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The double edge sword of John Henryism: Impact on patients' health in the People's Republic of China

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Abstract

The People's Republic of China has experienced extraordinary economic growth, which is associated with increases in chronic health stressors. We examined the impact of John Henryism—a coping mechanism—on various health indicators in a sample of patients ($n = 642$) in China. John Henryism significantly related to increased medical adherence ($B = .03$, $p < .001$) and health-promotional behaviors ($B = .02$, $p < .001$). John Henryism predicted several indicators of psychological health through social support. John Henryism was also related to increased alcoholism ($B = .04$, $p < .05$). The findings highlight the complexity and paradoxical implications of John Henryism on health. Implications are discussed in relation to China's epidemiological and age demographic shifts.

Keywords

John Henryism, People's Republic of China, psychological health

John Henryism and People's Republic of China

John Henryism is a psychosocial construct which refers to an individual's behavioral propensity to engage in high effort coping in the face of chronic stressors (James, 1994; James et al., 1983). John Henryism has been regarded as a form of active coping, in which an individual acts to overcome a problem. John Henryism reflects a prolonged and higher effort coping mechanism (Bronder et al., 2014; Kiecolt et al., 2009). In fact, this significant construct was derived from the folk-story of a man named John Henry, a "steel-driving man" who died from over-exertion immediately after a test of physical endurance against a machine. Historically, John Henryism has been used to empirically examine the discriminatory health discrepancies between African Americans and Whites in the United States. Furthermore, John Henryism was traditionally hypothesized to pose a significant health risk. Consequently, a significant body of research has examined the

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relationship between John Henryism and physiological indicators of health. For instance, research has found that higher scores of John Henryism are associated with higher levels of blood pressure, elevated heart rates (e.g. Merritt et al., 2004; Wright et al., 1996), and hypertension proclivity primarily in African Americans of lower socioeconomic status groups (Bennett et al., 2004). While this body of work has been foundational, it is necessary to examine the impact of John Henryism in additional countries where individuals face other forms of chronic stressors (Čvorović and James, 2017). In addition, it is essential to expand the body of research on John Henryism beyond physiological indicators of health to include more psychological indicators and health perceptions.

In the past 30 years, The People's Republic of China—the most populous nation in the world—has experienced extraordinary economic growth, which has had direct implications for the health of the population (Chen and Feng, 2000; Wang et al., 2007; Zhao et al., 2010). To put this in perspective, China's National Bureau of Statistics reported a 6.9 percent growth in gross domestic product in 2017, while the growth in the United States was only a little over 2 percent. (National Bureau of Statistics of China, 2018; The World Bank, 2018). While the economic growth is beneficial in certain ways, research has found that this rapid increase in economic growth can also be associated with a significant increase in chronic stressors, prevalent in developed countries (American Psychological Association (APA), 2012; Liu and Diamond, 2005). Specifically, China has seen an increase in chronic non-communicable diseases (He et al., 2005; Yang et al., 2008), environmental health hazards (Kan et al., 2012), mental health illness (Lee, 2004; Park et al., 2005), and alcoholism (Cochrane et al., 2003). To address this epidemiological shift, we examine the role of John Henryism in shaping various health indicators in a sample of patients in China.

John Henryism and medical adherence

Patient adherence to medical recommendations—defined as the extent to which patients follow doctors' orders, such as taking prescribed medication—is a factor directly related to patients' psychological and physiological well-being (Osterberg and Blaschke, 2005). Research in China has examined medical adherence in patients with significant physiological conditions such as HIV and AIDS (e.g. Wang et al., 2008, 2010; Zhao et al., 2002), and psychological conditions such as schizophrenia (Li and Arthur, 2005). Given the importance of medical adherence, studies have examined which factors positively relate to patient adherence, including the role of stigma (Li et al., 2011b), electronic drug monitoring (Sabin et al., 2010), and social support (Pang et al., 2001). However, there is a paucity of research worldwide dedicated to examining the impact of active coping (i.e. John Henryism) on medical adherence (Holt et al., 2012).

As previously mentioned, John Henryism has been associated with negative physiological indicators of health, such as poor cardiovascular function. However, recent research has suggested that John Henryism may function as a double-edged sword, affecting various health outcomes negatively and others positively (Kiecolt et al., 2009). John Henryism may be a critical factor in predicting medical adherence. While this has not been thoroughly researched, some existing studies suggest this relationship may exist. For instance, research has demonstrated that increased John Henryism was positively related to health-promoting behaviors, such as exercise, and eating a nutritious diet (e.g. Glanz and Schwartz, 2008; Lehto and Stein, 2013). Furthermore, research has found that increased active coping was positively associated with help seeking (see Schwarzer and Knoll, 2007 for review). Therefore, it is possible that increased John Henryism positively predicts medical adherence.

It is currently inconclusive how exactly John Henryism may predict specific deteriorating health behaviors, like alcohol consumption and smoking specifically in China (Bennett et al., 2004). It is necessary to take the psychosocial context into account when considering culturally relevant consumption behaviors. In Western countries, alcohol consumption has been an important part of the social fabric. Alcoholism has been increasing more rapidly in China than other countries because of multiple social and economic factors (Cochrane et al., 2003; Le and Xu, 1992). Similarly, China is the largest consumer of tobacco and has one of the largest populations of adult smokers (Li et al., 2011a). On one hand, it is possible that John Henryism is positively related to increased alcoholism and smoking, demonstrating a negative consequence of active coping. Alcoholism in China is more prevalent among those facing a greater number of daily stressors (Liu et al., 2009). On the other hand, it is possible that John Henryism may be negatively related to alcoholism and smoking; two studies found that John Henryism negatively relates to alcohol consumption and positively to smoking cessation; however, these were conducted in the Netherlands (Duijkers et al., 1998; Van Loon et al., 2001). Perhaps, individuals with higher scores on John Henryism are more likely to actively seek external resources to help stop health deteriorating habits. It is unclear how these relationships would manifest in China.

In the current study, we aim to address these major gaps in the literature. We examine how John Henryism relates to medical adherence, in addition to health-promoting behaviors, and *explore* how it relates to alcoholism and smoking in China. From this, we hypothesize

H1: John Henryism is positively associated with increased medical adherence.

H2: John Henryism is positively associated with health-promotional behaviors (e.g. eating fruits and vegetables).

As an exploratory question, we also examined the relationship between John Henryism (JH) and alcoholism and smoking.

John Henryism, psychological health perceptions, and social support

There is an emerging body of literature examining the link between John Henryism and a broad set of health measures, including psychological well-being and self-perceptions of health. The literature suggests that John Henryism is largely predictive of *better* psychological well-being and self-perceptions of health (Kiecolt et al., 2009). For instance, higher level of John Henryism has been associated with lower levels of depressive symptomology (Neighbors et al., 2007), and perceptions of stress (Haritatos et al., 2007). Although these studies have been instrumental in understanding the efficacy of John Henryism, they were conducted with samples in the United States. It is critical to expand this body of literature into China, because the rate of mental health illnesses has been rising steadily, and it has unique social and cultural factors that should be considered (Park et al., 2005). One study has examined the effect of John Henryism on psychological health perceptions in a sample in China and found a significant negative correlation between John Henryism and anxiety and depression (Hsieh et al., 2014). However, this small body of literature suggests that there is a need to adopt a more nuanced approach when considering coping mechanisms that relate to psychological outcomes in China.

In recent years, China has seen a blending of "western" values (e.g. emphasis on the individual) with collectivistic cultural values (e.g. emphasis on the social group and interdependence) (Egri and Ralston, 2004). John Henryism as an ideal embodies American values of individualism and bootstrapping. By contrast, collectivist East Asian cultures, such as China, value harmony, interdependence and social support (Cao, 2009).

As a country, China is in transition. Unprecedented economic growth and one child policy resulted in a blended culture where individualism and collectivism thrive (Cao, 2009). John Henryism and social support exemplify the cherished ideals of western and collectivist cultures, respectively. They are often conceptualized as oppositional coping strategies that fit within this value framework; they both significantly impact psychological health. As mentioned, John Henryism is a coping strategy that is largely dependent on the efforts of the individual and their ability to work harder to overcome stressors. On the other hand, social support emphasizes the importance of one's social networks in overcoming stressors (Thoits, 1986). Given that both sets of values have become increasingly more prominent, it is necessary to examine how social support may inform the relationship between John Henryism and perceptions of psychological well-being and perceptions of general health. Those with more active coping may be more likely to seek and maintain social supports, which in turn may promote health outcomes. In one study, increased John Henryism was positively related to social support (Bronder et al., 2014). Therefore, it is possible that John Henryism will positively relate to perceptions of psychological well-being and self-perceptions of health through an increase in social support. In the current study, we investigate this link. We hypothesize that:

> H3: John Henryism is positively associated with psychological self-perceptions of health (i.e. Positive and Negative Affect, and Short Form-12), mediated by an increase in social support.

Materials and methods

The survey in the current study was approved by the Institutional Review Board at the University Michigan Medical School (HUM00043936) and Peking Union Medical College located in Beijing, China. Questionnaires were given to adult patients waiting to be seen in the general internal medicine clinics at three different hospitals associated with Peking Union Medical College (i.e. Peking Union Medical College Hospital, Chao Yang Second Hospital, and Feng Tai Hospital for Women and Children). Patients were not compensated, but were willing to volunteer. Questionnaires were given out to patients by a team of medical students: 14 from Beijing and 2 from the University of Michigan. The survey was distributed from July 2011 to July 2012.

Procedure and measures

A comprehensive informed consent opportunity was provided to each patient. A packet containing a cover letter and questionnaire was then distributed to all patients who agreed to participate in the study. The initial survey and informed consent was prepared in English and translated to Mandarin by native speakers. Different native speakers back-translated it into English to ensure the initial meaning was preserved. The United States research team then reviewed the back-translation for accuracy. The entire survey was administered in Mandarin and then all final data were translated into English. A total of 659 patients participated in the study, but because we were interested in examining Chinese adults, we excluded patients that were younger than 18 years old. The final sample included 642 participants.

Participants

Patients were between the ages of 18 and 92 ($M = 39.37$, $SD = 15.50$), and 66 percent of the sample were women and 28 percent of the patients had a 4-year degree. Information about additional demographic variables is included in Table 1.

Measures

John Henryism. Patients responded to the 12 items on the John Henryism Active Coping Scale (JHAC) (James, 1996). Patients indicated on a 3-point scale from 1 (*Not True*) to 3 *(Very*

Table 1. Participant Demographics.

Demographics	*n* (%)
Marital status	
Married/cohabited	473 (74%)
Separated/divorced/widowed	27 (4%)
Never married	136 (21%)
Missing	6 (1%)
Urban/rural	
Urban	496 (77%)
Rural	137 (21%)
Missing	9 (2%)
Religion	
Attends church and/or temple	188 (29%)
Does not attend	441 (69%)
Missing	13 (2%)
Children	
No	261 (41%)
Yes	376 (58%)
Missing	5 (1%)
Mean Number of Children	1.39
Does your father live in your household?	
No	440 (69%)
Yes	195 (30%)
Missing	7 (1%)
Does your mother live in your household?	
No	415 (65%)
Yes	220 (34%)
Missing	7 (1%)

True) the extent to which they agreed with the statements for John Henryism (e.g. In the past, even when things get really tough, I never lost sight of my goals). The John Henryism score was computed by taking the sum of values assigned to each response. The highest possible score is 36 (12 questions * 3 for the response to "Very True") and the lowest possible score is 12 (12 questions *1 for the response "Not True"). The scale was reliable ($\alpha = 0.79$; $M = 26.11$, $SD = 5.13$).

Positive and Negative Affect Schedule. The 10-item Positive and Negative Affect Schedule (PANAS) was used to measure patients' positive and negative affect (Thompson, 2007). Patients indicated on a 5-point scale from 1 (*Very Slightly or Not at All*) to 5 (*Extremely*) the extent to which they agreed with the scale statements on the positive affect dimension. The five positive affect items were reliable ($\alpha = 0.77$) and were averaged into a single measure of Positive Affect ($M = 2.49$, $SD = 0.75$). Higher scores on the Positive Affect dimension indicate greater positive affect, and one sample item includes "Determined." The five negative affect items were reliable ($\alpha = 0.74$) and were averaged into a single measure of Negative Affect ($M = 1.82$, $SD = 0.63$). Higher scores on the negative affect dimension indicated greater negative affect, and one sample item includes "Upset."

12-Item Short Form. We used the 12-Item Short Form (SF-12) to assess negative self-perceptions of physical and mental health (Ware et al., 1996). Patients indicated on multiple 5-point scales (e.g. 1 (*Not at all*), 5 (*Extremely*)) the extent to which they agreed with the statements. All items on the scale were standardized (*Z*-scored). Eight items regarding perceptions of physical health were reliable ($\alpha = 0.82$) and then averaged into a measure of Physical Health. One sample item includes, "How much bodily pain have you had during the past 4 weeks?." Four items assessing perceptions of mental health were reliable ($\alpha = 0.75$) and were averaged into Mental Health. One sample item includes, "During the past 4 weeks, how much have you been bothered by emotional problems?." Higher scores on both measures indicate worse physical and mental health.

General adherence to medical treatment. Patients responded to 5 items, on 6-point scales (1 (*None of the Time*) to 6 (*All of the time*)) from the General Adherence to Medical Treatment scale (DiMatteo et al., 2002). One sample item includes, "I followed my doctor's suggestions exactly." The scale was very reliable ($\alpha = 0.76$) and the items were coded, such that higher scores indicate greater adherence ($M = 4.63$, $SD = 1.08$).

Social support. Patients responded to 16 statements regarding social support on a 6-point scale

Table 2. Bivariate correlation table.

	1	2	3	4	5	6	7	8	9	10
1. Positive affect	–									
2. Negative affect	0.37***	–								
3. SF-12: physical health	0.03	0.26***	–							
4. SF 12: mental health	−0.01	0.28***	0.60***	–						
5. Medical adherence	−0.03	−0.06	0.03	0.02	–					
6. Social support	0.02	−0.09*	−0.07	−0.13***	0.08*	–				
7. Health-promoting behaviors	0.14***	−0.03	0.11**	0.01**	0.25***	0.20***	–			
8. Alcoholism	−0.01	−0.01	0.01	−0.004	0.27***	−0.03	0.19**	–		
9. Smoking	−0.05	0.01	0.05	0.03	0.24***	0.07	0.22***	0.20**	–	
10. John Henryism	0.18***	−0.06	−0.03	−0.05	0.17***	0.12**	0.25***	0.18**	0.01	–

SF-12: 12-Item Short Form.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

(1 (*Strongly Agree*) to 6 (*Strongly Disagree*)) (Zimet et al., 1988). One sample item includes, "My friends really try to help me." All 16 items were averaged into a single measure of social support ($\alpha = 0.81$), where higher values indicate greater social support ($M = 4.64$, $SD = 0.72$).

Health-Promoting Lifestyle Profile II. Patients indicated on a 4-point scale, from 1 (*Never*) to 4 (*Routinely*); how often they engaged in health-promoting behaviors. Due to time constraints associated with collecting data during their appointments, 19 items of the 52 items from the Health-Promoting Lifestyle Profile II (HPLP II) were included in the administered survey. These were selected to represent different aspects of health-promoting behaviors (e.g. reporting symptoms to a doctor). All 19 items were averaged into a single measure of health-promoting behaviors ($\alpha = 0.82$); higher averaged scores indicate greater health-promoting behaviors ($M = 2.49$, $SD = 0.43$) (Walker et al., 1987).

CAGE alcoholism. Patients responded to four questions regarding their drinking behaviors on a (1 (*No*), 2 (*Yes*)) response scale (Ewing, 1984). This measure is used to detect alcoholism. One sample item includes, "Have you ever felt guilty about your drinking?." We computed a sum of the values, and higher scores indicate greater alcoholism ($M = 6.91$, $SD = 1.31$, $Median = 7.00$).

Smoking. Patients responded to one question regarding their smoking behavior "Do you currently smoke tobacco on a daily basis, less than daily, or not at all?" Patients indicated their response of a 3-point scale (1 (*Daily*), 2 (*Less than daily*), 3 (*Not at all*)). Lower values indicate greater smoking habits ($M = 2.70$, $SD = 0.66$).

Results

To examine hypotheses 1 and 2, we ran hierarchical linear regressions. We also used regressions to explore the relationships between John Henryism and smoking and alcoholism. China is a disproportionally male dominated society, where women face biased institutional and social treatment yielding significant differences in mental health and physical health outcomes (Anson and Sun, 2002; Yu and Sarri, 1997). In addition, China is a rapidly aging population—aging faster than anywhere else in the world—and aging is significantly related to substantial increases in physical and mental health problems (Jiang et al., 2016). For these reasons, we

Table 3. Regressions 1.

General adherence						Health-promoting lifestyle profile					
		b	SE (*b*)	*β*	*p*			*b*	SE (b)	*β*	*p*
Step 1						Step 1					
	Constant	4.21	0.12		<0.001		Constant	2.17	0.05		<0.001
	Age	0.01	0.003	0.19	<0.001		Age	0.009	0.001	0.32	<0.001
	Gender	−0.30	0.10	−0.13	0.002		Gender	−0.07	0.04	−0.07	0.07
Step 2						Step 2					
	Constant	3.43	0.24		<0.001		Constant	1.73	0.09		<0.001
	Age	0.01	0.003	0.16	<0.001		Age	0.007	0.001	0.26	<0.001
	Gender	−0.30	0.09	−0.13	0.001		Gender	−0.07	0.04	−0.07	0.06
	John Henry	0.03	0.009	0.16	<0.001		John Henry	0.02	0.004	0.22	<0.001

SE: standard error.

control for both sex and age of the patients in all our analyses. We assessed that there were no issues of multicollinearity for all our analyses (Variance Inflation Factor < 2.00). Although the data were not Missing Completely at Random, they were largely Missing at Random and in all subsequent analyses, all missing data were deleted list wise (see Table 2 for correlations and Tables 3 and 4 for regression analyses).

There was a significant relationship between John Henryism and medical adherence. Every one-unit increase in John Henryism was associated with a 0.03 unit increase in medical adherence $(\text{adj}R^2 = 0.07;\ \Delta R^2 = 0.02)\ \ F(1,\ 554) = 13.57$, $p < 0.001$, $(B = 0.03, SE = 0.009;\ p < 0.001)$.

There was a significant relationship between John Henryism and health-promoting behaviors. Every one-unit increase in John Henryism was associated with a 0.02 unit increase in health-promoting behaviors $(\text{adj}R^2 = 0.14; \Delta R^2 = 0.04)$, $F(1, 568) = 29.40$, $p < 0.001$, $(B = 0.02, SE = 0.004;\ p < 0.001)$.

We found a significant relationship between John Henryism and alcoholism. Every one-unit increase in John Henryism was associated with a 0.04 unit increase in alcoholism $(\text{adj}R^2 = 0.02; \Delta R^2 = 0.02), F(1, 243) = 4.71, p < 0.05, (B = 0.04, SE = 0.02;\ p < 0.05)$. There was no significant relationship between John Henryism and smoking $(\text{adj}R^2 = 0.13; \Delta R^2 = 0.00)$, $F(1, 523) = 4.71$, $p = 0.86$, $(B = 0.001, SE = 0.006)$.

To examine hypothesis 3, we used the PROCESS macro for SPSS (Hayes, 2012) and ran a mediation analysis for each dependent variable. In our results, we first present the test of significance, which is indicated by a significant indirect effect, using bias corrected bootstrapped confidence intervals (CIs) (Preacher and Hayes, 2004; Zhao et al., 2010). The effect is statistically significant if the CI does not contain zero at the 0.05 level. After, we report the unstandardized coefficient for each part of the indirect effect, and then the coefficient for the direct effect. In all analyses, we control for age and sex of the patient (see Figure 1 for mediation analyses).

There was a statistically significant indirect effect of John Henryism on a reduction of negative perceptions of physical health $b = -0.002$ boot standard error (SE) = 0.001, CI [−0.005, −0.0001]. A unit increase in John Henryism was related to an increase in social support $b = 0.02$, $t(573) = 2.82$, $p < 0.01$. Holding John Henryism constant, a unit increase in social support was associated with a significant decrease in negative perceptions of physical health $b = -0.09$, $t(572) = -2.44$, $p < 0.05$. The direct effect was not significant $b = -0.006$, $t(573) = -1.09$, $p = 0.28$.

There was a statistically significant indirect effect of John Henryism on a reduction of negative perceptions of mental health $b = -0.003$

Table 4. Regressions 2.

Alcoholism						Smoking					
		b	SE (*b*)	*β*	*p*			*b*	SE (*b*)	*β*	*p*
Step 1						Step 1					
	Constant	6.59	0.24		<0.001		Constant	2.77	0.07		<0.001
	Age	0.01	0.006	0.13	0.05		Age	0.003	0.002	0.07	0.01
	Gender	−0.12	0.16	−0.05	0.45		Gender	−0.51	0.06	−0.37	<0.001
Step 2						Step 2					
	Constant	5.65	0.49		<0.001		Constant	2.75	0.15		<0.001
	Age	0.006	0.006	0.07	0.33		Age	0.003	0.002	0.07	0.12
	Gender	−0.09	0.16	−0.04	0.59		Gender	−0.51	0.06	−0.37	<0.001
	John Henry	0.04	0.02	0.15	0.03		John Henry	0.001	0.006	0.007	0.86

SE: standard error.

boot SE = 0.002, CI [−0.007, −0.0003]. A unit increase in John Henryism was related to an increase in social support $b = 0.02$, $t(572) = 2.82$, $p < 0.01$. Holding John Henryism constant, a unit increase in social support was associated with a significant decrease in negative perceptions of mental health $b = -0.16$, $t(571) = -3.69$, $p < 0.01$. The direct effect was not significant, $b = -0.003$, $t(572) = -0.54$, $p = 0.59$.

There was no statistically significant indirect effect of John Henryism on positive affect $b = -0.0002$ boot SE = 0.001, CI [−0.003, 0.002] or negative affect $b = -0.001$ boot SE = 0.001, CI [−0.004, 0.0000].

Discussion

In the current study, we examined the relationship between John Henryism and medical adherence, health-promoting behaviors, alcoholism and smoking in patients in the People's Republic of China. We found support for hypothesis 1, such that increased John Henryism positively related to medical adherence. This first finding contributes to the literature on medical adherence, by considering how psychological factors—specifically coping mechanisms—can impact the tendency to adhere to a doctor's recommendation or treatment plan. The significant positive relationship between John Henryism and medical adherence has implications for multiple health problems that uniquely impact China. As stated earlier, China has experienced major epidemiological shift, from primarily infectious to chronic non-communicable diseases. These findings demonstrate that John Henryism may be an important factor in promoting the overall health in individuals with chronic health conditions, since long-term medical adherence is generally associated with better health outcomes (Osterberg and Blaschke, 2005). This relationship may become more important as the population continues to age rapidly, and the likelihood of facing non-communicable diseases increases with age (Wagner and Brath, 2012). In addition, it is important to understand why John Henryism positively relates to medical adherence. Although the exact mechanisms that underpin this relationship have not been thoroughly examined, it is possible that increased John Henryism leads to increased perceptions of personal control. Thus, the more individuals engage in active coping, the more they feel in control of their health, and perhaps are more likely to adhere to medical recommendations (e.g. taking a medication daily). Researchers need to continue to investigate these mechanisms.

However, all coping mechanisms are not similar and may not be equally effective in promoting medical adherence. In fact, it is possible that some may lead to *decreased* medical

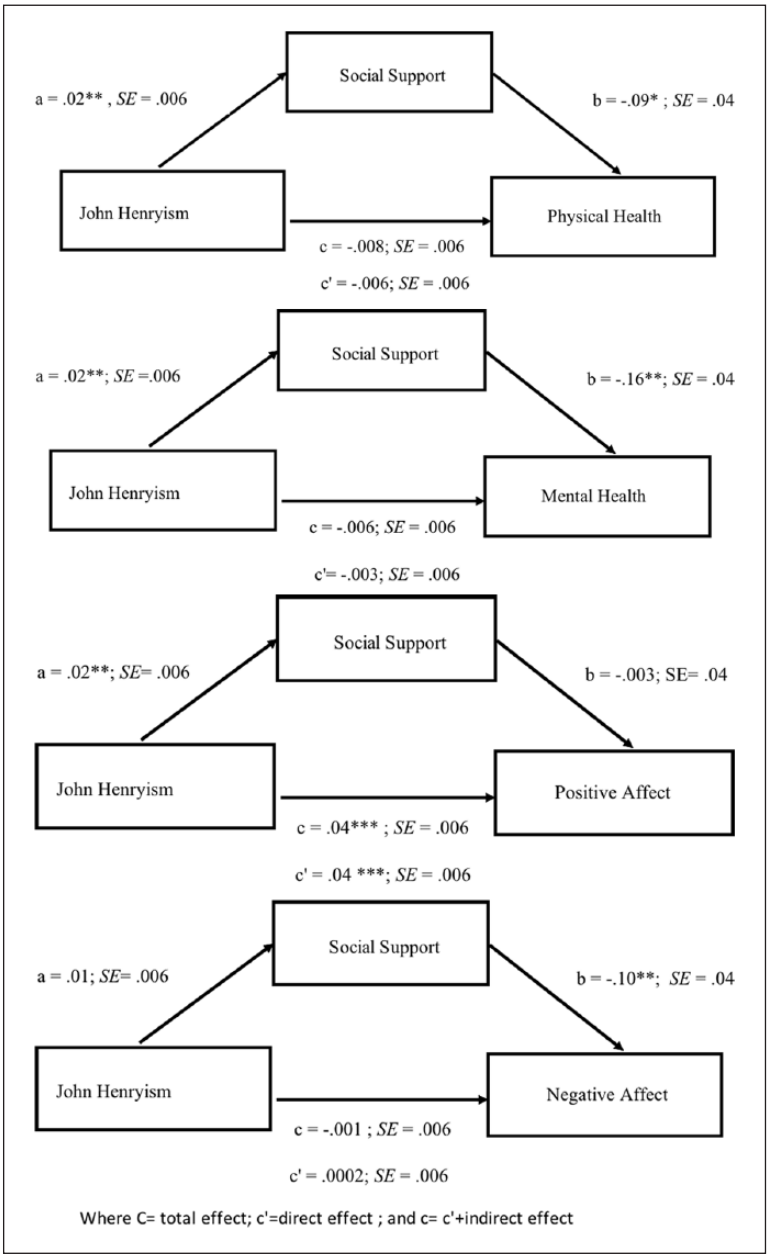

Figure 1. Mediation analyses.

adherence. John Henryism is a uniquely higher effort coping mechanism, in which individuals are actively engaging with a problem. Some individuals may utilize avoidance, a coping mechanism in which they are actively disengaging with an issue (Lazarus, 1993). Avoidance has been linked to worsened depressive symptoms (Welch and Austin, 2001). Researchers need to continue investigating how different coping mechanisms relate to adherence, because these findings have implications for patients' health in every country (Krueger et al., 2005).

We also found support for hypothesis 2, where an increase in John Henryism was positively associated with health-promoting behaviors. A substantial body of existing research has found that a large proportion of chronic non-communicable diseases are preventable, through an engagement in health-promoting behaviors (e.g. Thompson et al., 2003). China is the nation with one of the highest percentage of individuals with obesity (NCD Risk Factor Collaboration, 2016). It may be possible that increased John Henryism may help individuals engage in health-promoting behaviors (e.g. eating a nutritious diet), which in turn reduces the likelihood of obesity. However, specific chronic conditions like obesity are multifactorial and researchers need to consider the unique complexities of each condition (McAllister et al., 2009).

Despite John Henryism's positive associations to health-promoting behaviors and medical adherence, our findings suggest that John Henryism can be a doubled-edged sword since it also predicts negative outcomes. We found a significant positive relationship between John Henryism and alcoholism, but not one to smoking. The finding on alcoholism underscores the idea that simply relying on individual efforts of coping to maintain health is not enough. Institutional health structures (e.g. health insurance, mental and physical health facilities) should be accessible to all individuals. Likewise, chronic stressors that impede health should be eradicated. The first three findings together (i.e. medical adherence, health-promotional activities, and alcoholism) stress the idea that the impact of John Henryism is more complex than originally theorized; researchers need to continue to investigate it in a more nuanced way to understand when John Henryism functions as a protective factor, and the point and conditions under which it functions as a risk factor.

To address this, researchers need to conduct longitudinal studies to examine the long-term effect of John Henryism on various health behaviors. For instance, we found that John Henryism positively related to medical adherence, but data were collected at a single time point while patients were actively seeking medical attention. It is necessary to examine its relationship to adherence over time, since the effects of adherence are dependent on repeated behaviors over time. Furthermore, John Henryism's economic implications should be carefully investigated. We speculate that the growing appeal to Western values has complex consequences. Increases in non-communicable diseases are associated with losses in billions of dollars in China. Although increases in health-promoting behaviors and medical adherence prevent this income lost, any fiscal losses associated with long-term health conditions (i.e. alcoholism) must be factored in as well to understand the phenomenology of John Henryism, which idealizes individualism, and its social implications for emerging markets like China.

The current study also examined the relationship between John Henryism and psychological health and self-perceptions of health through an increase in social support. In general, we found partial support for this hypothesis. In our mediations, John Henryism was related to increased social support. This single element of the mediation provides a unique extension of the literature by linking an individualistic coping strategy (i.e. John Henryism) to a group-focused coping mechanism (i.e. social support). Future research should incorporate both to further investigate how the relationship between the two functions. In support of our third hypothesis, John Henryism was associated with a reduction of negative perceptions of psychological and physical health through an increase in social support. However, John Henryism was not predicative of positive and negative affect. These inconsistent findings for psychological health outcomes could be complicated by China's historical stigma of mental health (Xu et al., 2018). China has under-developed public mental health services, and in recent years, the number of community-based mental health facilities has significantly decreased because of the economic boom (Liu et al., 2011). Since individual efforts of coping are not consistently predicting positive mental health outcomes, China should make efforts to restore mental health resources to urban and

rural communities to help promote improved psychological health. In addition, the literature on John Henryism and psychological health has prioritized clinical mental health outcomes (e.g. depression, chronic stress, psychiatric disorders), and to our knowledge, the relationship between John Henryism and emotional components of psychological heath (i.e. negative affect) have not been examined previously. This relationship should be investigated further.

Limitations

In the current study, we expanded the body of literature of John Henryism by focusing on a unique sample of patients in China. However, the study did not come without limitations. First, relying on a sample of patients does not allow us to generalize our findings to the entire population. Our sample may have been in worse health than non-patients, since they were all seeking professional medical attention. Likewise, it is possible that the current sample was more motivated than non-patients to address their health concerns. Thus, issues regarding health were likely more salient within our sample. Similarly, most of the sample was from an urban area and all had accessibility to the medical center. While urbanization is associated with specific chronic stressors, individuals from rural areas face distinct sets of obstacles—including lack of accessibility to medical facilities— that impact their psychological and physiological health (Gong et al., 2012). Future research should examine John Henryism in samples of individuals from rural areas of China, where accessibility is restricted.

Further the magnitude of our found effects is small. However, this is expected given the intersections of individual differences and socio-political factors on health perceptions. Researchers should explore the complexities. For instance, we did not assess individuals' levels of trust in the medical system. There has been a noticeable increase in mistrust in doctors and the medical profession in China (Pan et al., 2015; Zhang and Sleeboom-Faulkner, 2011). In addition, our study design is cross-sectional in nature, which limits our statements regarding the positive impact of active coping. While the measures in the current study were reliable, it is helpful to measure reliability of study scales throughout the translation process. Consequently, longitudinal studies are necessary to examine the role of active coping over time.

Conclusion

The findings from the current study highlight paradoxical implications of the coping mechanism John Henryism, simultaneously predicting increased health-promoting and deteriorating behaviors, like medical adherence and alcoholism. Simply relying on individual efforts of coping is not entirely sufficient in promoting optimal health. Thus, every country should invest in the health and well-being of their people by making health institutions available, accessible, and affordable for their citizens.

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