

**How Belief in A Just World Benefits Mental Health: The Effects of Optimism  
and Gratitude**

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## Abstract

Past research suggests that individuals' belief in a just world (BJW) is closely connected with their mental health. To clarify the underlying mechanism, the current study proposes that BJW encourages optimism and gratitude which then mediates the relationship between BJW and mental health as indicated by subjective well-being (SWB) and depression. A sample of 1200 undergraduates yields results indicating that (a) BJW influences optimism, gratitude, SWB, and depression after controlling for gender, age, income, and personality; (b) optimism and gratitude mediate BJW effects by increasing SWB and decreasing depression. The issues of BJW's adaptive functions are discussed.

Key words: belief in a just world; gratitude; optimism; subjective well-being; depression

## **How Belief in A Just World Benefits Mental Health: The Effects of Optimism and Gratitude**

### **Introduction**

As a fundamental cognitive tendency, when people have *belief in a just world* (BJW), they tend to believe that people deserve what they get and get what they deserve (Lerner, 1965, 1980; Rubin & Peplau, 1973, 1975). In his eminent book, *The Belief in a Just World: A Fundamental Delusion*, Lerner (1980) said “the belief in a just world refers to those more or less articulated assumptions which underlie the way people orient themselves to their environment” (p. 9). BJW provides a frame for understanding and interpreting everyday confrontations with injustice or unexpected threats, therefore BJW affects attitudes toward negative experiences, and ultimately mental health.

Consequently, since 1965 when Lerner first introduced the concept of BJW, research into BJW has predominantly focused on perceptions and attributions regarding victims of injustice (e.g., Cialdini, Kenrick, & Hoerig, 1976; Godfrey & Lowe, 1975; Lerner & Miller, 1978; Maes, 1998; Montada, Schmitt, & Dalbert, 1986). For example, many derogate or blame victims to maintain their belief that the world is stable, orderly, logical, and that bad things happen to bad people (e.g., Kristiansen & Giulletti, 1990; Montada, 1998). Victim derogation displays the negative side of BJW (for a review see Furnham, 2003). However, research in the past decade has shifted to the positive side of BJW, namely psychological benefits such as healthy coping and subjective well-being (SWB), among other benefits (e.g., Dalbert, 2001, 2002; Otto, Boos, Dalbert, Schöps, & Hoyer, 2006; Xie, Liu, & Gan, 2011).

Under the shadow of this positive approach, substantial research has documented the influence of BJW on different indices of mental health. For example,

individuals with high BJW may sleep better (Jensen, Dehlin, Hagberg, Samuelsson, & Svensson, 1998) and have more positive affect (Dalbert, 1998), optimism (Littrell & Beck, 1999), healthy coping (Dalbert, 2001; Tomaka & Blascovitch, 1994), and long-term hope and gratification (Xie et al., 2011). Although much BJW literature has focused on the connection between BJW and mental health, few studies have investigated the mechanisms underlying this association. To fill that gap, we attempt to explore BJW as it influences mental health using SWB and depression as indicators.

## **1. Research Problem and Hypotheses Development**

Again, BJW is widely believed to be adaptive by increasing SWB and decreasing depression. For example, Lipkus, Dalbert, and Siegler (1996) demonstrated that undergraduates' BJW strongly predicted increased life satisfaction and decreased depression. Similarly, Dzuka and Dalbert (2007) showed that teachers' BJW was positively associated with their well-being and positive affect. Moreover, when teachers were exposed to violence, their BJW decreased the negative affect. In addition, Otto and Schmidt (2007) found that BJW fostered workers' mental health by compensating for stress. Similarly, Otto et al. (2006) observed that BJW helped victims cope with disaster by decreasing anxiety and depression. In summary, past work has confirmed that BJW could facilitate well-being by serving as a buffer against negative events.

As mentioned earlier, beyond the superficial association between BJW and mental health, little is known about the mechanism underlying how BJW influences mental health, such as SWB and depression. Thus we attempt to summarize two basic psychological sources rooted in BJW by providing potential influential paths between BJW and mental health.

### *1.1. Psychological Source One: Being Optimistic*

According to Taylor and Brown's (1988) mental health model, positive illusions rather than accurate perceptions are best for promoting well-being. That is, individuals who see themselves positively and maintain an unrealistic but optimistic belief that they have control over their future, tend to show higher SWB than those who have more accurate, less optimistic perceptions (Taylor & Brown, 1994). Apparently BJW answers the human need for positive illusion, encouraging people to view the world as logical, orderly, and predictable (Lerner, 1980; Lerner & Miller, 1978). In other words, the justice motive theory (Lerner, 1997) asserts that we deserve what we get and we get what we deserve. As such, BJW encourages perceptions that fate is justly deserved and that the future will be positive (Hafer & Olson, 1989; Xie et al., 2011).

More directly, Dalbert (2001) conceptualized BJW as a positive illusion, which "reflects a positively biased picture of one's own social environment" (p.8). In addition, Dalbert showed that BJW offers three adaptive functions supporting positive illusions. Specifically, BJW provides a cognitive schema ascribing meaning to events. Consequently, when people face unfairness or disasters in their personal lives, BJW can attenuate their negative feelings by playing down the unfairness or by helping them to avoid self-focused rumination. Second, people who enjoy high BJW tend to believe that they will be treated fairly and will not be victimized by unforeseeable disasters. Confident that life will be fair, they tend to feel less threatened and less distressed. Third, BJW strengthens their trust that the future will be positive, that they will be rewarded for good behavior with a good outcome.

Consistent with Dalbert's (2001) argument, empirical studies demonstrate that optimism shares close association with mental health and BJW. To be specific, optimism represents a generalized expectancy for positive outcomes that generate strong feelings (Mckenna, 1993; Peterson, 2000). Whether we regard optimism as a springing from human nature (e.g., Matlin & Stang, 1978), individual differences (e.g., Scheier & Carver, 1985), or explanatory styles (e.g., Buchanan & Seligman, 2013), optimism can greatly promote psychological and physiological well-being and buffer against depressed feelings (for a review see Scheier & Carver, 1992). In addition to effects on well-being and depression, optimism has also been associated with BJW. For example, Correia and Vala (2004) found optimism to be moderately correlated with BJW. Similarly, Dalbert (2001) saw BJW and optimism as two distinct concepts sharing a close connection. Therefore, on one hand, optimism indicates that BJW is a positive psychological source; on the other hand, optimism shares a close association with SWB.

### *1.2. Psychological Source Two: Being Grateful*

Gratitude, as derived from justice motive theory (Dalbert, 2001; Lerner, 1980, 1997) could be another psychological source influencing one's mental health. Justice motive theory (Lerner, 1997) explains that concern for justice is based on a "personal contract" between individuals and their social environment. In developing their personal contract, individuals learn the importance of mutually honored commitments between individuals who deserve fair treatment. In line with this belief, individuals are more likely to attribute their good fortune to the kindness of others. Alternatively, their perceptions that life has treated them fairly make them grateful for universal justice (Strelan, 2007).

Assuming gratitude to be interdependent between individuals and their social

environment, BJW is an adaptive function enhancing mental health and interpersonal relationship. Otto et al. (2006) observed that strong BJW helped German flood victims escape negative psychopathological responses. Similarly, BJW facilitates well-being among victims of rape, job loss, and earthquakes (Dalbert, 2002; Xie et al., 2011). Moreover, because of gratitude for others' help, BJW facilitates one's prosocial responses. That is, individuals high in BJW are more likely to help others in need, demonstrating higher awareness of social responsibility (Otto & Dalbert, 2005) and interpersonal trust (Bègue, 2002).

Past research suggests that gratitude can be defined as a life orientation toward noticing and appreciating positives in the world (Wood, Froh, & Geraghty, 2010; Wood, Joseph, & Maltby, 2009). Gratitude has been shown to be closely associated with SWB (for a review, see Wood et al., 2010). For instance, grateful people usually view their social environment positively (e.g., Wood, Maltby, Stewart, Linley, & Joseph, 2008), use more flexible coping strategies (e.g., Wood, Joseph, & Linley, 2007), and have more intense grateful affect (e.g., McCullough, Emmons, & Tsang, 2002). More important, gratitude has been found to cause SWB (Emmons & McCullough, 2003). In addition to promoting SWB, gratitude can also prevent negative feelings. For example, in a longitudinal investigation, Wood, Maltby, Stewart, Linley, and Joseph (2008) showed that gratitude led to lower stress and depression. In short, as a quintessentially positive trait, gratitude can be grounded in BJW (Strelan, 2007) as well as predict SWB (Emmons & McCullough, 2003).

In summary, above literature depicts the relationship among BJW, optimism, gratitude, SWB and depression. Following these empirical findings, we propose three hypotheses:

*Hypothesis 1:* BJW is positively related to SWB, but negatively related to

depression.

*Hypothesis 2:* Optimism mediates BJW effects on (a) SWB and (b) depression: people high in BJW will be high in optimism, high in subjective well-being, and low in depression.

*Hypothesis 3:* Gratitude mediates BJW effects on (a) SWB and (b) depression: people high in BJW will be high in gratitude, high in subjective well-being, and low in depression.

Integrating our hypotheses, we investigate the following model (Figure 1) in the current study.

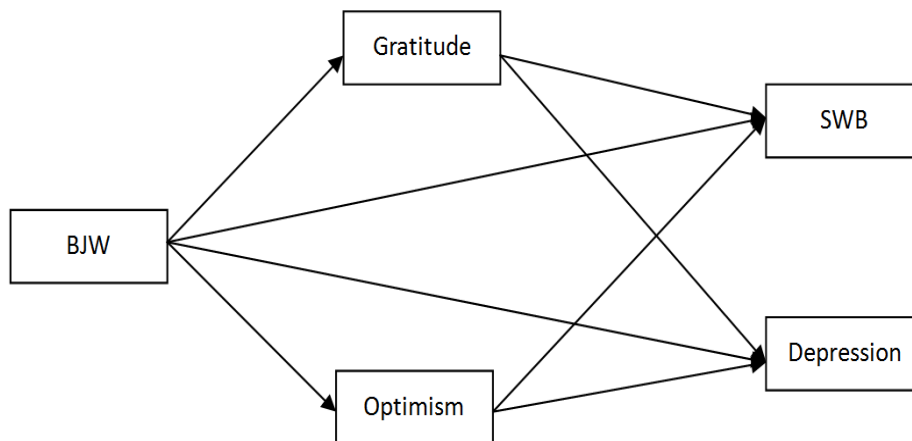


Figure 1. The proposed model

## 2. Methods

### 2.1. Procedure and participants

As a part of large-scale cross-cultural survey, we recruited a sample of 1,200 participants (470 males, 692 females, 38 missing; average age =20.73 years;  $SD=1.37$ ) from four different universities in north China: North China Electric Power University (Beijing), China University of Geosciences (Beijing), Hebei Medical University (Hebei province), and Shanxi Datong University (Shanxi province).

### 2.2. Research instruments



*Belief in a just world.* We assessed BJW using the global belief-in-a-just-world scale (Lipkus, 1991), a 7-item scale that assesses individuals' general belief that the world is fair (e.g., "I feel that rewards and punishments are fairly given"). Participants responded on a 7-point Likert scale, ranging from 1 = *totally disagree* to 7 = *totally agree*. We followed translation-back translation procedure to translate the English-based measures into Chinese. The original English version and the English back translation reached high agreement. The result of a confirmatory factor analysis indicated that one dimension structure of this scale can be supported in the Chinese sample ( $\chi^2/df = 4.14$ , CFI = .91, IFI = .91, GFI = .94, RMSEA = .07). The internal consistency was .69.

*Gratitude.* We assessed gratitude using the grateful disposition scale (McCullough, Emmons, & Tsang, 2002), a 6-item scale that measures individual tendencies to be grateful (e.g., "If I had to list everything that I feel grateful for, it would be a very long list"). Participants responded on a 7-point Likert scale, ranging from 1 = *totally disagree* to 7 = *totally agree*. We followed translation-back translation procedure to translate the English-based measures into Chinese. The original English version and the English back translation reached high agreement. Also, we conducted confirmatory factor analysis to examine whether current data support the structure of the scale. Results showed the model fit was acceptable ( $\chi^2/df = 3.26$ , CFI = .93, IFI = .92, GFI = .93, RMSEA = .07). The internal consistency was .67.

*Optimism.* We measured optimism with the Chinese Revised Life Orientation Test (CLOT-R) developed by Lai and Yue (2000) (e.g., "In uncertain times, I always expect the best"). The scale was designed to assess dispositional optimism, conceptualized as positive outcome expectancies having important health implications. The 6-item scale was translated and revised based on the Life Orientation Test (LOT)

originally developed by Scheier and Carver (1985). Widely used in Chinese and other East Asian samples, it has exhibited good reliability and validity (e.g., Chang, Sanna, & Yang, 2003; Lai, Evans, Ng, et al., 2005; Lai & Yue, 2000). Participants responded on a 7-point Likert scale, ranging from 1 = *totally disagree* to 7 = *totally agree*. The internal consistency was .74.

*SWB.* We assessed subjective well-being with the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), which assesses general beliefs that individuals hold about their lives (e.g., “In most ways my life is close to my ideal”). The scale has been widely used and validated across nations (e.g., Diener, Suh, Smith, & Shao, 1995). Participants responded on a 7-point Likert scale, ranging from 1 = *totally disagree* to 7 = *totally agree*. The measurement has been widely used in Chinese samples and has shown good reliability and validity (e.g., Xu, Wu, & Qiu, 2005). The internal consistency was .74.

*Depression.* Depression was measured with the Chinese version of the Self-Rating Depression Scale (SDS) (Zung, Richards, & Short, 1965). The Chinese version of SDS was translated and validated by Wang, Wang, and Ma (1999). It comprises 20 items, ranging from 1 = *a little of the time* to 4 = *most of the time* (e.g., “life is meaningless”). The internal consistency was .73.

*Control variables.* To examine BJW’s unique contribution in predicting the mediators and outcome variables, we also measured some control variables in our questionnaire set. To be specific, participants’ age, gender, and family income/month (for scale of income, please see Appendix A) were measured as control variables. Personality has been associated with BJW, optimism, gratitude, depression, and SWB (e.g., Lipkus et al., 1996; Wolfradt & Dalbert, 2003; Wood et al., 2009). Therefore, in addition to the demographic variables we have mentioned, we measured personality

using a very brief measure of Big-Five personality<sup>1</sup> (e.g., “I see myself as extraverted, enthusiastic”) (Gosling, Rentfrow, & Swann, 2003). Following translation-back translation procedure, we achieved the Chinese version based on the original English version with high agreement. The internal consistencies of extraversion, agreeableness, conscientiousness, neuroticism, and openness ranged from .60 to .71.

### 2.3. *Statistic analysis*

Prior to the test of hypotheses, confirmatory factor analysis served to ascertain the factorial validity of optimism and gratitude. As shown in the section of research instruments, results indicated that the structure of both optimism and gratitude fitted into the current data.

The test of hypotheses involved the estimation of effects of BJW on optimism, gratitude, SWB, and depression, and the influential paths from BJW to SWB and depression. For effects of BJW on optimism, gratitude, SWB, and depression, the estimation relied on correlation and hierarchical linear regression. For the influential model from BJW to SWB and depression, the estimation relied on path analysis conducted with Amos (Blunch, 2013).

## 3. Results

### 3.1. *Descriptive Statistics*

Table 1 shows the descriptive statistics and correlations among BJW, optimism, gratitude, SWB, and depression. As expected, the results indicated that BJW, optimism, gratitude, and SWB were positively related. Meanwhile, all were negatively related with depression. Hypothesis 1 was supported.

Table 1 Descriptive statistics and inter-correlations among the main variables.

	M	SD	1	2	3	4	5
1. BJW	4.75	.92	1				

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2. Optimism	2.33	.61	.23**	1			
3. Gratitude	5.31	.94	.27**	.27**	1		
4. SWB	4.91	1.15	.32**	.50**	.33**	1	
5. Depression	2.06	.35	-.19**	-.39**	-.38**	-.47**	1

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Note: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

### 3.2. The Influences of BJW on Optimism, Gratitude, SWB, and Depression

Further analysis was conducted to estimate the unique contribution of BJW in influencing outcome variables (SWB and depression) and the mediators of optimism and gratitude. As Table 2 shows, after controlling for age, gender, income, and personality, results of hierarchical regression indicated that BJW positively influenced SWB ( $\Delta R^2=.05, p <.001$ ) but negatively influenced depression ( $\Delta R^2=.03, p <.001$ ). Hypothesis 1 was supported.

Table 2 Linear regressions with SWB and depression as dependent variables

Predictors	SWB		Depression	
	Step 1	Step 2	Step 1	Step 2
Constant	13.75***	8.43***	50.46***	56.25***
Age	-.04	-.01	-.14	-.18*
Gender	1.35***	1.23***	.62	.75
Income	-.03	-.02	.17	.16
Extraversion	.54***	.49***	-.32***	-.29**
Agreeableness	.09	.06	-.11	-.09
Conscientiousness	.11	.08	-.48***	-.46***
Neuroticism	-.52***	-.50***	.49***	.47***
Openness	.23**	.20**	-.36**	-.35**
BJW		.17***		-.18***
Adjusted R <sup>2</sup>	.24***	.29***	.13***	.15***
F	36.10***	69.95***	17.14***	25.24***
$\Delta R^2$		.05***		.03***

Note: \*  $p <.05$ ; \*\*  $p <.01$ ; \*\*\*  $p <.001$ .



In a similar vein, BJW was found to positively influence optimism ( $\Delta R^2=.03, p <.001$ ) and gratitude ( $\Delta R^2=.04, p <.001$ ). Table 3 details the results of hierarchical regressions.

Table 3 Linear regressions with optimism and gratitude as dependent variables

Predictors	Optimism		Gratitude	
	Step 1	Step 2	Step 1	Step 2
Constant	7.40***	4.17**	14.65***	9.05***
Age	.05	.07	.01	.04
Gender	.41	.32	2.22***	2.09***
Income	-.11*	.12*	.04	.04
Extraversion	.31***	.29***	.24***	.20**
Agreeableness	.12*	.11	.52***	.49**
Conscientiousness	.11*	.11*	.14*	.13
Neuroticism	-.28***	-.27***	-.03	-.01
Openness	.16**	.14*	.55**	.51**
BJW		.11***		.18***
Adjusted R <sup>2</sup>	.14***	.17***	.17***	.21***
F	20.61***	35.45***	26.17***	48.71***
$\Delta R^2$		.03***		.04***

Note: \*  $p <.05$ ; \*\*  $p <.01$ ; \*\*\*  $p <.001$ .

### 3.3. Path Analysis of BJW and SWB and Depression

To examine the proposed paths by which BJW influences SWB and depression via optimism and gratitude, we conducted the path analysis with Amos 17.0. Following the common practices in Amos (Blunch, 2013), we controlled for age, gender, income, and personality by connecting them to the endogenous variables

(gratitude, optimism, SWB, and depression) and covarying them with the exogenous variable (BJW). The model fitness was acceptable ( $\chi^2/df = 4.83$ , CFI = .91, IFI = .91, GFI = .97, RMSEA = .07). Moreover, results from the model estimate indicated that the control variables did not confound the proposed model. Figure 2 displays the influential paths in detail. All the links in Figure 2 were significant except the direct association between BJW and depression ( $r = -.02$ ,  $p = .37$ , *ns*). Therefore, our proposed model (hypotheses 2 and 3) was partially supported, indicating both optimism and gratitude are two underlying factors, via which BJW promotes SWB and buffers depression.

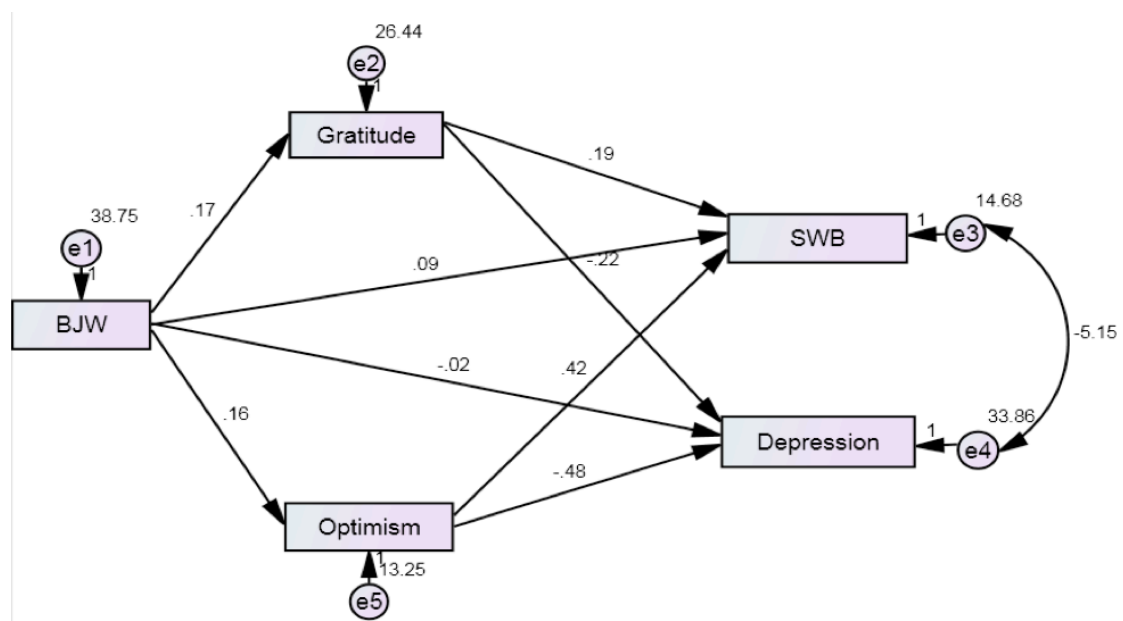


Figure 2. The investigation of proposed influential paths

#### 4. Discussion

Particularly relevant to our investigation is work by Xie et al. (2011) who studied how BJW affected mental health in earthquake victims. Although the work identified a link between BJW and mental health, we must be cautious in generalizing their context-specific earthquake model, because both uncertainty and future



orientation mediators in their model are essential for studying effects on people who live through unexpected disasters. Therefore, little is known about how ordinary people with strong BJW will predictably have better mental health. In this study, we address this issue by investigating how BJW influences mental health in the forms of SWB and depression. We rely on two positive psychological sources that spring from BJW—optimism and gratitude—that cause individuals to feel higher SWB and lower depression. Therefore, we identify the link between BJW and mental health and two important mediators, gratitude and optimism, to advance understanding of BJW's adaptive functions.

#### *4.1. Theoretical Implications*

Lerner (1980) conceptualized BJW as a basic belief that the world is just and fair. Traditionally, scholars have tested BJW effects in unfairness contexts in which victims were hurt and consequences were dire. Although past research has examined BJW adaptive functions among victims in disaster contexts such as floods (e.g., Otto et al., 2006), earthquakes (e.g., Xie et al., 2011), and unemployment (e.g., Dzuka & Dalbert, 2002), recent research has shifted to more positive sides among ordinary people, students in particular (Dalbert, 1999, 2001),

Under this positive approach, several studies have demonstrated BJW's adaptive functions for adolescents or college students. For example, Dette, Stöber, and Dalbert (2004) observed that adolescents with stronger BJW assign a higher probability of success of their personal goals than do adolescents with a weaker BJW. They further suggested that the general BJW was related to vocational goals and the personal BJW to social goals. For interpersonal relationship, Strelan (2007) conducted a study with 275 undergraduates and found that personal BJW was positively related to forgiveness of others, suggesting that BJW reflects a general disposition to respond

to transgressions in a prosocial and adaptive manner. The present study echoes previous notion that the BJW has positive effects on mental health (Dalbert, 1999, 2001) and further extends the underlying influential mechanism, i.e., via promoting optimism and gratitude, the BJW increases SWB and decreases depression.

Much research has demonstrated that BJW, SWB, and depression are associated (e.g., Dalbert, 2001; Dzuka & Dalbert, 2002; Lipkus et al., 1996; Xie et al., 2011), and some have attempted to investigate the underlying mechanisms (e.g., Xie et al., 2011). As noted earlier, Xie et al. (2011) showed that uncertainty and future orientation mediated the link between BJW and mental health in the form of depression, anxiety, and hope. Uncertainty and future orientation as mediators might be restricted to their investigation of earthquake victims who confronted an unforeseeable natural disaster. Uncertain environmental changes are significant stressors that decrease victims' psychological well-being (e.g., Evans & Cohen, 1987), while expectancy for the future enhances optimism and gives victims hope (Zimbardo & Boyd, 1999). We went beyond disaster contexts and examined optimism and gratitude, rooted in BJW, and found that both of them successfully mediated the path from BJW to SWB and depression among ordinary students.

This mediating role of optimism and gratitude on the BJW-mental health link can be interpreted as on one hand they meet psychological needs springing from the BJW (i.e., being optimistic and grateful), on the other hand they are closely associated with mental health (e.g., Diener, Oishi, & Lucas, 2003; Eid & Diener, 2004; Mäkikangas & Kinnunen, 2003). Specifically, for optimism, it has been found to mediate many variables' effects on well-being and health, such as self-efficacy (Karademas, 2006), pain (Wong & Fielding, 2007), social support (Ekas, Lickenbrock, & Whitman, 2010), and traumatic experience (Brodhagen & Wise, 2008). Similarly,

for gratitude, it has been also found to influence one's well-being and health by its mediating role. For instance, Emmons and McCullough (2003) conducted three experiments and found that gratitude successfully mediated intervention (gratitude vs. hassles)—well-being association, i.e., people in gratitude condition experienced more gratitude, which in turn, led to higher levels of positive affect and fewer physical symptoms. In the similar vein, Froh, Sefick, and Emmons (2008) indicated that gratitude mediated the relationship between manipulation of grateful condition and SWB. Consistent with past findings, the current study expands research in optimism and gratitude, suggesting that both of them can mediate BJW-mental health association. That is, the BJW promotes SWB and alleviates depression by increasing optimism and gratitude.

#### *4.2. Practical Implications*

Our results suggest that BJW can promote mental health by increasing optimism and gratitude. In practical terms, these results suggest that educators and school counselors might consider designing interventions for educating individuals to be optimistic and grateful. Consequently, such intervention may greatly contribute to abilities to positively cope with stress.

#### *4.3. Limitations*

This study has at least two shortcomings that should be noted. First, although we verified the influential paths from BJW to SWB and depression, the study has a cross-sectional design and is thus correlational, prohibiting causal inferences. Therefore, future research may use a longitudinal design to clarify the causal relationship between BJW, SWB, and depression. Second, all variables were measured by self-reported survey, which might have inflated the amount of shared variance among BJW as the independent variable, optimism and gratitude as the

mediators, and SWB and depression as the dependent variables. Following the suggestion of Podsakoff, MacKenzie, Lee, and Podsakoff, (2003), we conducted Harman's one-factor test. The results indicated that the first factor explained only 19.73% of the total variance, suggesting that common method bias was not a significant problem. Because the respondent was both predictor and criterion, caution still must be taken when interpreting the results, even though the one-factor test showed no common method bias in the data.

#### *4.4. Conclusions*

In this study, we investigate BJW for its influence on SWB and depression. As we proposed, optimism and gratitude—two psychological sources rooted in BJW—mediated BJW's relationship with SWB and depression. That is, relying on the role of optimism and gratitude, BJW exhibited adaptive functions by promoting SWB and preventing depression.

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Appendix A: Scale of family income/month.

- 1 = 2,000RMB (about 333USD or below),
- 2 = 2,001~5,000RMB (about 333~833USD),
- 3 = 5,001~8,000RMB (about 833~1,333USD),
- 4 = 8,001~10,000RMB (about 1,333~1,666USD),
- 5 = 10,001~15,000RMB (about 1,666~2,500USD),
- 6 = 15,001~20,000RMB (about 2,500~3,333USD),
- 7 = 20,001~30,000RMB (about 3,333~5,000USD),
- 8 = 30,001~40,000RMB (about 5,000~6,666USD),
- 9 = 40,001~50,000 (about 6,666~8,333USD),
- 10 = 50,000RMB (about 8,333USD or above).

#### Footnote

1. The questionnaire used in this study is part of a large scale survey that uses short measurements to keep participants from becoming impatient. Thus the personality scale is very brief.