach to life	4.47	1.05	0.76	0.69
Hoge7 I try hard to carry my religion over into all my other dealings in life	4.37	1.13	0.74	0.69
Hoge8 One should seek God's guidance when making every important decision	4.35	1.09	0.68	0.69
Hoge9 Although I believe in religion, I feel there are many more important things in life	3.22	1.71	0.26	0.73
Hoge10 It does not matter so much what I believe as long as I lead a moral life	4.03	1.36	0.44	0.71
HOGE Total Score	26.83	6.55	–	0.70
DUREL Item 3 In my life, I experience the presence of the Divine (i.e., God)	4.23	1.15	0.74	0.83
DUREL Item 4 My religious beliefs are what really lie behind my whole approach to life	4.44	1.08	0.88	0.79
DUREL Item 5 I try hard to carry my religion over into all my other dealings in life	4.35	1.15	0.89	0.78
DUREL Total Score	13.03	2.82	–	0.78

indicate that item 3, item 9, and item 10 are extrinsic religiosity, while the other items are intrinsic religiosity. This result seems consistent with prior research in the West (Hoge, 1972; Koenig & Bussing, 2010).

Correlations between Hoge IR, DUREL, and mental health outcomes

Finally, four scales are used as criteria against the Hoge IR and DUREL. They include: suicide ideation, depression, anxiety, and life satisfaction. Table 1 shows the mean scores of these scales. As predicted, the data sample show low-to-modest correlations between the total scores for Hoge IR, DUREL, and the mental health outcomes (see Table 3).

Discussion

The goal of this study was to test the reliability of the Hoge IR and DUREL and examine their correlations with mental health outcomes in a non-Western, non-Christian sample. In this study, we modified the original Hoge IR and DUREL within the Chinese context, using a community-based sample of rural Chinese young women, 18–34 years old. We believe these modifications are necessary and appropriate because Chinese religiosity is situated in a polytheistic culture and unified under one universal theme: to achieve health,

Table 3. Correlations between Hoge IR, DUREL, and mental health outcomes.

Variable names	Suicide ideation	Depression	Anxiety	Life satisfaction
Hoge IR	−0.22***	−0.17***	−0.13***	0.16***
DUREL (3–5)	−0.17***	−0.16***	−0.12***	0.11***
ORA	0.04	0.02	0.01	−0.02
NORA	0.00	0.03	0.03	−0.03

Notes: $*p < 0.05$, $**p < 0.01$, $***p < 0.001$.
IR = intrinsic religiosity.
ORA = organizational religious activity.
NORA = non-organizational religious activity.
DUREL = Duke University Religion Index.

high status, and good luck (Overmyer, 1986). Despite many different forms and expressions of Chinese religiousness, "behind the superficial variety there is order of some sort" (Freedman, 1974, p. 20). This holistic view applies not only to orthodox Buddhism, Confucianism, and Taoism, but also to Chinese folk religion and magic (Freedman, 1974).

Regarding the Hoge IR's internal consistency, items 3, 9, and 10 stand out as less fitted to the scale. Item 3 asks respondents if they refuse to let religious considerations influence their own everyday affairs. Item 9 asks if the individual feels there are many more important things in life than his or her religious beliefs. Item 10 asks respondents if they agree that what they believe is not as important as living a moral life. All three of these items are scored in reverse and reflect extrinsic religiosity. Since the other seven items on the scale are all responded to in the positive (i.e., higher scores indicated greater intrinsic religiosity), only these three items have responses where higher scores indicate lower intrinsic religiosity. For this reason alone, we would expect these items to load largely on their own factor.

What deserve particular attention are the correlations between Hoge IR/DUREL and the mental health outcomes. While there has been a long-standing debate whether religion has a positive association with good mental health, our results seem consistent with prior literature suggesting that religiousness/spirituality matters but the effect sizes are modest (as in Western samples, given the complexity of the relationships and the lack of precision in measurement of both religious involvement and mental health) (Ellison, Boardman, Williams, & Jackson, 2001; Liu, 2011; Liu, Koenig, & Wei, 2012; Liu, Schieman, & Jang, 2011). In addition, compared with DUREL, it seems that Hoge IR displays slightly stronger correlation with the mental health outcomes. The larger number of items on the Hoge IR, all focused on religious motivation, provides greater sensitivity in detecting relationships with mental health, so would probably be a preferred measure if there is enough space in the questionnaire to include 10 items. Of course, this only measures one dimension of religiosity, unlike the DUREL that assesses three dimensions, and taps into public and private religious activities.

A large body of previous studies conducted in the Western, primarily Christian societies indicates that collective participation in rituals activities benefit mental health (Ellison et al., 2001). However, we find from our study that ORA was not correlated with mental health outcomes. This finding seems consistent with prior research showing that the participatory dimension of Chinese religiousness is unrelated to mental and social health (Liu, 2009, 2010; Liu & Mencken, 2010; Liu et al., 2011, 2012). There are several

plausible explanations. First, regular participation in group-related religious activities is not a requirement in the Chinese context (Iannaccone, 1995; Stark & Finke, 2000). Often individual adherents of Chinese religions visit temples only during special occasions such as holidays or when specific needs and desires arise (Overmyer, 1986). As a matter of fact, the mean score of frequency of attendance (0.31 on a 0–5 scale) reported in Table 3 suggests that the rural Chinese young women are still largely disengaged from collective religious practices. Moreover, because Chinese traditions do not require formal member-ship and exclusive denominational loyalty, levels of social integration and support are relatively low for temples visitors, who are loosely connected with one another. Thus, participation, regardless of frequency, in group activities does not necessarily produce and sustain durable and vigorous communities of social support which in turn benefit mental health (Liu, 2010).

In addition to examining intrinsic religiosity and ORA, we also found no correlation between NORA and mental health indicators. It is possible that devotional practices such as meditation may calm practitioners through cultivating the art of concentration and enhancing cognitive sensitivity, but these cognitive benefits may not be easily translated into emotional health (Austin, 1999, 2006). Nonetheless, there might be an exception – praying was positively and significantly related with positive emotion (Liu et al., 2011, 2012). Praying is a coping strategy that is based on the human relationship of exchange with divine others (Pargament, 1997). Thus, an intimate relationship with divine others may enhance subjective well-being (Liu et al., 2011, 2012). In view of this, future research on religion and mental health in China as well as other Eastern societies should investigate not only frequency of devotional activity but also types of devotional activity, especially the ones based on exchange relationship with divine others.

As with most research, the present study is limited by weaknesses. First, it is based on a community sample of rural Chinese young women, 18–34. This particularised sample represents one of the population subgroups that are most vulnerable to suicide in China (Zhang & Liu, 2012). Although the reliability test and comparison of the Hoge IR and DUREL in this particularised sample has significant implications for future research, our findings cannot be generalised to other population groups. Thus, further studies are much needed to assess the generalisability of the scales across different Chinese populations. Second, our study was not able to implement a test-retest reliability which is a standard practice to ensure stable results over time. Additionally, since research on religion and mental health in China is still in its infancy, there is yet a gold standard for religiosity in China (Liu, 2011). While we were able to examine correlations between the scales and mental health outcomes, we cannot argue that these insights provide definite evidence for their validity. Third, as noted above, the study is cross-sectional and cannot determine order of causation, that is, whether religiosity leads to better mental health or whether better mental health leads to greater religiosity. Likewise, the study could not determine what the effects of engagement in religious activity has on mental health over time, i.e., whether initially high levels of distress that prompt private religious activity leads to a lowering of that stress as a result of effective coping.

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