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Research paper

Are changes in positive mental health associated with increased likelihood of depression over a two year period? A test of the mental health promotion and protection hypotheses

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ABSTRACT

This paper investigates the mental health promotion and protection (MHPP) model of reducing depression. Data are from the Clergy Health Initiative Longitudinal Survey of United Methodist ministers in North Carolina that included the Mental Health Continuum Short Form (MHC-SF) for positive mental health and the Patient Health Questionnaire (PHQ-9) for depression in 2014 and 2016 (N = 955). The promotion hypothesis predicts reduced risk of depression in 2016 among clergy whose mental health increased to flourishing and the increased risk of depression in 2016 for clergy who stayed not flourishing. The protection hypothesis predicts increased risk of depression in 2016 for clergy who were flourishing in 2014 but went down to 'not flourishing' in 2016. The reference group is clergy who stayed flourishing. We used modified Poisson regression models for binary outcomes to estimate Prevalence Ratios (PR) and to estimate Incidence Rate Ratios (IRR) of depression in 2016 associated with changes in mental health status. Results support both hypotheses. Compared to clergy who stayed flourishing, clergy who improved to flourishing were as likely, while clergy who stayed not flourishing were nearly seven times more likely, to have depression in 2016. Clergy who declined to not flourishing were six times more likely to have depression in 2016 compared to those who stayed flourishing. Similar patterns were observed when the sample was restricted to clergy without depression in 2014. These findings suggest focusing on MHPP as a complementary approach to treatment to reduce the incidence, prevalence and burden of depression.

1. Introduction

The World Health Organization (WHO) defines mental health as a "state of well-being in which every individual realizes his or her own potential, can cope with normal stresses of life, can work productively and fruitfully and is able to make a contribution to her or his community" (WHO, 2005, p.2). This definition of mental health implies conceiving of mental health not only as the absence of mental illness but also as the presence of feeling good about life (i.e., a state of well-being), as well as functioning well in life at the individual (i.e., realizing one's potential) and societal (i.e., contributing to community) levels (Keyes, 2002).

The study of "subjective" well-being – the subjective referring to the self-report of one's own well-being – was historically synonymous with the hedonic conception of a good life. The hedonic tradition conceives of well-being in terms of feeling good about life (e.g., happy) and

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evaluations of one's satisfaction with life (Diener, 1984). However, the study of subjective well-being expanded when Ryff (1989) argued that another view of a good life originates with Aristotle's view of a good life as arete (excellence), otherwise called eudaimonia, and it should include the measurement of the human potential to become a better person. Ryff's (1989) dimensions of psychological well-being reflect the challenges we face to become a better person in terms of self-acceptance (liking most parts of your personality) and autonomy (having the confidence to think and express your own ideas and opinions). This view of human potential as only individual in nature was challenged by Keyes (1998) when he argued that another side of human potential is to become a better community member or citizen. Keyes' (1998) conception of social well-being reflects similar dimensions to Ryff's dimensions of psychological well-being in that individuals are not only challenged to be better at accepting most parts of their own personality, they are also challenged to become better members of a community and be more accepting of other people. Similarly, while individuals should become more confident to think their own ideas, Keyes (1998) argued that to meet one's potential, we should be challenged to contribute things of worth and value to our communities and society.

The Mental Health Continuum-Short Form (MHC-SF) (Keyes, 2005) provides this comprehensive assessment by measuring the hedonic tradition via emotional well-being (i.e., feeling happy, satisfied, and interested in life) and the eudaimonic tradition in terms of the six facets of psychological well-being (e.g., self-acceptance) and the five facets of social well-being (e.g., social contribution). With the ability to measure mental health positively, Keyes (2005) sought to test the hypothesis implied by the definition of health as the absence of illness and also the presence of well-being, reflecting the notion that health and illness belong to two distinct, albeit correlated, continua. Today, numerous studies support the two continua model of mental health and illness both at the genetic and phenotypic level. At the genetic level, mental health as measured by the MHC-SF is as heritable as common mental illnesses like depression (Keyes et al., 2010), but less than half of the genetic variance of positive mental health is shared in common with the genetic variance associated with common mental disorders (Kendler et al., 2011). Thus, the absence of genetic risk for common mental disorders does not mean the presence of genetic potential for positive mental health. At the phenotypic (individual) level, the absence of mental disorders like depression does not mean the presence of mental health.

The ability to measure mental health positively and the strong support for the two continua model have important worldwide implications in terms of policy and research. The World Health Organization's (WHO, 2008) studies of the global burden of diseases now show that depression is the second leading cause of disability adjusted life years (DALYS), second only to heart disease and worse than cancers. A DALY is a combination of premature mortality and years lived with disability, meaning that a disease or illness is ranked based on the number of years a life was cut short due to premature mortality or the number of years lived with disability attributable to that health condition. The WHO projects that within a decade or less depression will surpass heart disease and become the leading cause of DALYS around the world.

The science supporting the two continua model means that the problem of depression cannot be solved solely by providing more and better modalities of treatment of depression. Treatment has been the default modality for decades, and yet the prevalence and burden of depression continues to grow and is projected to get worse. On the other hand, a growing body of evidence – much of it using longitudinal, representative studies – suggests that some depression could be prevented by moving the larger segment of populations that are not flourishing (but are also not depressed) to the level of flourishing mental health. That is, flourishing has been associated with lower prevalence and incidence of depressive (and anxiety) disorders over 1 year (Grant et al., 2013; Lamers et al., 2015), 3 year (Schotanus-Dijkstra et al., 2017) and 10 year timespans (Keyes et al, 2010). Thus, studies support Keyes' (2007) mental health promotion and protection (MHPP) hypotheses and approach to population mental health. The MHPP approach aims to elevate levels of positive mental health and protect against their loss because the risk of common mental disorders declines when levels of positive mental health increase, and increases when levels of positive mental health decrease.

The present study seeks to extend the body of research supporting the MHPP model by focusing on the mental health and illness of Christian clergy. Clergy offer an ideal group to study the MHPP hypotheses. Clergy experience equal and sometimes above-average rates of depression compared to the general population (Knox et al., 2002, 2005; Proeschold-Bell et al., 2013), and therefore are a group in need of mental illness prevention. The ability for clergy to function well in their role affects the quality of religious experience and well-being of members of the congregation and in return the well-being of clergy (Blizzard, 1956; Campbell, 1994; Carroll, 2006; Rowatt, 2001).

However, the job description for clergy includes a long list of tasks, from counseling to fundraising. These tasks are paired with a large set of diverse skills needed (US Department of Labor, 2020), and the days of clergy are busy, fragmented, and unpredictable (Kuhne and Donaldson, 1995). Complicating matters, each congregant may have a different priority for the scope of work of their clergy (Davey, 1996; Carroll, 2006), and further may expect perfection from the clergy and their family (Wells et al., 2012). The many stressors of ministry can be condensed into the categories of personal criticism, boundary ambiguity, presumptive expectations, and family criticism (Lee and Gilbert, 2003). It is important to prevent and reduce the burden of depression for clergy in order for them to provide optimal leadership that affects large numbers of congregants (Hall, 1997), including congregants who themselves have serious mental illness and seek out clergy as their frontline provider (Wang et al., 2003).

Based on the Mental Health Promotion and Protection (MHPP) model, we hypothesize that:

1 Clergy who improved to flourishing in 2016 will have an equal or lower likelihood of depression in 2016 than clergy who were flourishing at both time points (promotion hypothesis 1).
2 Clergy who were not flourishing in 2014 or 2016 will have a higher likelihood of depression in 2016 than clergy who were flourishing at both time points (promotion hypothesis 2).
3 Clergy who were flourishing in 2014 but who were not flourishing in 2016 will have a higher likelihood of depression in 2016 than clergy who were flourishing at both time points (protection hypothesis).

In short, the strategy of mental health promotion is supported if individuals who gain their positive mental health (i.e. go from not flourishing in 2014 to flourishing in 2016) are no more likely to have depression in 2016 than individuals who stayed flourishing. The strategy of mental health promotion is also supported if individuals who do not gain their mental health (i.e., stay not flourishing in 2016) are more likely to have depression in 2016 than individuals who stayed flourishing. The strategy for protecting against the loss of positive mental health is supported if individuals who 'lose' their positive mental health – going from flourishing in 2014 to not flourishing in 2016 – are more likely to have depression than individuals who stayed flourishing.

2. Methods

2.1. Study sample

The sample was 955 Christian clergy who participated in the 2014 and 2016 waves of a longitudinal panel survey conducted by Duke University. The survey began in 2008 and continued through 2016,

with participants surveyed every 2 years. All clergy in both the United Methodist Church (UMC) North Carolina (NC) and Western NC Annual Conferences were invited to participate in 2008. The survey sample included the district superintendents and deacons as well as all part-time and full-time church-appointed pastors and extension ministers. Clergy new to the conferences were added after 2008 as the study progressed. Participants were followed longitudinally even if they had left the NC conferences or left ministry. The data were collected through an online survey administered by Westat, Inc. The response rates of church-appointed clergy to the 2014 and 2016 panel surveys were 78.4% and 76.3% respectively. To be included in these analyses, participants had to have been appointed to a church in both 2014 and 2016 and provided flourishing and depression data in both surveys. All participants provided informed consent before completing the online surveys. The research protocols were reviewed and approved annually by both the Duke University and Westat Institutional Review Boards.

2.2. Measures

Depressive symptoms at 2014 and 2016 were measured using the self-report 9-item version of the Patient Health Questionnaire (PHQ-9) (Spitzer et al., 1999; Kroenke et al., 2001). The PHQ-9 asks about the frequency of nine specific depressive symptoms experienced over the past two weeks. Each item had a possible range of scores from 0 (not at all) to 3 (nearly every day), for a possible scale range of 0 to 27. For these analyses, depression was coded as a binary variable, with a score of 10 or greater on the PHQ-9 signifying moderate or severe depression.

Flourishing mental health was measured using the Mental Health Continuum Short Form (MHC-SF; Keyes, 2018). The MHC-SF includes three items that measure emotional well-being (happy, interested in life and satisfied), six items representing psychological well-being (liking most parts of your personality, good at managing the responsibilities of your daily life, that you had warm and trusting relationships with others, that you had experiences that challenged you to grow and become a better person, confident to think or express your own ideas and opinions, that your life had a sense of direction or meaning to it), and five items representing social well-being (that you had something important to contribute to society, that you belonged to a community, that our society is a good place or becoming a good place for all people, that people are basically good, that our way of society makes sense to you) during the past month. The score for each item measures the frequency with which participants experienced positive mental health in the past month. Item responses included never, once or twice, about once a week, about 2–3 times a week, almost every day, and every day. To be classified as flourishing, participants have to report experiencing "every day" or "almost every day" at least one of the three items that measure emotional well-being and at least six of the eleven items measuring psychological or social well-being. Participants who do not meet the criteria for flourishing are classified as not flourishing. Participants were divided into four categories: Flourishing in both 2014 and 2016, not flourishing in 2014 but flourishing in 2016, flourishing in 2014 but not flourishing in 2016, and not flourishing in both 2014 and 2016.

Several variables were used as control variables because research has shown these variables to related to depression in clergy (Proeschold-Bell et al., 2013, 2015). ***Demographic variables*** included age as a continuous variable, race (white, black, other), gender (male *vs.* female), and marital status (married *vs.* not married). ***Objective vocational variables*** included ordination status (elder, local pastor, other) and total number of hours worked per week, including hours in jobs outside of ministry, coded as a continuous variable. ***Occupational stress*** was measured using the five-item Clergy Occupational Distress Index (CODI) (Frenk et al., 2013) which addresses perceptions such as whether the congregation has made too many demands or has been too critical over the past year. Each item has a range of 0 (never) to 3 (very often) for a total possible scale score of 0 to 15, with higher scores indicating more occupational distress. ***Perceived financial stress*** was measured by asking a single question, "How stressful is your current financial situation for you?" and coded from 0 (not at all stressful) to 4 (extremely stressful). Perceived financial stress was used as a continuous variable with higher values indicating more perceived financial stress. ***Self-rated health*** was measured by asking "In general, would you say your health was excellent, very good, good, fair or poor," with a scale range of 0 (poor) to 4 (excellent). Self-rated health was used as a continuous variable in these analyses with higher values indicating better perceived health. ***Spiritual well-being*** was assessed using the nine-item personal component of the Clergy Spiritual Well-Being Scale (Proeschold-Bell et al., 2014) which asks about feeling the power and presence of God in daily life in areas such as in the ordinary and in your closest relationships, as well as feeling you had a vital relationship with God during the past six months. Each item is scored from 0 (never) to 4 (always) for a total score range of 0 to 36 with higher values indicating stronger well-being. Spiritual well-being was used as a continuous variable. ***Social support*** was measured using a single item, also used in the CDC's Behavioral Risk Factor Surveillance System (CDC, 2018), asking, "How often do you get the social and emotional support you need?", with responses ranging from 0 (never) to 4 (always). Social support was used as a continuous variable in these analyses with higher values indicating more support. ***Social isolation*** was measured by asking one question "How socially isolated do you feel?" with responses ranging from 0 (not at all socially isolated) to 4 (extremely socially isolated). Social isolation was used as a continuous variable with higher values indicating more isolation. ***Thoughts of leaving ministry*** was measured by asking three questions from the Pulpit and Pew project (Carroll 2006) that address how often in the last 6 months the participant doubted one's call to ministry, thought of leaving pastoral ministry in a congregation for another type of pastoral ministry, and thought about changing careers to a enter a secular occupation. Each question has responses that range from 0 (never) to 3 (very often). The scale ranges from 0 to 9 with higher numbers indicating more thoughts of leaving ministry. Thoughts of leaving ministry was used as a continuous variable. ***Life unpredictability*** was measured using the six-item Life Chaos Scale (Wong et al., 2006) which measures the degree of agreement with statements about instability, life organization, routine and the ability to anticipate and plan for the future. Selected items were recoded for directional consistency. Scale values range from 0 to 18, with higher numbers indicating more unpredictability.

2.3. Statistical analysis

We used descriptive statistics to provide the characteristics of the sample as well as differences in depression and flourishing status between 2014 and 2016. We used a modified Poisson regression model (a Poisson regression model with a robust error variance) to describe the association between change in flourishing status between 2014 and 2016 and depression status in 2016. Estimating modified Poisson regression models for binary outcomes can be preferable to logistic regression in that Prevalence Ratios (PR) and Incidence Rate Ratios (IRRs), which are similar to Relative Risk estimates, are computed rather than odds ratios (Zou 2004); therefore results are more intuitive to interpret in terms of the probability of an outcome. The IRRs were estimated from a restricted sample of those not depressed in 2014. All analyses were conducted using Stata v.15.1.

3. Results

Table 1 presents the characteristics of the 955 clergy who participated in both the 2014 and 2016 panel surveys. The sample was predominantly middle-aged (on average 53 years old with SD = 11 in 2014), male (71%), married (88% in 2014), and white (91%). At baseline (2014), 40% of the sample (383 participants) reported that their current financial situation was moderately, very or extremely stressful. Only 10% (96 participants) self-evaluated their health as fair

Table 1
Characteristics of the survey participants at baseline in 2014 (N = 955).

Sample characteristics		n
Mean age (SD)	52.9 (11.2)	954
Male%	70.6%	955
Race		955
White%	91.1%	
Black%	5.9%	
Other race%	3.0%	
Marital status		955
Married%	87.7%	
Not married%	12.3%	
Mean no. hours worked per week (SD)	49.4 (13.1)	955
Ordination status		943
Elder%	71.9%	
Local pastor%	24.4%	
Other%	3.7%	
Mean financial stress (SD)	1.4 (1.1)	954
Mean self-rated health (SD)	2.6 (0.8)	955
Mean spiritual well-being in the everyday (SD)	24.3 (5.0)	955
Mean clergy occupational distress (SD)	10.9 (2.9)	955
Mean social support, 0 = always to 4 = never (SD)	2.8 (0.9)	952
Mean social isolation (SD)	1.0 (1.0)	953
Mean rhoughts leaving ministry (SD)	7.6 (1.7)	955
Mean life unpredictability (SD)	6.7 (3.3)	955
Depressed%	8.0%	955
Flourishing mental health%	68.8%	955

or poor. With regard to ordination status, the majority of the participants (72%) were elders. Overall, the participants worked more than 40 h each week. Levels of spiritual well-being were high and levels of occupational distress were moderate. Eight percent (76) of the participants had a PHQ-9 score of 10 or greater in 2014, signifying probable moderate or more severe depression. Just over two thirds (69%) of clergy were flourishing in 2014.

A total of 181 (16%) of the clergy in the 2014 sample did not complete the 2016 follow-up and were not included in our analyses. Those lost to follow-up in 2016 were slightly younger, had poorer health, and were more likely to be local pastors and less likely to be elders than those who completed both the 2014 and 2016 surveys. A higher proportion of those participants lost to follow-up were depressed (13%) and a lower proportion were flourishing (61%) in 2014, compared to those who completed both waves.

While 8.0% of clergy met the criteria for depression in 2014 (see Table 1), 8.8% met the criteria for depression in 2016 (see Table 2). While 4.4% of clergy went from qualifying for depression in 2014 to not in 2016, 5.2% went from not qualifying for depression in 2014 to qualifying for depression in 2016. Thus, of the 8.8% of depression cases in 2016, over half (viz., 59% = 5.2% ÷ 8.8%) were not depressed in 2014.

Two findings support the two continua model of mental illness and mental health. First, depression increased just under 1% point in 2016, but there was a 4.3% point increase in flourishing, from 68.8% in 2014 (Table 1) to 73.1% in 2016 (Table 3). If mental health is merely the absence of mental disorders like depression, then at the group level, an increase in depression would be expected to correspond to a decrease in flourishing. Second, while 86.8% of clergy were not depressed in 2014 or 2016 (Table 2), only 60.2% of clergy were flourishing in 2014 and 2016 (see Table 3). If mental health is merely the absence of mental disorders like depression, the percent of clergy not depressed should correspond to the percent of clergy that are flourishing. Last, more clergy (18.3%) stayed not flourishing than improved to flourishing (12.9%), while 8.6% declined to not flourishing.

Table 2
Cross-classification of depression status in 2014 by depression status in 2016 (n = 955).

	Depression status in 2016		
Depression status in 2014	Not depressed, n (%)	Depressed, n (%)	Total N (%)
Not depressed, n (%)	829 (86.8%)	50 (5.2%)	879 (92.0%)
Depressed, n (%)	42 (4.4%)	34 (3.6%)	76 (8.0%)
Total, N (%)	871 (91.2%)	84 (8.8%)	955 (100%)

χ^2 [1] = 133.0, p < .001.
A total of 50 of the 84 clergy who met the criteria for depression in 2016 were not depressed in 2014. Thus, 59.5% of the clergy meeting the criteria for depression in 2016 did not meet the criteria for depression in 2014.

Table 3
Cross-classification of flourishing status in 2014 by flourishing status in 2016 (N = 955).

	Flourishing status in 2016		
Flourishing status in 2014	Not flourishing, n (%)	Flourishing, n (%)	Total, N (%)
Not flourishing, n (%)	175 (18.3%)	123 (12.9%)	298 (31.2%)
Flourishing, n (%)	82 (8.6%)	575 (60.2%)	657 (68.8%)
Total, N (%)	257 (26.9%)	698 (73.1%)	955 (100%)

χ^2 [1] = 222.9, p < .001.

Fig. 1. depicts depression status for participants by whether and how their positive mental health changed between 2014 and 2016. Among the 82 participants who changed from flourishing to not flourishing mental health status, 19.5% qualified for depression in 2016, compared to only 7.3% in 2014 before their positive mental health status worsened. Among the 123 participants who changed from not flourishing to flourishing, only 3.3% qualified for depression in 2016, compared to 13.0% in 2014 when their positive mental health status was worse.

Table 4. presents the results of the modified Poisson regression model to estimate the prevalence ratios (PR) of depression in 2016. There were only two control variables in the PR model that were significantly associated with depression in 2016 outside of earlier depression and flourishing status. Higher perceived financial stress in 2014 was significantly associated with a higher prevalence depression in 2016.

As hypothesized, depression in 2014 was significantly associated with depression two years later. Participants who were classified as depressed in 2014 were two times as likely (PR = 1.99, 95% CI = 1.2, 3.2) to be classified as depressed in 2016, compared to those classified as not depressed in 2014. Turning to our hypotheses, changes in positive mental health were statistically significantly associated with depression in 2016, conditional on depression in 2014. First, results support the promotion hypothesis. The association between not flourishing in 2014 but flourishing in 2016 and depression in 2016 was not significant (PR = 1.3, 95% CI = 0.4, 4.0). Thus, clergy who were not flourishing in 2014 but flourishing in 2016 were no more likely to be depressed in 2016 as clergy who were flourishing at both time points. Moreover, clergy who were not flourishing in both waves were almost eight times as likely (PR = 7.9, 95% CI = 3.4, 18.3) to be classified as depressed in 2016 compared to clergy who were flourishing in both 2014 and 2016, supporting the second version of promotion hypothesis. Last, results also support the protection hypothesis. Clergy who were flourishing in 2014 but not flourishing in 2016 were seven times as likely (PR = 7.2, 95% CI = 3.2, 16.1) to have been classified as depressed in 2016 as clergy who were flourishing at both time points.

Table 4 also reports the incidence rate ratios (IRR) of depression in 2016 when the analysis is restricted to only those clergy who did not meet the criteria for depression in 2014. We assessed both the prevalence and incidence models for multicollinearity by estimating the Variance Inflation Factor (VIF) for each of the variables. The highest VIF was 1.8 which indicates the variance of the flourishing variables was not significantly affected by any potential correlation with the control variables.

Although no more or less likely to meet the criteria for depression in

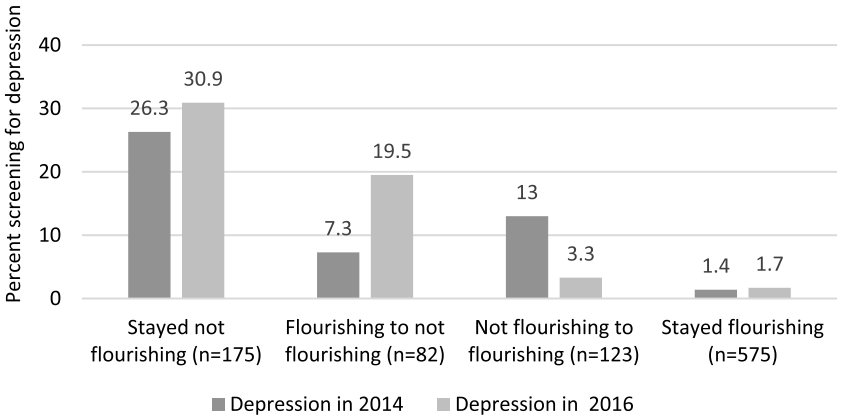

Fig. 1. Percent screening for depression in 2014 and/or 2016 by change in positive mental health status between 2014 and 2016.

2016 than White clergy in the PR model, Black clergy in the IRR model were less likely than White clergy to have depression in 2016. This finding is consistent with research comparing Blacks to Whites in the general U.S. population where Blacks report lower rates of mood, anxiety, and substance abuse disorders (Kessler et al., 1994). As in the PR model, perceived financial stress in 2014 was significantly associated with incidence of depression in 2016. The role of perceived financial stress went from an 18% increase in the prevalence of depression in 2016 to a 30% increase in the incidence of depression per unit increase in perceived financial stress in 2014.

The IRR results also support the promotion and protection hypotheses. Clergy who were not flourishing and not depressed in 2014 but improved to flourishing in 2016 were no more likely to have depression in 2016 (IRR = 0.47, 95% CI = 0.06, 3.7) than clergy who were flourishing in 2014 and 2016. However, clergy who were not flourishing in 2014 and not flourishing in 2016 were over eight times as likely (IRR = 8.45, 95% CI = 2.9, 24.6) to be depressed in 2016 compared to clergy who were flourishing in 2014 and flourishing in 2016. Thus, when good mental health does not improve to flourishing, the risk of depression is dramatically higher, but when good mental health improves to flourishing, the risk of depression is lowered – i.e., clergy whose mental health has improved are no more likely to have depression than clergy who had good mental health at both time points.

Our findings in the restricted sample also support the mental health protection hypothesis. Clergy who were flourishing in 2014 but whose mental health declined to not flourishing in 2016 were over seven times

Table 4
Association between change in flourishing status between 2014 and 2016 and depression status in 2016, controlling for selected covariates at their 2014 status (N = 938).

Independent variables	Prevalence ratio (PR)	95% Confidence limits (CI)	p- value	Incidence rate ratio (IRR)	95% Confidence limits (CI)	p- value
	N = 938			N = 864		
Depressed in 2014	1.99	(1.23, 3.23)	0.005			
Not depressed in 2014	1.00					
Not flourishing in 2014 and Not flourishing in 2016	7.85	(3.37, 18.26)	<0.001	8.45	(2.91, 24.6)	<0.001
Flourishing in 2014 to Not flourishing in 2016	7.19	(3.22, 16.09)	<0.001	7.57	(2.98, 19.2)	<0.001
Not flourishing in 2014 to flourishing in 2016	1.27	(0.40, 4.04)	0.691	0.47	(0.06, 3.73)	0.478
Flourishing in both 2014 and 2016	1.00			1.00		
Age (years) in 2014	0.99	(0.97, 1.01)	0.32	0.99	(0.97, 1.02)	0.72
Female	1.27	(0.85, 1.90)	0.25	1.36	(0.78, 2.40)	0.28
Male	1.00			1.00		
Not married in 2014	0.91	(0.52, 1.59)	0.73	0.97	(0.45, 2.10)	0.94
Married in 2014	1.00			1.00		
Black	0.31	(0.06, 1.67)	0.17	<0.01	(<0.01, <0.01)	<0.001
Other race	1.20	(0.48, 3.01)	0.70	0.94	(0.21, 4.29)	0.94
White	1.00			1.00		
Local pastor in 2014	1.29	(0.83, 2.02)	0.26	1.28	(0.68, 2.38)	0.44
Other position in 2014*	<0.01	(<0.01, <0.01)	<0.001	<0.01	(<0.01, <0.01)	<0.001
Elder in 2014	1.00			1.00		
Continuous scales						
Total hours worked per week in 2014	1.01	(0.99, 1.03)	0.46	1.01	(0.99, 1.03)	0.42
Perceived financial stress in 2014	1.18	(1.00, 1.39)	0.049	1.30	(1.01, 1.68)	0.04
Self-rated health in 2014	0.92	(0.74, 1.13)	0.41	0.85	(0.64, 1.14)	0.27
Spiritual well-being in 2014	1.02	(0.98, 1.07)	0.30	1.03	(0.96, 1.11)	0.39
Perceived occupational distress in 2014	1.03	(0.95, 1.12)	0.49	1.01	(0.89, 1.15)	0.89
Social support in 2014, 0 = never to 4 = always	0.95	(0.74, 1.23)	0.70	1.14	(0.77, 1.68)	0.51
Social isolation in 2014	0.96	(0.75, 1.22)	0.73	1.09	(0.77, 1.55)	0.62
Thoughts of leaving ministry in 2014	0.97	(0.88, 1.06)	0.46	0.91	(0.78, 1.07)	0.25
Life unpredictability in 2014	1.07	(1.00, 1.15)	0.06	1.06	(0.95, 1.17)	0.30

* None of the 35 participants in the "Other Position" category (e.g., associate members, UMC clergy from an out-of-state conference, clergy from a denomination other than UMC) was depressed in 2016.

*Among participants who didn't have depression in 2014, no Black participant was depressed in 2016.

as likely (IRR = 7.57, 95% CI = 3.0, 19.2) to have depression in 2016 as clergy who were flourishing in both 2014 and 2016. In other words, the loss of good (i.e., flourishing) mental health results in increased risk of depression compared to maintaining good (i.e., flourishing) mental health.

4. Discussion

This study investigated the MHPP hypotheses in a longitudinal sample of clergy. Consistent with the view of ministry being a calling and in which work can be a source of meaning, we find a relatively high prevalence of flourishing, with 7 out of 10 clergy in our sample flourishing. However, and consistent with the view that the competing demands and potential criticism that clergy face can produce stress and demoralization, we find that 8.8% of the clergy in 2016 screened positively for depression on the PHQ-9.[6]

Our study supports the promotion and protection hypotheses. We found that clergy who stayed 'not flourishing' had a markedly higher risk of depression than clergy who stayed flourishing, indicating that the lack of positive emotions, psychological functioning (e.g., personal meaning) and social functioning (e.g., social contribution) are related to depression and that the promotion of these aspects of positive mental health prevent depression. We found that clergy who improved to flourishing were no more likely to have depression than those who stayed flourishing, suggesting that the benefits of flourishing mental health can accrue in less than the two years between our data waves. Finally, we found that clergy who were flourishing but declined to not flourishing had increased risk of depression than clergy who stayed flourishing, indicating a need to protect against the loss of good mental health.

One alternative explanation to our findings could be that changes in depression preceded and caused changes in positive mental health, given the gap of two years between our study time points. Indeed, there is one study we could find that shows that changes in psychopathology (measured by the Brief Symptom Inventory; BSI) predicted change in level of mental health as measured by the MHC-SF (Lamers et al., 2015). That study measured the BSI and MHC-SF four. The PHQ-9 has a specificity of 88% using the cutpoint of a score of 10 or higher (Kroenke, Spitzer, & Williams, 2001). Applying the 12% false positive error rate to our prevalence of depression in 2016, a more accurate prediction of clergy who possibly have major depression is 8.0% (i.e., 12% of 84 = 10; 84 – 10 = 74; 74 ÷ 955 = 8.0%). The 2016 National Survey on Drug Use and Health, using the DSM 5 criteria for major depression, found that 6.7% of U.S. adults over the age of 18 have major depression (National Institute of Mental Health, 2018). The 95% confidence interval (CI) for the revised prevalence estimate of 8.0% clergy depressed in 2016 is 6.1% to 9.6%. This CI includes our revised estimate of 8.0% and the 6.7% of the U.S. general prevalence based on the 2016 NSDUH study. The PHQ-9 also has a sensitivity of 88%, so there are also some false negatives in our data times at 3 month intervals over 1 year in a sample of Dutch adults. Using a cross-lagged panel analysis, Lamers et al. (2015) found reciprocal relationships in changes in levels of the BSI on change in levels of the MHC-SF, while changes in the MHC-SF predicted changes over time in levels of the BSI. In short, decreases in psychopathology predicted increases in good mental health, while simultaneously declines in good mental health predicted increases in psychopathology.

Given the DALYs associated with major depression and that the rates of depression over time have not declined, an alternative to the treatment-only approach to better population mental health is MHPP. Primary prevention is preferable for many reasons, including a reduction in the need for depression identification, treatment, and related expenses. The MHPP approach is consistent with the National Institute of Mental Health's universal intervention category, for the largest part of the population (National Advisory Mental Health Council Workgroup on Mental Disorders Prevention Research, 2001).

However, for people who are already depressed and for whom intervention is indicated, the MHPP approach has implications for treatment, including fostering positive emotions, opportunities for personal growth and meaning, and opportunities to contribute to society. The cognitive behavioral psychotherapy approach of Behavioral Activation for the Treatment of Depression (BATD) maps onto this plan by having individuals identify their values and change their daily activities to increase the amount of time spent engaged in personally important, meaningful, and enjoyable activities, without needing to dive into emotional childhood or current experiences. The BATD has been tested in dozens of randomized controlled trials with results superior to medication (Ekers et al., 2014).

Using the MHPP approach as a primary prevention tool may be quite appealing; increasing one's enjoyment and meaning in life seem quite pleasant and do not require, for example, weekly therapy sessions. At the population level, the MHPP approach suggests that social institutions need to be available and attractive, so individuals will want to engage with them and thereby increase their sense of belonging and social contributions. In addition, people will need to have time outside of necessary work and chores to engage in social activities, although notably personal growth and meaning can occur within supportive workplaces. Of relevance here, religious congregations represent a widespread and possibly robust locus to facilitate flourishing (Milstein et al., 2010; VanderWeele 2017).

Given that the resources of time and money may make it easier to engage more often in enjoyable activities, it is not surprising that we found financial strain in our 2014 data to relate to a higher likelihood of depression in the 2016 data. The MHPP approach is also appealing in that individuals can tailor the ways they increase their positive emotions to their preferences, and numerous studies have identified diverse means (see e.g., Lyubormirsky, 2008). Given their spiritual calling, clergy likely already have strong personal meaning in their lives, although they also question it at times (Carroll, 2006) and such doubt has been related to depression and anxiety (Proeschold-Bell et al., 2013). In terms of social connection, ironically, clergy are surrounded by people but may feel that they provide others with more social support than they receive, and this can relate to depression (Eagle et al., 2018). Clergy may need to cultivate relationships with people outside of their congregations.

Our study is not without limitations. Our classification of depression is based on self-reported responses to the PHQ-9 screener and not clinical diagnoses. Our depression assessments were 2 years apart and may not reflect changes in the interim. A higher proportion of those lost-to-follow-up were depressed and not flourishing in 2014, which could affect the estimates. At the same time, our sample has many strengths, including a large sample size and the use of validated measures and rigorous analytic techniques. In the current study, all participants were United Methodist Church clergy in North Carolina and 91% were white. At the same time, this homogeneity means that further study is needed with different populations.

In sum, flourishing has been associated with lower prevalence of depressive disorders over a 1 year (Grant et al., 2013; Lamers et al., 2015), now a 2 year (i.e., the current study), a 3 year (Schotanus-

[6] The PHQ-9 has a specificity of 88% using the cutpoint of a score of 10 or higher (Kroenke, Spitzer, & Williams, 2001). Applying the 12% false positive error rate to our prevalence of depression in 2016, a more accurate prediction of clergy who possibly have major depression is 8.0% (i.e., 12% of 84 = 10; 84 – 10 = 74; 74 ÷ 955 = 8.0%). The 2016 National Survey on Drug Use and Health, using the DSM 5 criteria for major depression, found that 6.7% of U.S. adults over the age of 18 have major depression (National Institute of Mental Health, 2018). The 95% confidence interval (CI) for the revised prevalence estimate of 8.0% clergy depressed in 2016 is 6.1% to 9.6%. This CI includes our revised estimate of 8.0% and the 6.7% of the U.S. general prevalence based on the 2016 NSDUH study. The PHQ-9 also has a sensitivity of 88%, so there are also some false negatives in our data.

Dijkstra et al., 2017) and a 10-year (Keyes et al., 2010) timespan. A decline in levels of positive mental health appears to increase the risk of depression, while an increase in levels of positive mental health decreases the risk. To prevent the WHO's prediction that depression will shortly become the number one cause of DALYs worldwide, we must think more innovatively than improving upon the quality and quantity of modalities for treating depression. While treatment is a necessary tool in helping with the mental health of a population, it is not the solution to improving the overall mental health of a population. The growing support for MHPP suggests we have a potential and complementary (Keyes, 2007) approach to treatment as a way to reduce the burden of depression now and in the future.

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CRediT authorship contribution statement

Corey L.M. Keyes: Conceptualization, Writing - original draft. **Jia Yao:** Formal analysis, Writing - review & editing. **Celia F. Hybels:** Writing - review & editing. **Glen Milstein:** Writing - review & editing. **Rae Jean Proeschold-Bell:** Writing - review & editing.

Declaration of Competing Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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None

Data availability

The survey data used to support the findings of this study are restricted by the Duke University Arts & Sciences Institutional Review Board in order to protect participant privacy. Data are available from Rae Jean Proeschold-Bell, rae.jean@duke.edu, for researchers who meet the criteria for access to confidential data.

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Supplementary materials

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