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# Meaning in life, self-control and psychological distress among adolescents: A cross-national study

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## ABSTRACT

Meaning in life refers to the sense made of, and significance felt regarding, the nature of one's being and existence and includes two dimensions (i.e., presence of meaning and search for meaning, Steger et al., 2006). This research aimed to: (1) compare the mean level differences in presence of meaning and search for meaning among Chinese and Italian adolescents; (2) examine the association between presence of and search for meaning and psychological distress; (3) test self-control as a mediator in the aforesaid relationship, and (4) compare the direct and the indirect effects between the two samples. To this end, self-report questionnaires were administered to Chinese ( $N = 270$ ) and Italian ( $N = 279$ ) adolescents. Results showed that Chinese adolescents reported greater search for meaning than their Italian counterparts. Moreover, presence of meaning was negatively related to psychological distress whereas search for meaning was positively related to psychological distress, through self-control in both samples with similar magnitude. Collectively, the findings contribute to the knowledge about the influence of meaning in life on adolescent psychological health and the underlying mechanisms. The dialectic model of meaning in life, a model that assumes cultural differences in presence of meaning and search for meaning, is partially supported.

## 1. Introduction

Adolescence is a transition period characterized with dramatic physical and psychosocial changes (Arnett, 1999; Steinberg and Morris, 2001). Although a majority of adolescents successfully navigate this period, a substantial minority of adolescents experience distress (Laible et al., 2000). Individual differences in meaning in life, defined as “the sense made of, and significance felt regarding, the nature of one's being and existence” and categorized as presence of meaning and search for meaning (Steger et al., 2006), is a crucial factor distinguishing youths who undergo this transition with good adjustment and those who do not, as research reveals that a lack of life meaning relates to increased psychological distress in adolescence (Brassai et al., 2011, 2013; Kiang and Fuligni, 2010). However, there are some crucial gaps in the literature that warrant further investigation. The present study aimed to address the following voids.

### 1.1. Is presence of meaning and search for meaning related to adolescent psychological distress differentially?

Meaning in life is a broad concept and thought to contain three distinguishable yet related concepts (i.e., coherence, purpose, and significance, Martela and Steger, 2016). Based on the extent to which people experience and seek life meaning, meaning in life (but not the other three analogous concepts) can be divided into two dimensions, namely presence of meaning and search of meaning. *Presence of meaning* refers to “the degree to which people experience their lives as comprehensible and significant, and feel a sense of purpose or mission in their lives that transcends the mundane concerns of daily life”, whereas *search for meaning* concerns “the dynamic, active effort people expend trying to establish and augment their comprehension of the meaning, significance, and purpose of their lives” (Steger et al., 2008a, p. 661).

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Although there is a growing body of studies examining meaning in life among adolescents (e.g., Kiang and Fuligni, 2010; Rose et al., 2017; Wang et al., 2016), research about meaning in life has disproportionately focused on adults (Kiang and Fuligni, 2010). In fact, both quantitative and qualitative studies have revealed that even young adolescents aged 13 to 14 can have one or more life meanings (Aviad-Wilchek and Ne' eman-Haviv, 2018; De Vogler and Ebersole, 1983; Wang et al., 2016; Wilchek-Aviad and Ne' eman-Haviv, 2016). Developing a sense of meaning is a vital task during adolescence (Damon et al., 2003). In daily life, adolescents often encounter many life-changing events from which they explore and make meaning of their life (Tavernier and Willoughby, 2012). This process may lead to personal growth and benefit mental health (Frankl, 1963; Taylor et al., 2000). Previous studies have found that a lack of life meaning associates with elevated psychological distress, such as emotional problems, suicidal thoughts, and psychosomatic complaints (Brassai et al., 2011; Henry et al., 2014; Nielsen and Hansson, 2007; Simonsson et al., 2008).

Studies testing the “life meaning – psychological distress” link mainly consider life meaning as a holistic construct. One question awaiting investigation is whether presence of and search for meaning are differentially related to adolescent psychological distress. Presence of meaning is a positive psychological resource beneficial to optimal psychological health and personal thriving and should be negatively related to psychological distress (Steger et al., 2006). However, the case of search for meaning is more complicated (Steger et al., 2008a). Some scholars consider that active search for meaning can be a motivational force for individuals to look for new opportunities and understand life experiences (Frankl, 1963); thus it may reflect an “approach” orientation related to adaptive outcomes (Carver and Scheier, 1999). However, others argue that youths’ active searching for life meaning entails a difficult period of time and that search for meaning only takes place when one’s needs have been frustrated; thus search for meaning should be related to more psychological distress (Baumeister, 1991; Klingler, 1998). To date, only a few studies have examined this issue among adolescents, finding that presence of meaning was negatively related to psychological distress whereas search for meaning was positively related to psychological distress (e.g., Kiang and Fuligni, 2010). In this sense, more research is needed to further clarify this question.

### 1.2. What are the mechanisms linking meaning in life and psychological distress?

Another understudied issue is how meaning in life relates to psychological distress. In this study, we considered self-control as a potential mediator accounts for the relationship between meaning in life and psychological distress, given that low self-control is seen as a core hallmark of many psychological and psychiatric disorders (American Psychiatric Association, 2013). Self-control refers to one’s ability to change thoughts, emotions, and behavioral tendencies to bring them in line with values, morals, and to support the pursuit of long-term goals (Tangney et al., 2004). It is thought as an umbrella term that consists of multiple sub-dimensions, such as cognitive control, emotional control, and behavioral control (Tangney et al., 2004). Moreover, scholars also contend that self-control includes both inhibition and initiation (de Ridder et al., 2011). Self-control aids individuals to overcome undesirable thoughts, emotions, and behavior and also facilitate the desirable opposites, thus assisting people to go through daily frustration and difficulties and to maximize adolescent psychosocial adjustment (Finkenauer et al., 2005). Numerous studies have found that high levels of self-control protects against psychological distress among adolescents (Finkenauer et al., 2005; Li et al., 2015; Nie et al., 2014; Situ et al., 2016).

Life meaning is thought to facilitate the acquisition self-regulation (Damon et al., 2003). Frist, according to MacKenzie and Baumeister (2014), life meaning enables individuals to think about long-terms goals and cultural standards; without meaning, one may

behave based on impulsive and instinctual desires. Under the guidance of meaning, one can transcend momentary urges and override the more primitive and impulsive mode of living and thus be more able to regulate his/her own emotion and behavior towards long-term goals and social standards. In other words, life meaning has the capacity of guiding individual to recruit and maintain the exercise of self-control. Second, the cognitive-affective system theory of personality (Mischel and Shoda, 1995) assumes that personality trait (e.g., self-control) is organized in line with three categories of social-cognitive factors (i.e., belief about control, values and goals, and strategies and competencies). A clear and stable life meaning shapes the goals individuals pursue and the approaches they accomplish these goals, which further defines the target of self-control and fuels it (Tamir and Mauss, 2010).

Research has found that greater life meaning (and related constructs) is related to better (cognitive and emotional) self-control in both adolescent and adult samples (Bowlin and Baer, 2012; Brassai et al., 2013). However, little research has examined whether presence of and search for meaning relate to self-control differently. Life meaning is an overarching value system that guides and motivates adolescents to exert self-control, and thus, greater experience of presence of meaning should be related to better self-control. Regarding search for meaning, although sometimes it is viewed as an approach orientation (Carver and Scheier, 1999), it also entails uncertainty and stress (Kiang and Fuligni, 2010). Dealing with stress and uncertainty during search for meaning may activate the hot system which is known to undermine self-control (Duckworth et al., 2013; Metcalfe and Mischel, 1999). This suggests that search for meaning probably relates to lower self-control.

Collectively, we expect that presence of meaning would be negatively related to psychological distress through increased self-control, whereas search for meaning would be positively related to psychological distress through reduced self-control.

### 1.3. Are the associations between meaning in life, self-control, and psychological distress similar or different in different cultures?

The dialectic model of meaning in life is proposed to describe the cultural differences in meaning in life (Steger et al., 2008a). One proposition of this model is that in individualistic cultures, perceiving life as meaningful is a self-enhancement strategy but actively searching for meaning hinders self-image, and thus people in individualistic cultures embrace presence of meaning more than search for meaning. In collectivistic cultures, in contrast, individuals endorse self-improvement rather than self-enhancement. Since search for meaning is a means of improving the self, people in collectivistic cultures endorse search for meaning more than presence of meaning (Steger et al., 2008a). Another tenet of the dialectic model is that in individualistic cultures, individuals favor presence of meaning and disapprove search for meaning, and thus the two dimensions are supposed to be negatively related. In contrast, individuals in collectivistic culture endorse both presence of meaning and search for meaning, and thus the two dimensions should be positively related. Prior research has confirmed this model among Japanese and U.S. adults (Steger et al., 2008a), but little research has been done to replicate this model. Thus, another research question of this study was to reexamine the dialectic model of meaning in life among Chinese and Italian adolescents, given that China and Italy is often seen as a representative of collectivistic and individualistic culture, respectively (<https://geert-hofstede.com/countries.html>).

If there are mean levels differences in meaning in life, it seems also critical to examine whether the magnitudes of the relationships between meaning in life, self-control and psychological distress are similar or different in different cultural contexts. However, little research has examined this issue from a cross-cultural perspective so far. To address this issue, we compared the direct and indirect effects of the model between the two adolescent samples. The relation between self-control and psychological distress (e.g., depression and psychological

difficulties) has been found invariant between Chinese and Italian adolescents (Li, 2017; Li et al., 2015), but the associations between presence of and search for meaning with self-control and the ones with psychological distress are unexplored. Therefore, this issue was left as an open question.

#### 1.4. The present study

In sum, this study aimed to investigate the relationship between presence of and search for meaning, self-control and psychological distress among Chinese and Italian community-based adolescents. In the literature, more and more studies published in journals about psychiatry and schizophrenia use non-clinical samples to address psychotic phenomena because of several reasons. First, psychological distress and psychotic phenomena have been seen as a continuum with normal experiences (Berry et al., 2006; de Leede-Smith et al., 2017; Keyes, 2002; van Os et al., 2000). In other words, psychological distress in non-clinical samples may have the possibility to exacerbate into severe psychotic disorders. Therefore, understanding psychological distress in non-clinical adolescents is crucial for early detection, early identification, and early intervention for those with psychological disorders so as to reduce their future risk of having severe psychotic disorders, as suggested by experts (e.g., van Os et al., 2009). Second, investigation of protective / risk factors of psychotic disorders in clinical samples are often confounded by medication, duration of illness and severe psychopathology or institutionalization (van't Wout et al., 2004). In this sense, use of non-clinical sample seems to provide relatively “purer” empirical evidence about the etiology and developmental trajectory of psychotic disorders. In sum, we examined the aforesaid model in non-clinical adolescents and hypothesized that presence of meaning was negatively related to psychological distress, that search for meaning was positively associated with psychological distress, and that self-control significantly mediated these links.

## 2. Method

### 2.1. Participants and procedure

In this study, 270 Chinese adolescents (129 boys, 141 girls, age range: 16 – 17 years,  $M_{\text{age}} = 16.34$  years,  $SD = 0.48$ ) from Guangzhou and 279 Italian adolescents (131 boys, 148 girls, age range: 16 – 17 years,  $M_{\text{age}} = 16.34$  years,  $SD = 0.48$ ) from the Venetian region of Italy undertook the research. In order to better compare the findings between the two samples, we controlled for the proportion of gender and age in the sampling process. There was no significant difference in the proportion of boys and girls ( $\chi^2(1) = 0.037$ ,  $p = 0.847$ ) or age ( $t(547) = -0.097$ ,  $p = 0.923$ ) between the two samples. All Chinese and Italian participants were recruited from public high schools and indicated they and their parents were citizens of their respective countries with Chinese and Italian as their native languages, respectively. No participants reported ever being hospitalized because of psychiatric or psychological problems or taking any psychiatric medicine or treatment.

This study was part of a large-scale cross-cultural research project collaborated between the University of Padua and Guangzhou University.<sup>1</sup> Before data collection, approval by University's ethical committee, written consent from parents, and oral assent from participants were sequentially obtained. Voluntary participation and anonymity were highlighted and no reward was given. Students answered the self-report questionnaires in group format during regular school

<sup>1</sup> The IRB of the University of Padua provided ethical approval to collect data in Italy (the protocol number was 1523). The IRB of Guangzhou University provided ethical approval to collect in China but no protocol number was assigned.

hours. Some participants in the full dataset (< 5%) reported they had consulted psychological counseling for emotional issues (e.g., break up) over the past two years. Thus, no participants were excluded because of psychiatry or psychological counseling history.

### 2.2. Measures

#### 2.2.1. Meaning in life

The Meaning in Life Questionnaire (MLQ, Steger et al., 2006) was used to assess the extent to which individuals experience their life as meaning (i.e., presence of meaning) and the degree to which people engage in searching life meaning (i.e., search for meaning). Chinese and Italian adolescents respectively answered the existing Chinese and Italian version of this scale ([http://www.michaelfsteger.com/?page\\_id=13](http://www.michaelfsteger.com/?page_id=13)). It consists of 10 items rated on a 7-point scale (“1 = absolutely untrue” ; “7 = absolutely true” ), with 5 items assessing presence of meaning and another 5 items assessing search for meaning. A higher score indicates participants perceive their lives as more meaningful or they are more actively seeking meaning in their lives. Results of confirmatory factor analyses showed that the two-factor structure was generally supported in the current samples.<sup>2</sup>

#### 2.2.2. Self-control

The Self-Restraint subscale from the Adolescents' Self-Consciousness Scale (Nie et al., 2014) was utilized to measure participants' self-control ability. This scale has been used in both Chinese and Italian adolescents (Delvecchio et al., 2014; Li et al., 2015). It contains 11 items rated on a 5-point scale (“1 = not like me at all” ; “5 = like me very much” ). Summing up all the items (with some items reverse scored) yields a total score of self-control, with a higher score indicating better self-control ability.

#### 2.2.3. Depressive symptoms

The Children's Depression Inventory (CDI, Kovacs, 1992) was used to assess participants' depressive symptoms. This scale has been used in both Chinese and Italian adolescents (Li et al., 2015). It consists of 27 items rated on a 3-point (0–2) scale based on the grade in severity. A total score can be obtained by summing up all the items with some items reverse scored; a higher score indicates more depressive symptoms.

#### 2.2.4. Psychological difficulties

Goodman's (1997) self-report version of Strength and Difficulties Questionnaire (SDQ, [www.sdqinfo.org](http://www.sdqinfo.org)) was used to assess participants' psychological difficulties and their prosocial behavior. This scale has been used in both Chinese and Italian adolescents (Li, 2017). It consists of 25 items, and the 20 items assessing total psychological difficulties were used in this study. All items are rated on a 3-point scale (“0 = Not true” ; “2 = Certainly true” ), with a higher score indicating more psychological difficulties. A score of 20 could be used as a cut-off point to identify those who fall within the “abnormal” range ([www.sdqinfo.org](http://www.sdqinfo.org)). In this study, a total of 77 participants could be identified as “abnormal” group (about 14% of the total sample). This suggests that our sample contained both normal and “abnormal” samples, but we

<sup>2</sup> Throughout the paper, the value of RMSEA lower than 0.08 and 0.05 suggest an “adequate” and “close” model fit respectively (Marsh, Hau, and Wen, 2004), while values of CFI and TLI higher than .90 indicate the model fit is acceptable (Bentler, 1990). Model fit of Chinese sample was  $\chi^2(34) = 122.31$ ,  $RMSEA = 0.10$ ,  $CFI = 0.89$ ,  $TLI = 0.85$ . In light of modification indices, correlating two errors could significantly increase in model fit. These errors are within the same dimension and may reflect highly correlated contents. After these errors were correlated, the model fit was  $\chi^2(32) = 75.82$ ,  $RMSEA = 0.07$ ,  $CFI = 0.95$ ,  $TLI = 0.92$ . Regarding the Italian sample, model fit was acceptable without any modifications:  $\chi^2(34) = 95.15$ ,  $RMSEA = 0.08$ ,  $CFI = 0.93$ ,  $TLI = 0.90$ .

label them “community-based” because no official diagnose was conducted.

### 2.3. Data analyses

Data were analyzed in SPSS 18.0 and Mplus 7.31. First, multi-group alignment analyses (Asparouhov and Muthén, 2014) were conducted to compare the latent factor means of presence of and search for meaning, since the scalar invariance was not supported.<sup>3</sup> Second, descriptive statistics and bivariate correlation analyses were calculated. Third, multi-group path analyses were carried out to: (1) examine the association between presence of and search for meaning, self-control and psychological distress in the two samples, and (2) compare whether the direct and indirect effects were similar or different across samples. We drew 5000 bootstrapping samples from the full dataset and used 95% confidence interval (CI) to determine the significance of the indirect effects and the differences in the direct and indirect effects. If the 95% CI exclude zero, then significant mediation or differences in the direct or indirect was tenable. In contrast, if the 95% CI include zero, then significance of the mediation effect of differences in the direct or indirect effect was not tenable.

## 3. Results

### 3.1. Comparison of the latent factor means of presence of and search for meaning

According to Muthén and Asparouhov (2014), the rate of non-invariance of loadings and intercepts/thresholds should not exceed 25% in order to ensure the comparison of latent factor means is trustworthy. The results showed that loadings of the ten items were invariant, but the intercept of item 4 was non-invariant across the two groups. The rate of non-invariance of this analysis was 2/40 \* 100% = 5%, suggesting further comparison could be considered reliable. Result of factor mean comparison<sup>4</sup> showed that there was no cultural difference in the levels of presence of meaning (0.114 vs. 0.000), but Chinese adolescents reported significant greater search for meaning than their Italian counterparts (0.411 vs. 0.000).

### 3.2. Descriptive statistics and bivariate correlation

Descriptive statistics and bivariate correlations of presence of and search for meaning, self-control, and psychological distress are presented in Tables 1 and 2, respectively. In both samples, presence of meaning was positively related to self-control and negatively related to psychological distress; whereas search for meaning was negatively related to self-control and positively related to psychological distress, except that the correlation between search for meaning and psychological difficulties was not significant in Chinese adolescents. In both

<sup>3</sup> The same error terms as in the Chinese sample were correlated in the Italian sample to keep the pattern of factor structure the same in both samples, and the model fit was acceptable,  $\chi^2(32) = 92.24$ ,  $RMSEA = 0.08$ ,  $CFI = 0.93$ ,  $TLI = 0.90$ . Based on this, configural, metric, and scalar invariance were sequentially tested. Model fit was  $\chi^2(64) = 167.81$ ,  $RMSEA = 0.08$ ,  $CFI = 0.94$ ,  $TLI = 0.91$  for configural invariance model,  $\chi^2(72) = 190.43$ ,  $RMSEA = 0.08$ ,  $CFI = 0.93$ ,  $TLI = 0.91$  for metric invariance model, and  $\chi^2(80) = 233.566$ ,  $RMSEA = 0.08$ ,  $CFI = 0.90$ ,  $TLI = 0.89$  for scalar invariance model. These findings suggest that configural invariance was tenable, and so was metric invariance since the decrease of the value of CFI did not exceed 0.01 (Cheung and Rensvold, 2002), but in the scalar invariance model the decrease of the value of CFI was 0.03, larger than the cut-off point (i.e., 0.01, Cheung and Rensvold, 2002). Therefore, scalar invariance was supported.

<sup>4</sup> In the multi-group alignment analyses, we used the “ALIGNMENT = FIXED” command to set the Italian sample as the reference group, indicated as the value of 0.000.

**Table 1**

Descriptive statistics of meaning in life, self-control and psychological distress.

	China			Italy		
	M	SD	$\alpha$	M	SD	$\alpha$
Presence of meaning	21.71	7.16	0.87	20.86	6.48	0.80
Search for meaning	26.05	5.86	0.83	23.14	7.31	0.88
Self-control	35.56	5.68	0.70	35.34	6.11	0.64
Depressive symptoms	13.13	6.49	0.82	13.21	7.47	0.87
Psychological difficulties	12.39	5.27	0.76	13.20	6.12	0.80

**Table 2**

Bivariate correlation between meaning in life, self-control and psychological distress.

	1	2	3	4	5
1 Presence of meaning	–	–0.30**	0.27**	–0.43**	–0.32**
2 Search for meaning	–0.04	–	–0.31**	0.29**	0.28**
3 Self-control	0.21**	–0.20**	–	–0.40**	–0.51**
4 Depressive symptoms	–0.29**	0.13*	–0.37**	–	0.70**
5 Psychological difficulties	–0.33**	0.11	–0.50**	0.65**	–

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ ; values below and above the diagonal represent Chinese and Italian sample, respectively

samples, presence of meaning was negatively related to search for meaning, but the coefficient was only significant among Italian but not Chinese youths. According to Cohen (1992)’s standards, the effect sizes of the relationship between presence of and search for meaning and the rest of variables ranged from low (i.e., the relation between search for meaning and depressive symptoms among Chinese sample,  $r = 0.13$ ) to medium-to-large (i.e., the relation between presence of meaning and depressive symptoms among Italian sample,  $r = -0.43$ ).

### 3.3. The association between presence of and search for meaning and psychological distress through self-control

To further reveal the relation between presence of and search for meaning and adolescent psychological distress through self-control, a two-step multi-group analysis was conducted.

First, we examined the total effect model which tested the effect of presence of and search for meaning on psychological distress without including self-control. The two dimensions of meaning life explained 9.7% and 11.4% variance of depressive symptoms and psychological difficulties respectively in the Chinese sample, and 21.7% and 13.9% variance of depressive symptoms and psychological difficulties respectively in the Italian sample. For both samples, presence of meaning was negatively related to depressive symptoms and psychological difficulties at statistically significant level; whereas search for meaning was positively related to these two distress indicators at statistically significant level, except the effect of search for meaning on psychological difficulties in the Chinese sample ( $B = 0.08$ ,  $S.E. = 0.05$ ,  $p = 0.092$ ). Controlling for the effect of sex on self-control and psychological distress did not change the significance of coefficients for both samples.<sup>5</sup>

Second, we examined the indirect effect model where self-control was included in the model. The indirect effect model explained 18.8% and 30.0% variance of depressive symptoms and psychological difficulties respectively in the Chinese sample, and 28.2% and 30.5% variance of depressive symptoms and psychological difficulties respectively in the Italian sample. The results showed that the direct effects of the two dimensions of meaning in life on psychological distress reduced after including self-control in the model (Table 3). Importantly, as shown in Table 4, presence of and search for meaning were associated

<sup>5</sup> Please see Table 1 in the supplemental materials for details.

**Table 3**  
Unstandardized associations between presence of and search for meaning, self-control, and psychological distress.

	Total effect model			Italy			Indirect effect model			Italy		
	China B	S.E.	p	B	S.E.	p	China B	S.E.	p	B	S.E.	p
MLQ_P → depressive symptoms	-0.26	0.05	< 0.001	-0.44	0.06	< 0.001	-0.20	0.05	< 0.001	-0.38	0.06	< 0.001
MLQ_S → depressive symptoms	0.13	0.06	0.048	0.19	0.06	0.002	0.06	0.06	0.342	0.11	0.06	0.06
MLQ_P → psychological difficulties	-0.24	0.04	< 0.001	-0.25	0.06	< 0.001	-0.17	0.04	< 0.001	-0.17	0.05	0.002
MLQ_S → psychological difficulties	0.08	0.05	0.092	0.17	0.05	0.002	0.01	0.04	0.903	0.07	0.05	0.144
MLQ_P → Self-control							0.16	0.05	0.002	0.19	0.06	0.001
MLQ_S → Self-control							-0.19	0.07	0.005	-0.21	0.05	< 0.001
Self-control → depressive symptoms							-0.36	0.08	< 0.001	-0.33	0.07	< 0.001
Self-control → psychological difficulties							-0.17	0.04	< 0.001	-0.44	0.05	< 0.001

MLQ\_P = presence of meaning; MLQ\_S = search for meaning.

**Table 4**  
Summary of the indirect effects of presence of and search for meaning and psychological distress through self-control.

	B	S.E.	95% CI
Chinese sample			
Presence of meaning → self-control → depressive symptoms	-0.06	0.02	[-0.10, -0.02]
Search for meaning → self-control → depressive symptoms	0.07	0.03	[0.02, 0.12]
Presence of meaning → self-control → psychological difficulties	-0.07	0.02	[-0.11, -0.02]
Search for meaning → self-control → psychological difficulties	0.08	0.03	[0.02, 0.14]
Italian sample			
Presence of meaning → self-control → depressive symptoms	-0.06	0.02	[-0.11, -0.02]
Search for meaning → self-control → depressive symptoms	0.07	0.02	[0.03, 0.12]
Presence of meaning → self-control → psychological difficulties	-0.08	0.03	[-0.14, -0.03]
Search for meaning → self-control → psychological difficulties	0.09	0.02	[0.05, 0.14]

with the two psychological distress indicators through self-control in both samples, as the 95% confidence interval did not include zero in all the indirect effects.<sup>6</sup> Controlling for the effect of sex on self-control and psychological distress did not change the significance of each coefficient for both samples.<sup>7</sup>

In order to examine whether the current sample sizes were sufficient (> = 0.80) in the mediation model, we conducted a power analyses with standardized coefficients.<sup>8</sup> We found that the statistical power of the mediation effects for the Chinese sample ranged from 0.891 to 0.906, and that the ones for the Italian sample ranged from 0.918 to 0.992. These findings suggested that the current sample size of each country was powerful enough to detect the mediation effect.

### 3.4. Cross-national comparison of the direct and indirect paths

As shown in Tables 5 and 6, the results indicated that the association between presence of meaning and depressive symptoms was stronger in Italian than in Chinese adolescents, difference: B = -0.17, S.E. = 0.08, 95% CI = [-0.33, -0.01]. No other direct or indirect paths were found significantly different between the two samples.

In addition, in the model where the effect of sex on self-control and psychological distress was controlled for, the cultural difference in the relation between presence of meaning and depressive symptoms became insignificant; no other direct or indirect paths were found significantly different, either.<sup>9</sup>

<sup>6</sup> One reviewer pointed out that considering the high number of tested analyses, adjustment of statistical significant (e.g., Bonferroni) should be applied. Based on this, adjusting the p-value for the four direct effect paths and the eight indirect effect paths should be 0.05/4 = 0.0125 and 0.05/8 = 0.00625, respectively. Significance of results remained the same in Table 3, except that the direct effect of search for meaning on depressive symptoms among the Chinese participants became insignificant after p-value adjustment.

<sup>7</sup> Please see Table 2 in the supplemental materials for details.

<sup>8</sup> Power analyses of the mediation model were examined on <https://davidakenny.shinyapps.io/MedPower/>

<sup>9</sup> Please see Tables 3 and 4 in the supplemental materials for details.

**Table 5**  
Comparison of direct paths.

Direct paths	B	S.E.	95% CI
Presence of meaning → depressive symptoms	-0.17	0.08	[-0.33, -0.01]
Search for meaning → depressive symptoms	0.06	0.09	[-0.11, 0.22]
Presence of meaning → psychological difficulties	0.00	0.07	[-0.12, 0.13]
Search for meaning → psychological difficulties	0.07	0.07	[-0.07, 0.20]
Presence of meaning → Self-control	0.03	0.08	[-0.12, 0.18]
Search for meaning → Self-control	-0.03	0.08	[-0.19, 0.13]
Self-control → depressive symptoms	0.02	0.10	[-0.16, 0.23]
Self-control → psychological difficulties	-0.02	0.07	[-0.17, 0.12]

## 4. Discussion

### 4.1. The role of presence of and search for meaning in adolescent psychological distress

Consistent with prior research (Kiang and Fuligni, 2010; Wang et al., 2016), in general our findings reveal that presence of meaning was related to less psychological distress whereas search for meaning was associated with more psychological distress. Although the relation between search for meaning and psychological difficulties was not significant at conventional significant level among Chinese adolescents, there was a trend showing the same pattern. In fact, a number of previous studies have found that the relationship between search for meaning and negative emotion differ greatly, with some revealing a significant relationship whereas others not (e.g., Chan, 2017; Steger et al., 2006), which suggests a further study (preferably a meta-analysis) to summarize the relationship between search for meaning and psychological health and the potential moderators are needed. Nevertheless, these findings generally suggest that presence of meaning appears a robust protective factor against adolescent psychological distress in both collectivistic and individualistic cultures. Although some scholars consider search for meaning plays a crucial role in adjustment

**Table 6**  
Comparison of the indirect paths.

Indirect paths	B	S.E.	95% CI
Presence of meaning → self-control → depressive symptoms	−0.01	0.03	[−0.07, 0.05]
Search for meaning → self-control → depressive symptoms	0.00	0.04	[−0.07, 0.07]
Presence of meaning → self-control → psychological difficulties	−0.02	0.04	[−0.09, 0.05]
Search for meaning → self-control → psychological difficulties	0.02	0.04	[−0.06, 0.09]

(e.g., Frankl, 1963), it is a marker of adolescent psychological distress. The current findings confirm that presence of meaning and search for meaning are related to adolescent psychological distress differently. However, since the number of studies that examine this issue is still comparatively scarce in the literature, more studies with other distress indicators are needed.

#### 4.2. How meaning in life relates to psychological distress

This study provides early evidence about how life meaning relates to adolescent psychological distress, namely partly through self-control. Although prior study has examined the association between life meaning and self-control and low self-control behavior (e.g., Bowlin and Baer, 2012; Brassai et al., 2013), little research has examined the influence of search for meaning on self-control, let alone the role of self-control plays in the “life meaning – adolescent psychological health” association. As expected, we found that presence of meaning is a valuable resource that initiates, organizes, and maintains self-control, whereas search for meaning hinders the employment of self-control, thus further relating to psychological distress. Search for meaning, as expected, impairs adolescents’ self-control, which further associates with more psychological distress.

It warrants attention that although search for meaning was not significantly related to psychological difficulties in the total effect model for Chinese adolescents, a significant indirect effect was found when using a bootstrapping technique was applied. This confirms the notion that indirect effect may still exist even in the absence of a significant total effect; and the one that while the statistical power for the total effect is low the one for the mediation effect can be still high (Hayes, 2009). Moreover, the indirect effects of self-control were similar in both samples, suggesting that self-control plays a similar role in linking meaning in life and psychological distress among adolescents from different cultures. This also implies that intervention targeting self-control could be a promising approach to reduce psychological distress for both Chinese and Italian adolescents, particularly for those with low levels of presence of meaning.

#### 4.3. Implication to the dialectic model

Our results provide partial support for Steger et al. (2008a) dialectic model of meaning in life. Specifically, we found Chinese adolescents indeed endorsed search for meaning more than Italian adolescents did, but no significant differences in presence of meaning was found. One possible reason may be because this research focuses on adolescents whereas the model was developed based on university students and adults. An alternative explanation is that the model was developed in Japanese and U.S. samples, but in the current study we focused on Chinese and Italian samples. In cultural psychology, collectivistic and individualistic cultures can be understood at both country and individual levels; and there is often a mismatch between country-level and individual-level individualism and collectivism, such that some people in individualistic culture can be collectivistic and vice versa (Triandis, 2001). As such, the levels of collectivism and individualism individuals endorse could vary from sample to sample, which largely limits the validity of true “cross-cultural comparison”. This implies that it may be more desirable for future research to revisit the dialectic

model at individual rather than at country-level individualism and collectivism.

In addition, we also found that Italian adolescents’ presence of meaning was negatively related to search for meaning whereas the relationship between the two dimensions was not significant in Chinese sample. In fact, prior research has also failed to reveal a significant relationship between the presence of meaning and search for meaning, regardless of collectivistic and individualistic cultures (e.g., Chan, 2017; Park and Jeong, 2016; Steger and Dik, 2009). A possible interpretation is that the two dimensions are not only directly correlated, but their relationship can be moderated by a number of psychological constructs such as personality traits, and rumination (for details, see Steger et al., 2008b).

#### 4.4. Limitations

The present study is not without limitations. Only self-report data were collected and the research design was cross-sectional in nature. This may cause common shared variance and does not allow inferring causal relationship. However, there are strong theoretical and empirical reasons for us to consider that meaning in life is an important resource that facilitates one’s self-control ability (Bowlin and Baer, 2012; Brassai et al., 2013; Hart et al., 2006; MacKenzie and Baumeister, 2014; Simmons, 1980). In addition, we are aware that using longitudinal research design with multiple report informants would be desirable, but research as the current one is still of paramount importance in the early stage of examining a novel assumption, especially for cross-cultural study which costs enormous economic and personnel resources. Another limitation is that the current samples were community-based and collected in one city/region in each country, and thus the generalizability of the finding is limited. Future research may collect participants with more diverse backgrounds and replicate the model in clinical samples. Nevertheless, as mentioned in the introduction, we believe that findings obtained from non-clinical sample also shed light on the understanding of psychotic disorders in clinical samples and related clinical practice.

#### 5. Conclusion

The importance of meaning in life to adolescent development is gaining increasing recognition (Kiang and Fuligni, 2010; Rose et al., 2017; Wang et al., 2016). This research adds to the knowledge of this trendy topic with two different adolescent samples. Our findings indicate that presence of meaning is a protective factor against psychological distress among adolescents, whereas search for meaning is a risk factor of psychological distress. Besides, self-control partly explains how the two dimensions of meaning in life relate to adolescent psychological distress. Moreover, the dialectic model of meaning in life is revisited and partially supported. In sum, we believe that a stable and clear life meaning together with high self-control is important to adolescent psychological health.

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## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.psychres.2018.12.033](https://doi.org/10.1016/j.psychres.2018.12.033).

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