

**DIALECTICAL THINKING AND MEANING-MAKING IN NEGATIVE
EXPERIENCES**

by

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Abstract

Three studies were conducted to examine how dialectical thinking may contribute to meaning-making in negative experiences (MINE) tendencies and subsequently to people's coping styles as they confront stressful situations. We examined dialectical thinking in two ways: (1) by comparing two cultural groups—Chinese and Euro-Canadians—that are well known to differ in dialectical thinking styles, and (2) by manipulating dialectical thinking in a single culture. Using a nine-item MINE scale with established measurement invariance across both cultures, we found that dialectical Chinese were more likely than non-dialectical Euro-Canadians to engage in meaning-making in negative experiences and to adopt *acceptance* and *positive reframing* coping styles (Study 1 and 2). Study 3 further demonstrated the causal effect of dialectical thinking on individuals' tendency to engage in meaning-making in negative experiences by manipulating Euro-Canadians' dialectical thinking. Compared to participants in the control condition, participants primed with dialectical thinking reported a higher tendency to engage in meaning-making in negative experiences and to adopt *acceptance* and *positive reframing* coping styles. The current research highlights the importance of the role of dialectical thinking in individuals' tendency to engage in meaning-making in negative experiences and coping.

Keywords: dialectical thinking, culture, meaning-making in negative experiences, acceptance, positive reframing, coping

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Chapter 1

Dialectical Thinking and Meaning-Making in Negative Experiences

The most beautiful people we have known are those who have known defeat, known suffering, known struggle, and have found their way out of those depths.

-Elisabeth Kubler-Ross

When people encounter stressful or negative situations, they often try to find or make meaning out of these situations as a way to understand their stressful experiences and resolve or benefit from the event (e.g., Calhoun, Cann, Tedeschi, & McMillan, 2000; Coleman & Neimeyer, 2014; Greenberg, 1995). Indeed, engaging in meaning-making often helps people change their expectations or the way they think or feel about negative events, which benefits people's well-being in various ways (Stanton, Kirk, Cameron, & Danoff-Burg, 2000; Wilson & Gilbert, 2008). Despite its importance, we know little about what contributes to one's inclination to engage in meaning-making in response to adversity. To fill this gap, in the present research, we take findings from cultural psychology to examine how dialectical thinking may contribute to individuals' tendencies to engage in meaning-making in stressful situations, and how this meaning-making tendency is related to individuals' coping styles.

1.1 Meaning-Making in Negative Experiences

Meaning-making can be conceptualized as how individuals construe, understand, and make sense of life experiences (Gillies, Neimeyer, & Milman, 2014; Ignelzi, 2000). This construct appears to be particularly important in the context of stressful situations because people usually engage in meaning-making to restore a sense of significance, purpose, and comprehension in their lives when they confront stressful life experiences (Heintzelman & King,

2014; Janoff-Bulman, 1992). About two decades ago, Park and Folkman (1997) organized and integrated the work of many meaning-making theorists into a structured meaning-making model, which involves two types of meanings: global meaning – people’s global belief about the world and their lives, and situational meaning – people’s appraisal of the situation they are in. The occurrences of stressful events often violate individuals’ global beliefs and result in a discrepancy between one’s global and situational meanings (Park, 2010), which can lead to distress. According to this model, people engage in meaning-making efforts to reduce the discrepancy between the two types of meanings, and thus the distress associated with it.

Although it seems reasonable to assume that some individuals may be more inclined to engage in meaning-making efforts in stressful situations than others, researchers have yet to examine this assumption directly. The present research addresses this by examining individuals’ general tendency to engage in meaning-making as they confront stressful situations. We operationalize this tendency to make meaning in negative experiences (MINE) as comprising two related components: (1) individuals’ general lay belief that negative experiences are meaningful and valuable, *and* (2) the degree to which individuals actively engage in the process of reflecting on the meaning or value of their negative experiences. We contend that individuals with a higher tendency to engage in meaning-making in negative experiences will (1) have a more positive general lay belief about negative experiences (i.e., appraise and consider negative experiences to be nonthreatening or even valuable), and (2) be more likely to actively reflect on the meaning or value of the stressful events they encounter.

At this juncture, we should note the distinctions between individuals’ tendencies to engage in meaning-making in negative experiences and other similar concepts such as, “meaning-in-life” and “sense-making.” First, meaning-in-life refers to the subjective feeling that

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one's life and experiences matter and make sense, and one has a sense of fulfilment and direction (King, Hicks, Krull & Del Gaiso, 2006). Meaning-making in negative experiences, on the other hand, refers to one's appraisal of negative experiences, and the conscious and deliberate cognitive process of reflecting on those negative experiences to construct a sense of significance and purpose from them. As such, meaning-in-life predominantly focuses on the outcome of having made meaning in general, whereas meaning-making in negative experiences primarily focuses on people's current appraisal and active reflection of their negative experiences. Moreover, meaning-in-life is mostly associated with life experiences in general without a specific referent context (Heintzelman & King, 2014; Stroebe, Draper, & Whitehead, 2013), whereas meaning-making in negative experiences is more specifically situated in the context of negative experiences.

Second, sense-making generally refers to the integration of incomprehensible events into comprehensible structures to give one's life a retrospective sense of order, purpose, and coherence (Keesee, Currier, & Neimeyer, 2008; Weick, 1995). It primarily focuses on understanding why certain events happen in one's lives, so that one can construct a coherent narrative of one's life in the present moment. Meaning-making in negative events, however, does not emphasize on finding reasons for, or the cause of, one's negative experiences. Furthermore, meaning-making in negative experiences is contextualized in negative situations, whereas sense-making can be applied to both positive and negative experiences and even for general events.

Some individuals may be more inclined to engage in meaning-making than other individuals. Although researchers have noted the possibility that culture may influence individuals' tendencies to engage in meaning-making in the presence of stressful experiences (Neimeyer, Prigerson, & Davies, 2002; Park, 2010), evidence for the role of culture in shaping

individuals' meaning-making tendencies is lacking. Given the cultural differences characterizing the East and the West thinking styles and lay beliefs, particularly differences in dialectical system of thought, we reasoned that these culture-specific system of thought may guide how we appraise and respond to stressful experiences.

1.2 Culture, Dialectical thinking, and Meaning-making in Negative Experiences

In the culture and cognition literature, a substantial amount of research has documented East and West differences in thinking styles and lay beliefs: in particular, dialectical thinking is more prevalent among East Asians than among North Americans (Nisbett, Peng, Choi, & Norenzayan, 2001; Peng & Nisbett, 1999). According to the dialectical way of thinking, opposing elements in the world—positive and negative—can co-exist (i.e., principle of contradiction), and every element in the universe is in constant flux (i.e., principle of change; Peng & Nisbett, 1999). Dialectical thinkers believe that opposite elements not only complement each other but also give rise to and reinforce each other. Thus, positives and negatives can transform into each other. In addition, they believe that every event in the universe is not constant but always changing in a cycle. As symbolized by the black and white dot in the yin/yang symbol, something negative or bad at one time can become something positive and good at another time (and vice versa) in a never-ending cycle and reversal.

Indeed, compared to European North Americans, East Asians (including Chinese, Japanese, and Koreans) are more comfortable with, and accepting of, contradictions (Nisbett, 2003; Nisbett, Peng, Choi, & Norenzayan, 2001; Peng & Nisbett, 1999) and more likely to expect and predict non-linear patterns of change (i.e., changes that do not have a fixed pattern; Ji, 2008; Ji, Nisbett, & Su, 2001). Numerous studies have found that, compared to North

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Americans, East Asians are more likely to acknowledge and embrace the co-occurrence of pleasant and unpleasant experiences (Grossmann, Huynh, & Ellsworth, 2016; Schimmack, Oishi, & Diener, 2002) and less motivated to up-regulate positive and down-regulate negative affective states (Miyamoto & Ma, 2011; Miyamoto, Ma, & Petermann, 2014). Thus, dialectical thinking about negative experiences can reduce one's tendency to value positive over negative experiences, and thus negative experiences can be perceived as less threatening and less undesirable (see De Vaus, Hornsey, Kuppens, & Bastian, 2017, for a review).

In line with the principles of contradiction and change, we posit that dialectical beliefs about negative experiences can play an important role in individuals' tendencies to engage in meaning-making in negative experiences. When encountering stressful events, the belief that positive things can co-exist with negative experiences may lead East Asians to perceive negative experiences as less threatening or more valuable than do North Americans. Hence, dialectical thinkers may have a more positive perception and belief about negative experiences, compared to non-dialectical thinkers. In addition, due to the beliefs that things exist in a perpetual cycle of change and renewal while being interconnected with one another, East Asians may be more likely than North Americans to think that similar negative experiences potentially can reoccur in the future, and that the insights gained from the current negative experience potentially can be relevant and helpful for similar encounters in the future (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997; Meichenbaum, 1985; Uchida & Kitayama, 2009). Therefore, dialectical thinkers may be more motivated than non-dialectical thinkers to actively reflect on their stressful encounters or negative experiences.

Taken together, dialectical thinking may lead individuals to have a more positive general lay belief about negative experiences, and a greater tendency to actively reflect on the meaning

or value of the negative experiences they encounter. Hence, we expected dialectical individuals to have a higher tendency to engage in meaning-making in negative experiences than non-dialectical individuals. The tendency to engage in meaning-making in negative experiences (MINE) can be construed as a specific form or subset of the general dialectical system of thought. While dialectical thinking can refer and apply to everything on a more global level, tendencies to engage in MINE specifically refer and apply the principles of contradiction and change to negative experiences one encounter on a more local level.

1.3 Relationship between Meaning-Making in Negative Experiences and the Coping Styles

As already mentioned, meaning-making plays a crucial role in how one copes with stress (Davis, Eshelman, McKay, 2000; Gillies & Neimeyer, 2006; Park & George, 2013). It is important to examine how individuals' tendency to engage in meaning-making in negative experiences relates to their coping styles. One commonly and widely-used approach to measure coping styles is Carver, Scheier, and Weintraub's (1989) brief COPE inventory that measures 14 different types of coping styles: *self-distraction, active coping, denial, substance abuse, emotional support, instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame*. Depending on how meaning-making is defined, certain coping efforts are considered to be more meaning-related or meaning-focused than others (see Folkman, 1997; Park & Folkman, 1997; Folkman & Moskowitz, 2007).

Based on our operationalization of meaning-making in negative experiences in the current research (i.e., positive general lay beliefs about negative experiences and tendency to actively reflect on the meaning or value of negative experiences), we have identified “*acceptance*” and “*positive reframing*” as the two coping styles that are most relevant to and

contingent on individuals' tendency to engage in meaning-making. Indeed, many meaning-making studies have used these two coping styles as a proxy-measure to tap onto people's meaning-making efforts (Boehmer, Luszczyska, & Schwarzer, 2007; Park & Folkman, 1997; Folkman & Moskowitz, 2007). *Acceptance* coping can be defined as acknowledging the presence of the stressor and accepting the reality of the stressful or negative situation, and *positive reframing* can be defined as re-construing or re-interpreting the stressful or negative events in positive terms (Carver et al., 1989). Individuals who have a more positive general lay belief about negative experiences may be more likely to appraise the stressful experience as less threatening or even valuable to a certain extent; and thus, they may be more likely to accept or live with the reality of situation (i.e., engage in acceptance coping). Similarly, individuals who are more motivated to actively reflect on their negative experiences also may be more likely to re-assess or re-evaluate the negative situation (i.e., engage in positive reframing coping) than individuals who are not. As such, we predicted individuals' tendency to engage in meaning-making in negative experiences would be positively associated with their *acceptance* and *positive reframing* coping styles. Consequently, we expected dialectical thinkers to be more likely than non-dialectical thinkers to engage in these two coping styles.

1.4 Present Research

In three studies, the current research examined how dialectical thinking may shape individuals' tendencies to engage in meaning-making in negative experiences (MINE), which may be subsequently associated with individuals' *acceptance* and *positive reframing* coping styles. In Study 1, we tested people from two cultures that are well known to differ in dialectical thinking: Chinese and Euro-Canadians. Using a nine-item MINE scale, we examined if Chinese

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and Euro-Canadians differ in their tendency to engage in meaning-making in negative experiences. We expected Chinese—who are more likely to endorse dialectical thinking (Peng & Nisbett, 1999)—to be more inclined to engage in meaning-making in negative experiences than Euro-Canadians would. In Study 2, we replicated and extended the findings from Study 1 by examining the relationship between individuals' tendencies to engage in meaning-making in negative experiences and *acceptance* and *positive reframing* coping styles across both cultures. Specifically, we predicted that Chinese would be more likely than Euro-Canadians to engage in *acceptance* and *positive reframing* coping styles, and that these cultural differences in coping would be accounted for by the differences in their tendencies to engage in meaning-making. In Study 3, we tested the causal influence of dialectical thinking style on individuals' tendencies to engage in meaning-making in negative experiences by manipulating Euro-Canadians' dialectical thinking. We expected individuals primed with dialectical thinking to be more inclined to engage in meaning-making than individuals primed with non-dialectical thinking, which would, in turn, predict their *acceptance* and *positive reframing* coping styles.

Chapter 2

Pilot Study

In our conceptualization, individuals' tendency to engage in meaning-making in negative experience refers to their general lay beliefs about, and tendency to actively reflect on, negative experiences. The current meaning-making measures could not adequately capture our operationalization of meaning-making in negative experiences (MINE); thus, in this pilot study we decided to adapt van Heuval et al.'s (2009) meaning-making scale to better assess the meaning-making construct that fits our conceptualization. We also examined the structure of this adapted MINE measure in the current pilot study.

2.1 Method

2.1.1 Participants

The exploratory factor analysis (EFA) was conducted on 424 Euro-Canadian undergraduates (62 men, 355 women, and 7 other; $M_{age} = 19.50$, $SD_{age} = 1.44$) from Queen's University. Under relative poor conditions (e.g., majority of the communalities less than .40, and less than three measured variables load on each of the predicted factors), the estimated sample size for the EFA is approximately 400 (Fabrigar et al., 1999; Fabrigar & Wegener, 2012; MacCallum, Widaman, Zhang & Hong, 1999).¹

The confirmatory factor analysis (CFA) was conducted on a separate 210 Euro-Canadians (17 men, 191 women, and 2 missing; $M_{age} = 20.27$, $SD_{age} = 3.85$) undergraduates from

¹ Because the MINE measure is a newly adapted scale, I decided to be more conservative and estimate the required sample size based on a less optimal condition for the EFA.

Queen's University. Under moderately good conditions (based on the properties of the data from the EFA, majority of the communalities range from .41 to .74, and at least 4 to 5 measured variables loaded on each of the two factors), the minimum sample size for the CFA is estimated to be at least 200 (Fabrigar & Wegener, 2012; MacCallum et al., 1999).

All participants received course credit for their participation.

2.1.2 Materials and Procedure

We adapted van Heuval et al.'s (2009) meaning-making scale to measure individuals' tendencies to engage in meaning-making based on our conceptualization of MINE (i.e., people's general lay beliefs about, and tendency to actively reflect on, negative experiences). For example, items in the original meaning-making scale focused on all events in life in general, regardless of whether they are positive or negative (e.g., *"I actively take the time to reflect on events that happen in my life"*). Because we specifically focus on individuals' tendencies to engage in meaning-making in negative experiences, we adapted most of the items by changing all the neutral general "events" to "stressful events" or "stressful life events" to highlight and emphasize the context of stressful or negative situations (e.g., *"I actively take the time to reflect on stressful events that happen in my life"*). In addition, we added a few more items to better assess the two components in our conceptualization of MINE. For example, we added items such as *"I understand that experiencing stressful events can be beneficial"* to capture the positive general lay beliefs about negative experiences, and *"I usually find myself thinking about the value of the stressful events that I encounter"* to capture individuals' tendency to actively reflect on negative experiences. As a result, we ended up with a 14-item MINE measure. After a few rounds of pretesting and testing with a separate sample of Canadian participants, we removed

items that either functioned differently from the rest of the items (i.e., did not correlate well with the other items on the scale) or had substantial factor loadings on both latent factors, and finally we retained nine items in the final MINE measure (see Appendix). Participants in this and all subsequent studies were given the following instructions:

Everyone experiences stress. The statements below concern how you generally feel when you experience stressful events in life. Respond to each statement by indicating how much you agree or disagree with it. There are no "right" or "wrong" answers, so please answer according to your personal opinion, rather than how you think "most people" would answer.

All nine items in the MINE scale were presented to participants in a random order.

Participants rated their agreement with each item on a 6-point scale (1 = *strongly disagree* to 6 = *strongly agree*), and then provided their demographic information (e.g., age, gender, and ethnicity).

2.2 Results

We examined the factor structure of this final nine-item MINE measure using EFA and evaluated whether the two-factor structure of this MINE scale fit the data well using a CFA.

Exploratory Factor Analysis. Consistent with our operationalization of MINE, all four procedures—parallel analysis, scree test, RMSEA model fit, and factor interpretability—suggested that a two-factor solution fits the data well: five items assessing participants' general lay beliefs about negative experiences (e.g., "*I think that experiencing stressful events in life is meaningful.*"), and four items assessing the process of actively reflecting on the meaning or value of the negative experiences (e.g., "*I actively focus on the meaning of the stressful events that I encounter.*").² Results of the EFA using a Maximum Likelihood (ML) factor analysis with Direct

² Comparing the eigenvalues from the reduced correlation matrix of the actual data to the eigenvalues from the random data, parallel analysis suggested a 3-factor model as most appropriate. The scree test that was performed

Quartimin rotation were summarized in Table 1. The Cronbach's alpha coefficient of the overall MINE measure was .857 ($\alpha = .816$ for the general belief subscale and $\alpha = .788$ for the active process subscale).

Table 1

QUARTIMIN Rotated Factor Loadings for the Nine Items on the MINE Scale using Maximum Likelihood Factor Analysis.

Factor	Factor Loadings	
	Factor 1	Factor 2
Active Process of Reflection on Negative Experience		
1. I actively take the time to reflect on the stressful events that happen in my life.	-.689	-.027
2. I prefer not to think about the meaning of the stressful life events that I encounter (R).	-.516	.085
3. I actively focus on the meaning of the stressful events that I encounter.	-.906	-.076
4. I usually find myself thinking about the value of the stressful events that I encounter.	-.520	.266
General Lay Beliefs about Negative experience		
5. Stressful life events can make my life meaningful.	-.159	.619
6. There can be value in stressful experiences.	-.077	.626
7. I think that experiencing stressful events in life is meaningful.	.097	.887
8. I think that there is little value in experiencing stressful events (R).	.037	.666
9. I understand that experiencing stressful events can be beneficial.	-.037	.554

Confirmatory Factor Analysis. We specified LISREL to freely estimate the correlations between the two MINE factors. Across all standard fit indices, the two-factor model showed good model fit (CFI = .983, NNFI = .976, IFI = .983, SRMR = .044, and RMSEA = .053). More

using eigenvalues from the reduced correlation matrix suggested a 2-factor model. Root Mean Square Error of Approximation (RMSEA), which was computed using Browne's (1992) FITMOD program and maximum likelihood model fitting, suggested the 2-factor model (RMSEA = .096) fits the data substantially better than the 1-factor model (RMSEA = .145), $\chi^2(1) = 155.42$, $p < .001$, but not substantially worse than the 3-factor model (RMSEA = .081); (Fabrigar & Wegener, 2012).

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importantly, the hypothesized two-factor model provided significantly better model fit than the single factor model (CFI = .810, NNFI = .746, IFI = .812, SRMR = .091, and RMSEA = .173), $\chi^2(1) = 155.42, p < .001$. The two MINE factors were moderately correlated with each other, $r = .67$.

Taken together, the results of both EFA and CFA demonstrated that the nine-item MINE scale measures two latent factors, which we have identified as: (1) individuals' positive general lay beliefs about negative experiences, and (2) individuals' tendency to actively reflect on the meaning or value of negative experiences.

Chapter 3

Study 1

In the pilot study, we described the adaptation of the MINE measure to fit our conceptualization and examined its factor structure. In Study 1, we established measurement invariance of the final nine-item MINE measure across the two cultures that are well known to differ in dialectical thinking: Chinese and Euro-Canadians. Then, we used the nine-item MINE measure to examine if Chinese and Euro-Canadians differ in their tendency to engage in meaning-making in negative experiences. We expected Chinese to report a higher tendency to engage in meaning-making in negative experiences than Euro-Canadians would.

3.1 Method

3.1.1 Participants

Three hundred and ninety-six Euro-Canadian (53 men, 335 women, and 8 unknown; $M_{\text{age}} = 18.20$, $SD_{\text{age}} = 1.46$) undergraduates from Queen's University, and 331 Chinese undergraduates from Peking University (86 men, 238 women, and 7 unknown; $M_{\text{age}} = 20.87$, $SD_{\text{age}} = 1.98$) participated in this study. Participants either received course credit or payment for their participation.

Under moderately good conditions (communality of majority of measured variables range from .40 to .82, and at least 4 to 5 measured variables loading on each factor, based on the property of the data from the factor analyses in the pilot study; Fabrigar & Wegener, 2012; MacCallum et al., 1999), an estimated sample size between 200 and 400 per group for the measurement invariance test would suffice (Meade, 2005). Assuming the power to be .95, α to

be .05, and a small to medium effect size (to be conservative), $d = .25$, an a priori power analysis using G*Power3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) estimated that a minimum sample size of 347 per group would be required for the independent samples t test to detect the mean difference between the two cultural groups.

3.2 Materials and Procedures

The nine-item MINE scale was translated into Chinese and checked by bilingual researchers for equivalence. Participants indicated their agreement with each of the statements in the MINE measure on a six-point scale (1 = *Strongly disagree*, 6 = *Strongly agree*), and provided their demographic information (e.g., age, gender, and ethnicity).

3.3 Results

3.3.1 Internal consistency of the MINE scale.

The nine-item MINE scale had high internal consistency among participants from both cultures. The Cronbach's alpha coefficient of the overall MINE scale was .85 for Euro-Canadians ($\alpha = .82$ for the general belief items and $\alpha = .76$ for the active process items) and .81 for Chinese ($\alpha = .75$ for the general belief subscale and $\alpha = .74$ for the active process subscale). Likewise, the coefficient omega of the overall MINE scale was .85, 95% CI [.82, .88] for Euro-Canadians ($\omega = .83$, 95% CI [.80, .85] for general belief items and $\omega = .77$, 95% CI [.72, .81] for active reflection process items), and .82, 95% CI [.79, .85] for Chinese ($\omega = .75$, 95% CI [.70, .80], for the general belief items; $\omega = .74$, 95% CI [.68, .78] for the active reflection process items).

3.3.2 MINE measurement invariance.

To make meaningful comparisons across cultures, we tested the measurement invariance for MINE by performing a multi-sample model test, in which we compared the fit of the factor invariance model (in which equality constraints were placed on the factor loadings of the items for Euro-Canadians and Chinese) with the fit of the unconstrained model using a chi-square difference test (Horn & McArdle, 1992; Riordan & Vandenberg, 1994; Vandenberg & Lance, 2000). The fit of the constrained model was not significantly different from the unconstrained model, $\chi^2(9) = 6.42, p = .698$.³ Thus the factor structure of, and factor loadings of the items in the MINE scale across both samples were comparable, indicating pattern invariance.⁴ These two factors (general lay beliefs about, and active process of reflection on the meaning and value of negative experiences) had moderately high inter-correlations among Euro-Canadians ($r = .69$) and Chinese ($r = .77$). See Table 2 for the factor loadings of the MINE scale for Euro-Canadians and Chinese participants.

Taken together, these findings suggest that the MINE scale has similar factor structures and loadings across both cultural groups.

³ The fit of the multi-sample model after constraining the factor loadings of the items for Euro-Canadians to be equal to those for Chinese (CFI = .970, NNFI = .965, IFI = .970, SRMR = .077, & RMSEA = .072) was not significantly different from the fit of the model when their factor loadings were not constrained (CFI = .969, NNFI = .958, IFI = .970, SRMR = .061, & RMSEA = .079), $\chi^2(9) = 7.60, p = .575$. The chi-square test of perfect fit of the unconstrained model was $\chi^2(52) = 169.722, p < .001$, and chi-square test of perfect fit for the constrained model was $\chi^2(61) = 176.138, p < .001$.

⁴ We examined the structural (metric) invariance test here because we would like to make sure that the factor structure of the MINE measure is similar and comparable across both culture groups. As the metric invariance across the two groups indicates that each item of the scale loads onto the specified latent factor in a similar manner, it provides a foundation that allows us to make comparisons across groups on overall MINE as well as the two underlying MINE factors (Byrne, Baron & Campbell, 1993).

Table 2

Parameter Estimates for the Factor Loadings (Standard Errors) of the Measured Variables in the Two-Factor MINE Model for Canadians (N = 396) and Chinese (N = 327).

	Factor loadings for CA		Factor loadings for CH	
	MINE Process	MINE Beliefs	MINE Process	MINE Beliefs
1. I actively take the time to reflect on the stressful events that happen in my life.	.668 (.048)		.633 (.054)	
2. I prefer not to think about the meaning of the stressful life events that I encounter (R).	.447 (.052)		.422 (.058)	
3. I actively focus on the meaning of the stressful events that I encounter.	.827 (.045)		.819 (.051)	
4. I usually find myself thinking about the value of the stressful events that I encounter.	.752 (.047)		.705 (.053)	
5. Stressful life events can make my life meaningful.		.831 (.043)		.685 (.054)
6. There can be value in stressful experiences.		.770 (.045)		.694 (.054)
7. I think that experiencing stressful events in life is meaningful.		.775 (.045)		.717 (.053)
8. I think that there is little value in experiencing stressful events (R).		.455 (.051)		.408 (.059)
9. I understand that experiencing stressful events can be beneficial.		.648 (.048)		.521 (.057)

Note. CFA demonstrated that the two-factor model for Canadians (CA); (CFI = .97, NNFI = .96, IFI = .97, SRMR = .04, & RMSEA = .06) and Chinese (CH); (CFI = .91, NNFI = .88, IFI = .91, SRMR = .06, RMSEA = .09) showed adequate model fit.

3.4 Culture differences in MINE.

The two negatively worded items were first reverse coded before all the nine items on MINE were averaged to form an average MINE index. In addition, the five and four items on the respective subscales were averaged to form the general lay beliefs index and the active reflection process index, respectively. To examine culture differences in MINE, we conducted three

independent samples *t* test on people's (1) average MINE tendency, (2) general lay beliefs about negative experiences, and (3) tendency to actively reflect on negative experiences.⁵ In line with our prediction, Chinese ($M = 4.36$, $SD = .66$) reported higher averaged MINE than did Euro-Canadians ($M = 4.00$, $SD = .79$), $t(721) = 6.81$, $p < .001$, $d = .51$.⁶ Specifically, Chinese ($M = 4.58$, $SD = .70$) reported more positive general lay beliefs about negative experiences than did Euro-Canadians ($M = 4.09$, $SD = .86$), $t(721) = 8.39$, $p < .001$, $d = .63$. Chinese also ($M = 4.09$, $SD = .81$) reported a higher tendency to actively reflect on their negative experiences than did Euro-Canadians ($M = 3.87$, $SD = .93$), $t(719) = 3.34$, $p = .001$, $d = .25$.

3.5 Summary

In sum, the final nine-item MINE scale had high internal consistency across both Euro-Canadians and Chinese and measurement invariance across both cultural groups. Consistent with our hypothesis, Chinese reported higher tendencies to engage in meaning-making in negative experiences than North Americans did.⁷ Specifically, Chinese tended to have a more positive belief about negative experiences and were more likely to engage in the active process of reflection on the meaning or value of negative situations they encountered, compared to Canadians.

⁵ Using Bonferroni correction, adjusted α was set at .017 (.05/3) to control for a Familywise error rates of the effect of culture on the three MINE indices.

⁶ Because Levene's test indicated that the assumption for homogeneity of variances for all three *t* tests were violated, $ps \leq .024$, the three *t* test were reported under the assumption that equal variances were not assumed (degrees of freedom were corrected for the unequal group variances).

⁷ We also compared just women across both cultures and found that Chinese women scored higher in their MINE than Euro-Canadian women, $ts > 2.67$, $ps < .008$, $ds > .022$.

Chapter 4

Study 2

In Study 1, we established measurement invariance of the nine-item MINE scale across both cultural groups and found that Chinese had a higher tendency to engage in meaning-making in negative experiences than did Canadians. In Study 2, we aimed to replicate and extend Study 1's findings by examining how these cultural differences in the tendencies to engage in meaning-making in negative experiences could influence individuals' *acceptance* and *positive reframing* coping styles. We predicted that Chinese would be more likely than Canadians to report engaging in *acceptance* and *positive reframing* coping styles; and these differences in coping styles would be explained by individual differences in their tendencies to engage in meaning-making in negative experiences.

4.1 Method

4.1.1 Participants.

Two hundred and thirteen Euro-Canadian (30 men, and 183 women; $M_{\text{age}} = 19.04$, $SD_{\text{age}} = 2.05$) undergraduates from a Canadian University, and 224 Chinese undergraduates from a Chinese university (180 men, and 44 women; $M_{\text{age}} = 19.73$, $SD_{\text{age}} = .934$) participated in this study. Assuming the power to be .95, α to be .05, and d to be .51 (estimated effect size of culture on individuals' average MINE based on Study 1), an a priori power analysis using G*Power3.1 (Faul et al., 2009) estimated that a minimum sample size of 168 would be required for an independent samples t test to detect the mean difference between the two cultural groups. Participants either received course credit or payment for their participation.

4.1.2 Materials and Procedure.

Participants completed the nine-item MINE scale as in Study 1, the Brief COPE inventory (Carver, 1997), and a general demographic questionnaire (e.g., age, gender, and ethnicity). The Brief COPE inventory consists of 28 items that assess 14 different coping styles. Each coping style was measured by two items that reflect a particular way of coping with the stress in their life. For example, *acceptance* coping was measured by “I’ve been accepting the reality of the fact that it has happened” and “I’ve been learning to live with it,” and *positive reframing* coping was measured by “I’ve been trying to see it in a different light, to make it seem more positive” and “I’ve been looking for something good in what is happening.” Although we were interested only in *acceptance* and *positive reframing* coping styles in the present research, and made no predictions for how individuals’ tendency to engage in meaning-making is associated with the other coping styles, we included the full COPE scale in this study for exploratory purposes. Participants indicated the extent to which they had been engaging in each coping response when dealing with problems or stressors in their lives on a four-point scale (1 = *I haven’t been doing this at all*; 4 = *I’ve been doing this a lot*).

4.2 Results and Discussion

4.2.1 Culture differences in MINE.

Replicating Study 1, Chinese ($M = 4.47$, $SD = .54$) reported a higher tendency to engage in meaning-making in negative experiences than did Euro-Canadians ($M = 4.15$, $SD = .73$), $t(390.60) = 5.30$, $p < .001$, $d = .51$.⁸ Specifically, Chinese ($M_{\text{belief}} = 4.58$, $SD = .66$) endorsed a

⁸ Levene’s test indicated that the assumption for homogeneity of variances for all three t -tests were violated, $ps \leq .054$, thus the t -tests were reported under the assumption that equal variances were not assumed (degrees of freedom were corrected for the unequal group variances).

more positive general lay belief about negative experiences as compared to Euro-Canadians ($M_{\text{belief}} = 4.27, SD = .79$), $t(413.23) = 4.51, p < .001, d = .43$; and Chinese ($M_{\text{process}} = 4.35, SD = .55$) were also more likely to actively reflect on negative experiences as compared to Euro-Canadians ($M_{\text{process}} = 4.00, SD = .97$), $t(331.44) = 5.23, p < .001, d = .44$.

4.2.2 Associations between MINE and coping styles.

As displayed in Table 3, both Euro-Canadians' and Chinese's tendencies to engage in MINE were positively correlated with their *acceptance* and *positive reframing* coping styles.^{9 10}

⁹ Some research has shown that interpersonal and intrapersonal resources (such as general self-efficacy, perceived social support, and optimism) often help one manage and cope with stress during adversities (e.g., Bonanno, 2011; Eggerman & Panter-Brick, 2010; Kato, 2014). In a separate study with ($N = 224$) Euro-Canadians, we found that their tendencies to engage in MINE predicted *acceptance* and *positive reframing* coping styles, above and beyond the effect of individuals' self-efficacy, social support, and optimism.

¹⁰ For exploratory purposes, we included all the correlations between individuals' MINE tendencies and their coping styles in Table 4 (see Appendix B). Both Canadians' and Chinese's MINE tendencies were also positively correlated with individuals' *active coping*, *emotional support*, *instrumental support*, and *planning coping* styles. There was, however, no measurement invariance across both cultural groups for these other four coping styles. Thus, it will be difficult to make meaningful cultural comparison.

Table 3

Correlations of Meaning-Making in Negative Experiences between Acceptance and Positive Reframing Across Cultures

	1	2	3	4	5
Euro-Canadians					
1. MINE Overall	-				
2. MINE Belief	.841**	-			
3. MINE Process	.836**	.406**	-		
4. COPE Acceptance	.275**	.252**	.208**	-	
5. COPE Positive Reframing	.369**	.350**	.268**	.493**	-
Chinese					
1. MINE Overall	-				
2. MINE Belief	.928**	-			
3. MINE Process	.831**	.564**	-		
4. COPE Acceptance	.387**	.338**	.354**	-	
5. COPE Positive Reframing	.419**	.399**	.334**	.675**	-

Note: ** $p < .001$

4.3 Cultural differences in Acceptance and Positive Reframing coping styles.

To ensure that *acceptance* and *positive reframing* coping measures were invariant and comparable across the two cultural groups, we compared the fit of the constrained model based on the four items measuring these coping styles (i.e., equality constraints were placed on the factor loadings of the items on the respective coping styles for both Euro-Canadians and Chinese) with the fit of the unconstrained baseline model using a chi-square difference test. The fit of the constrained model was not significantly different from the unconstrained model, $\chi^2(4) = 3.30, p = .510$, indicating their measurement invariance across both cultural groups.¹¹

¹¹ The fit of the model after constraining the factor loadings of the items on the respective acceptance and positive reframing coping for Euro-Canadians to be equal to those for Chinese (CFI = 1.00, NNFI = 1.007, IFI = 1.003, SRMR = .047, & RMSEA = .00) was not significantly different from the fit of the multi-sample model when their factor loadings were not constrained (CFI = 1.00, NNFI = 1.011, IFI = 1.002, SRMR = .014, & RMSEA = .00),

Next, we conducted two independent samples *t* tests on each of the coping styles, with culture as the independent variable. Chinese ($M_{\text{acceptance}} = 3.00$, $SD = .63$; $M_{\text{positive reframing}} = 3.13$, $SD = .60$) reported that they were more likely to engage in *acceptance* and *positive reframing* copings when confronting stressful experiences, compared to Euro-Canadians ($M_{\text{acceptance}} = 2.75$, $SD = .65$; $M_{\text{positive reframing}} = 2.61$, $SD = .75$), $t(435 \text{ and } 406.42) = 4.15 \text{ and } 7.99$, $ps < .001$, $ds = .40 \text{ and } .77$, respectively.¹²

4.3.1 Mediation analysis.

Finally, we ran two mediation analyses (one on each coping style) to determine whether culture differences in individuals' coping styles were at least in part due to their tendencies to engage in meaning-making during negative experiences. Using Hayes's (2018) PROCESS macro for SPSS (version 3.1), we entered culture (+.5 = Chinese, -.5 = Canadians) as the predictor, average meaning-making in negative experience as the mediator, and *acceptance* and *positive reframing coping* styles as the dependent variables, respectively, in each mediation analysis.

Acceptance coping. Culture was significantly related to individuals' average MINE tendency, $b = .326$, $t(435) = 5.34$, $p < .001$, which in turn was positively associated with individuals' *acceptance* coping, $b = .321$, $t(434) = 7.05$, $p < .001$, $t(435) = 8.78$, $p < .001$. Based on 10,000 bootstrap samples, a 95% confidence interval for the indirect effect ($b = .105$) did not include 0, 95%CI [.059, .162], indicating a significant indirect effect of culture on *acceptance* coping through MINE (see Figure 1).

$\chi^2(4) = 3.296$, $p = .510$. The chi-square test of perfect fit of the unconstrained model was $\chi^2(2) = 1.235$, $p = .539$, and chi-square test of perfect fit for the constrained model was $\chi^2(6) = 4.531$, $p = .605$.

¹² Levene's test indicated that the assumption for homogeneity of variances for *positive reframing* was violated, $p = .001$, the *t* test for *positive reframing* was reported under the assumption that equal variances were not assumed (degrees of freedom were corrected for the unequal group variances).

Positive Reframing coping. Likewise, individuals' average MINE tendency was positively related to their *positive reframing* coping, $b = .414$, $t(435) = 8.78$, $p < .001$. Based on 10,000 bootstrap samples, the 95% confidence interval for the indirect effect ($b = .135$) did not include 0, 95%CI [.082, .202], indicating a significant indirect effect of culture on *positive reframing* coping through MINE (see Figure 1).¹³

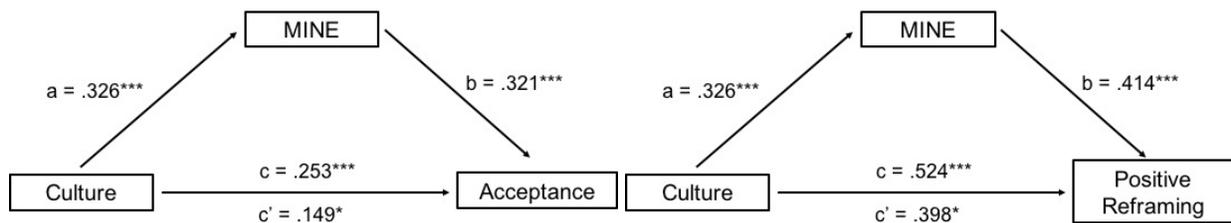


Figure 1. Unstandardized regression coefficients for the relationship between culture (+5 = Chinese, -.5 = Canadians) and *acceptance* (left) and *positive reframing* (right) coping styles as mediated by MINE. * $p < .05$, *** $p < .001$.

4.4 Summary

Replicating Study 1, we found that Chinese reported a higher tendency to engage in meaning-making in negative experiences, compared to Euro-Canadians. Individuals' tendencies to engage in meaning-making in negative experiences were positively associated with their *acceptance* and *positive reframing* coping styles, and this was true for participants from both cultures. Consistent with our predictions, Chinese participants were more likely to engage in *acceptance* and *positive reframing* copings than Euro-Canadians did; and this cultural difference

¹³ It is important to note that the alternative models that demonstrate the indirect relationship between culture and individuals' MINE tendencies through their *acceptance* and *positive reframing* coping styles also were significant, $bs = .08$ and $.19$, 95%CI [.04, .14] and [.13, .27], respectively. This suggests that the current mediation findings should be interpreted with caution because it is equally likely that individuals' coping styles may have mediated the cultural differences in individuals' MINE tendencies instead. We discuss this potential limitation in the general discussion.

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was partially accounted for by individuals' tendency to engage in meaning-making in negative experiences.

Chapter 5

Study 3

In Study 1 and 2, we consistently demonstrated cultural differences in people's tendency to engage in meaning-making in negative experiences, presumably due to cultural differences in dialectical thinking. In Study 3, we aimed to examine dialectical thinking directly by manipulating it. We predicted that compared to individuals primed to endorse a non-dialectical orientation, people primed to endorse a dialectical orientation would report higher tendency to engage in meaning-making in negative experiences and consequently be more likely to adopt *acceptance* and *positive reframing* coping styles, as shown in Study 2.

5.1 Method

5.1.1 Participants

Two hundred and twenty-three Euro-Canadian undergraduates (192 women, 31 men; $M_{\text{age}} = 18.47$, $SD_{\text{age}} = 1.31$) from Queen's University participated in this study. All participants received course credit for their participation. Assuming the power to be .95, α to be .05, and d to be .52 (estimated effect size of culture on individuals' average MINE scores based on Studies 1 and 2 $((.53 + .51)/2)$), an a priori power analysis using G*Power3.1 (Faul, et al., 2009) estimated that a minimum sample size of 162 would be required for an independent samples t test to detect the mean difference between the two independent groups.

5.1.2 Materials and Procedure

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Following Ma-Kellams, Spencer-Rodgers, and Peng's (2011) procedure, we manipulated participants' dialectical (vs. linear) thinking by presenting them with a fabricated *ScienceNow* article comprised of arguments that promote either a non-linear, dialectical orientation ("*Aristotle Got It Wrong*") or a linear, non-dialectical orientation ("*Aristotle Was Right: Truth is Truth*"). Each of these articles was one-page long and briefly described the respective orientation together with arguments supported by a series of "scientific findings." In sum, each of the articles demonstrated why the respective orientation is beneficial and adaptive. See an excerpt of the pro dialectical orientation scientific article below (refer to the appendix for both of the full articles):

A new series of cross-cultural studies have demonstrated that Eastern dialectical thinking emerges as an . . . accurate view of reality. In simple terms, dialecticism is grounded on the key principles that: 1) everything is always in constant flux, as reality itself is a process; 2) reality is not precise or cut-and-dried, but rather full of contradiction; and 3) nothing is isolated and independent, but rather everything is connected. Currently, researchers . . . are examining the implications of such a paradigm shift in our conceptions of what is reasonable, logical, and functional. A group of professors and Ph.D. candidates from the University of Michigan have found, for example, that individuals who consider multiple sides of the same issue during problem-solving tasks tend to perform better."

Participants were randomly assigned to either the dialectical or nondialectical condition. They were told that the purpose of this study was to explore "*how university students understand and assimilate new scientific findings*" (Ma-Kellams et al., 2011). They were given three minutes to read and process the (fabricated) scientific news article. After which, they wrote three to eight sentences presenting evidence derived from their own lives in support of the argument they had read.

Afterward, they completed the nine-item MINE scale, the coping items from the Brief COPE inventory, and the demographic questionnaire before they were debriefed.

5.2 Results & Discussion

5.2.1 Manipulation check

As a manipulation check, we examined participants' writing to see if they followed the instructions given in the priming task. Out of the 223 participants, 221 of them wrote at least two paragraphs of content (i.e., about 5 sentences on average) that were in support of the argument that they had read. The two participants who failed the manipulation check (i.e., one wrote only 1 word and the other left it blank) were excluded from our subsequent analyses.

5.2.2 Effect of dialectical orientation on MINE.

Consistent with our prediction, participants who were primed with the dialectical orientation reported (1) higher average MINE tendencies ($M_{dialectical} = 4.53, SD = .64$ vs. $M_{nondialectical} = 4.07, SD = .70$), (2) more positive general lay beliefs about negative experiences ($M_{dialectical} = 4.77, SD = .70$ vs. $M_{nondialectical} = 4.41, SD = .77$), and (3) higher tendency to actively reflect on negative experiences ($M_{dialectical} = 4.23, SD = .90$ vs. $M_{nondialectical} = 3.65, SD = .96$), $t(219) \geq 3.67, ps < .001, ds \geq .49$.¹⁴

5.2.3 Effect of dialectical orientation on coping styles.

In line with our predictions, dialectically primed participants ($M = 2.69, SD = .72$) were more likely to engage in *acceptance* coping than non-dialectically primed participants ($M = 2.36, SD = .68$), $t(219) = 3.47, p = .001, d = .47$. In addition, dialectically primed participants ($M = 2.84, SD = .84$) reported a higher tendency to engage in *positive reframing* coping, compared to

¹⁴ Levene's tests for Equality of Variances were not violated, $ps \geq .287$. Using Bonferroni correction, adjusted α was set at .017 (.05/3) to control for Familywise error rates of the effect of dialectical prime on the three MINE indexes.

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participants who were primed with the non-dialectical linear orientation ($M = 2.59$, $SD = .88$), $t(219) = 2.12$, $p = .035$, $d = .28$.

5.3 Mediation analysis.

Finally, we ran two mediation analyses to determine whether the relationship between dialectical thinking and coping styles were at least in part due to people's tendencies to make meaning during negative experiences. Using Hayes's (2018) PROCESS macro for SPSS (v3.1), we entered thinking style primes (+.5 = Dialectical Thinking, -.5 = Non-Dialectical Thinking) as the predictor, individuals' average MINE tendency as the mediator, and *acceptance* and *positive reframing coping* styles as the respective dependent variables.

5.3.1 Acceptance coping.

Dialectical prime was significantly related to individuals' average MINE tendency, $b = .459$, $t(219) = 5.07$, $p < .001$, which in turn was positively related to individuals' *acceptance* coping, $b = .148$, $t(218) = 2.12$, $p = .036$. Based on 10,000 bootstrap samples, the 95% confidence interval for the indirect effect ($b = .068$) did not contain 0, 95%CI [.002, .146], indicating a significant indirect effect of dialectical thinking on *acceptance* coping through MINE (see Figure 2).

5.3.2 Positive reframing coping.

Likewise, individuals' average MINE was positively related to their *positive reframing* coping, $b = .269$, $t(218) = 3.18$, $p = .002$. Based on 10,000 bootstrap samples, a 95% confidence interval for the indirect effect ($b = .123$) did not include 0, 95%CI [.036, .226], indicating a

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significant indirect effect of dialectical thinking on *positive reframing* coping through MINE (see Figure 2).¹⁵

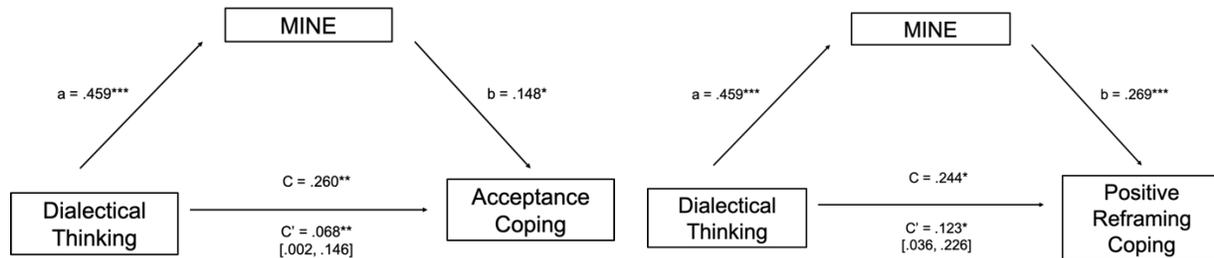


Figure 2. Unstandardized regression coefficients for the relationship between thinking styles (+5 = dialectical, -5 = non-dialectical) and *acceptance* (left) and *positive reframing* (right) coping styles as mediated by MINE. * $p < .05$, ** $p < .01$ *** $p < .001$.

5.4 Summary

In Study 3, we established the causal effects of dialectical thinking on people's tendency to make meaning in negative experiences and on coping styles. Participants who were primed to think dialectically reported a higher tendency to make meaning than participants who were primed to think non-dialectically, which was related to people's tendency to engage in *acceptance* and *positive reframing* coping styles.

¹⁵ The potential alternative models showed that the indirect relationship between dialectical prime and individuals' MINE tendencies through their *acceptance* and *positive reframing* coping styles also were significant, $bs = .05$ and $.04$, 95%CI $[.01, .11]$ and $[.00, .11]$, respectively. This suggests that the current mediation findings should be interpreted with caution because it is equally likely that individuals' coping styles may have mediated the group differences in individuals' MINE tendencies instead. We discuss this potential limitation in the general discussion.

Chapter 6

General Discussion

Across three studies, we consistently found that dialectical thinkers reported a stronger tendency to engage in meaning-making in negative experiences (MINE) than non-dialectical thinkers did. Specifically, compared to non-dialectical Euro-Canadians, dialectical Chinese reported a more positive general lay belief about negative experiences and were more likely to actively reflect on the value of the negative experiences, which was related to culture differences in their coping styles: Chinese were more likely than Euro-Canadians to engage in *acceptance* and *positive reframing* coping styles in stressful situations (Studies 1 and 2). Furthermore, we demonstrated the causal effect of dialectical thinking on individuals' tendencies to engage in meaning-making in negative experiences and coping within Euro-Canadians by manipulating individuals' dialectical thinking (Study 3). Compared to control individuals, people primed with dialectical orientation reported a higher tendency to engage in meaning-making in negative experiences and adopt *acceptance* and *positive reframing* coping styles. In sum, these findings highlight the importance of dialectical thinking styles in meaning-making and coping in response to negative experiences.

6.1 Theoretical contributions and implications

The present research contributes to the current literature on culture, meaning-making, and coping in a few ways. First, we adapted a meaning-making measure to assess individuals' tendency to engage in meaning-making in negative experience (MINE) and established its measurement equivalence across Chinese and Euro-Canadian samples. This indicated that the MINE measure captures the same underlying meaning-making construct for participants in both

cultures, making cross-cultural comparisons meaningful. The MINE scale, as the first of its kind that has been empirically validated across cultures, provides a useful tool for future research to assess individuals' tendencies to make meaning in negative experiences.

Second, adding on to the current meaning-making literature, we have provided further evidence showing that individuals' tendency to engage in meaning-making in negative experiences is associated with their coping styles, especially *acceptance* and *positive reframing*. Many studies in the current literature define meaning-making as the engagement in deliberate coping efforts to understand the situation and thus have characterized them as meaning-making coping (Park & Folkman, 1997; Folkman & Moskowitz, 2007). The majority of these studies do not differentiate meaning-making processes from coping efforts and often use selective COPE subscales (mostly *positive reframing*) as a proxy instead to tap onto people's meaning-making processes (Boehmer et al., 2007; Danhauer, Carlson, & Andrykowski, 2005; Manne, Ostroff, Fox, Grana, & Winkel, 2009; Park, 2005, 2008; Park et al., 2008; etcetera). The present research indicates that, although the meaning-making is positively associated with certain coping efforts, they are not the same thing. Indeed, across both Euro-Canadians and Chinese, individuals' tendency to engage in meaning-making in negative experience was only moderately correlated with *acceptance* and *positive reframing* coping styles (r s ranging from .28 to .42). More importantly, we also tested a "three-factor" model that reflected our expectation that the two MINE factors would load on two separate but correlated factors, and the coping styles would load on a third correlated factor. We found that it showed good model fit across all standard fit indices (CFI = .957, NNFI = .946, IFI = .958, SRMR = .043, and RMSEA = .060), and that the items that measure coping styles loaded on a different factor from the two MINE factors,

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suggesting that they are not the same constructs (see factor loadings summarized in Table 5 in Appendix B).

Finally, and most importantly, the current research has demonstrated the causal effect of dialectical thinking on individuals' tendencies to make meaning in negative experiences. The lay beliefs about the mutual existence of, and the constant oscillation between, contradictory elements in all things have led dialectical thinkers to endorse a more positive lay belief about negative experiences and be more likely to actively reflect on the value of adversity, instead of perceiving adverse experiences as threatening and trying to run away from the experiences. As such, dialectical thinkers not only reported a higher tendency to engage in meaning-making in adverse experiences, but they also are more likely to use *acceptance* and *positive reframing* strategies when coping with adversity, compared to non-dialectical thinkers.

One construct that is highly relevant to stress and negative experiences is resilience. Being resilient means being able to overcome stress, “bounce back” from or grow in the face of adversities, which eventually decreases one's vulnerability to future stressors (Southwick et al., 2014). Researchers in the current stress and resilience literature focus on understanding the protective factors (e.g., personal resources, social support, etc.) that promote resilience among people in times of stress (Bonanno, 2005). Bonanno (2004, 2005) argued that individuals who feel that their life has meaning and purpose and who believe negative life experiences are growth opportunities may be more resilient in the face of crisis. Tugade and Fredrickson (2007) also advocated that people who are able to find positive elements in negative events (i.e., silver lining) may be better at adapting and adjusting to, as well as coping with, life's challenges.

The current research can potentially be extended to the stress and resilience literature and further broaden our understanding of the relationship between stress and resilience. Although no

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research has directly examined the role of dialectical thinking and meaning-making in negative experiences in promoting resilience, we suggest that having a more positive lay belief about negative experiences and a higher tendency to actively reflect on the value of the negative experiences may help facilitate individuals' resilience. Bonanno et al. (2005) suggested that meaning-making can allow for quicker "understandings" of future similar adversities, which will act as buffer against stress as it helps individuals better manage the difficult situation without experiencing too much discrepancies between their global beliefs and their appraisal of the current situation. Future research could directly examine individuals' tendencies to engage in meaning-making in negative experience and resilience to better clarify their relationship with each other.

The present findings may help expand our understanding of the cultural differences in the prevalence of affective disorders, such as depression and anxiety. According to most epidemiological studies, the clinical rates of depression and anxiety disorders often are lower among Asian Americans than among Euro-Americans (Asnaani, Richey, Dimaite, Hinton, & Hofmann, 2010; Kawakami, Steele, Cifa, Phills, & Dovidio, 2008; Kessler, Berglund, Demler, et al., 2005; Lee, Tsang, Breslau, et al., 2009; Shen, Zhang, Huang, & et al., 2006; Weissman et al., 1996). Certainly, it could be because they are being manifested differently across different cultures. Another possibility, however, could be due to Eastern holistic and dialectical system of thought, which may have provided a foundation for East Asians to develop ways to adaptively manage negative emotions and experiences in most situations (De Vaus et al., 2017). Our findings suggest that individuals' tendencies to engage in meaning-making in negative experiences may be one such way. That is, the tendencies to engage in meaning-making in negative experiences may contribute to dialectical thinkers' adaptive regulation of negative

affect in most negative experiences, and thus indirectly contribute to the lower prevalence of affective disorders in East Asian cultures.

So far, we have been arguing that the documented tendency to engage in meaning-making and the two coping strategies are adaptive. There are, however, exceptions where they could be maladaptive. For example, for mistreated individuals who are involved in harmful relationships, it may be more maladaptive to perceive the negative experiences as meaningful or actively reflect on the value of the negative experiences because it may lead these ill-treated individuals to tolerate and stay in such abusive relationships rather than end them. Likewise, depending on the stressful situation that one is in, the two coping styles may turn out to be more maladaptive than other coping strategies. For example, for rape victims, accepting and positively reframing the negative experience may be more detrimental, whereas behavioral disengagement may turn out to be more beneficial instead. Therefore, it is important to note that the benefit and positive outcomes of meaning-making tendencies and coping styles may be dependent on the context of negative experiences.

6.2 Future directions

The present research focused on how dialectical thinking influences individuals' tendency to engage in meaning-making and coping strategies in response to hypothetical adversity. Future research should expand the present research and examine some of the practical implications of meaning-making in negative experience in various real-life situations. For example, in educational settings, students inevitably face challenges such as school work, exam, social and academic difficulties. Compared to non-dialectically thinking students, would dialectically thinking individuals be more likely to engage in meaning-making during those

stressful periods of time and cope with the stressors? Future studies could further examine some of the academic and well-being consequences that may be associated with individuals' meaning-making tendencies.

Likewise, in the close relationship context, meaning-making in negative experiences may potentially play a role in people's relationship persistence and endurance as couples cope with challenges (other than extremely detrimental ones, such as abusive partner) in their relationship. For example, throughout the course of a relationship, people inevitably experience negative or stressful times (e.g., financial difficulty, miscarriages, betrayal of trust, neglect or absence of support due to work duties, etc.). Some relationships endure through these stressful times; whereas others end in dissolution. Of course, many factors (such as trust, commitment, satisfaction, attachment styles, etc.) could play a role in the maintenance or dissolution of a relationship. In addition to these factors, we think future research potentially could examine whether a dialectical system of thought would shape individuals' tendencies to engage in meaning-making in negative experiences in close relationship context, and thus help them cope with relationship difficulties (e.g., engage in pro-relationship behaviors during these stressful times).

Finally, in clinical settings, meaning-making in negative experiences may be beneficial for people dealing with adverse situations, such as distress and anxiety. Studies have shown that the pressure or need to devalue negative emotions has played a major role in individuals' depression symptoms (Dejonckheere, Bastian, Fried, Murphy, & Kuppens, 2017), presumably because negative experiences often are perceived as problematic and undesirable (Bastian, Kuppens, Hornsey, Park, Koval, & Uchida, 2012; Suh, Diener, Oishi, & Triandis, 1998). The present research suggests that, encouraging people to endorse dialectical thinking (i.e.,

acknowledge and understand that both positive and negative emotions can co-exist, and that change is likely) may produce positive outcomes, as dialectical thinking can lead to more positive (or less negative) beliefs about their negative experiences, and greater reflection on the value of their negative experiences. Future studies should extend current findings to more psychologically vulnerable populations to directly examine the clinical utility of dialectical thinking and tendencies to engage in meaning-making in negative experiences.

6.3 Limitations

Although we examined and found that individuals' tendency to engage in meaning-making in negative experience (MINE) mediated the cultural (Study 2) and group (Study 3) differences in individuals' coping styles, we should be careful in concluding individuals' tendency to engage in MINE as the mechanism underlying the cultural and group differences in coping because an equally possible alternative model—coping styles mediating cultural and group differences in individuals' MINE tendencies—was also significant. As such, in the present research, we cannot rule out the possibility that individuals' coping styles may be accounting for the cultural differences in individuals' tendency to engage in MINE instead. To rule out the alternative model and clarify the mediating role of MINE, future research should examine the effect of MINE on the coping styles more directly by manipulating individuals' tendency to engage in MINE.

Another closely related concern with the mediation findings is whether the relationship between culture and the two coping styles could be an artifact of something other than individuals' tendency to engage in meaning-making in negative experience. For example, it seems possible that cultural differences in coping styles may be due, at least in part, to the

cultural differences in their tendency to use different emotion regulation strategies. Studies have shown that individuals from collectivistic cultures are more oriented towards emotion suppression, and are less emotionally expressive, than individuals from individualistic cultures (Gross & John, 2003; Matsumoto, Nezlek, & Koopman, 2007; Matsumoto, Yoo, Nakagawa, et al., 2008). Studies also have shown that suppression led individuals from interdependent cultures to cope and adjust more adaptively than individuals from independent cultures (Huang & Leong, 1994; Le & Impett, 2013). Although Study 3 partially addressed this concern by manipulating and showing the effect of dialectical thinking on individuals' tendency to engage in meaning-making in negative experiences, the association between individuals' meaning-making tendencies and coping styles is less clear. Future studies should either attempt to manipulate individuals' meaning-making tendencies to directly examine the effect of meaning-making on coping or simultaneously measure and control for the various emotion regulation strategies to clarify the effect of meaning-making on coping above and beyond these emotion regulations.

In the present research, we focus on meaning making in stressful rather than general life situations, presumably because meaning-making seems most relevant in the context of stressful situations. A potential limitation of the current research is that we did not directly compare the current MINE measure with other meaning-making scales that refer to life events in general, and therefore could not establish the incremental validity of the current MINE measure. It will be important for future research to demonstrate the importance of contextualizing and measuring meaning-making tendencies in the context of negative experiences.

Finally, although it is theoretically meaningful to conceptualize and establish the two underlying factors in the meaning-making in negative experiences construct (i.e., general lay beliefs about negative experiences and active reflection on the meaning of the negative

experiences), it is currently unclear how practically meaningful is this distinction because the two underlying constructs are not only highly correlated with each other ($r_s \geq .406$) but also have similar predictions for different coping strategies. Future work should examine and establish the distinct predictive values of each of these two underlying factors if there are any.

6.4 Conclusion

With the cross-culturally validated MINE scale to assess individuals' tendency to make meaning in negative experience, we have shown that dialectical thinking, manifested in both cross-cultural and within-cultural samples, increases people's tendency to engage in meaning-making in negative experiences, which further predicts people's coping styles in response to adversity.

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Appendix A

Scales

9-item Revised MINE Scale

Everyone experiences stress.

The statements below concern how you generally feel when you experience stressful events in life. Respond to each statement by indicating how much you agree or disagree with it.

There are no "right" or "wrong" answers, so please answer according to your personal opinion, rather than how you think "most people" would answer.

Please use the scale from 1 (strongly disagree) to 6 (strongly agree).

Active process of meaning making in negative experiences (process focus):

1. I actively take the time to reflect on the stressful events that happen in my life.
2. I prefer not to think about the meaning of the stressful life events that I encounter. (R)
3. I actively focus on the meaning of the stressful events that I encounter.
4. I usually find myself thinking about the value of the stressful events that I encounter.

General belief about meaning in negative experiences (outcome focus/beliefs):

5. Stressful life events can make my life meaningful.
6. There can be value in stressful experiences.
7. I think that experiencing stressful events in life is meaningful
8. I think that there is little value in experiencing stressful events. (R)
9. I understand that experiencing stressful events can be beneficial.

DIALECTICAL THINKING, MINE, COPING

Brief COPE – 28 items, 14 subscales¹⁶ (Carver, 1997)

These items deal with ways you've been coping with stress in your life. There are many ways to try to deal with problems. These items ask what you've been doing to cope with stressful situations in your life. Each item says something about a particular way of coping. We want to know to what extent you've been doing what the item says – how much or how frequently. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

Please indicate the extent to which you agree with each of the following statements by clicking on the circle under each response.

Please use this scale:

- 1 = I haven't been doing this at all
- 2 = I've been doing this a little bit
- 3 = I've been doing this a medium amount
- 4 = I've been doing this a lot

¹⁶ Self-distraction, items 1 and 19

Active coping, items 2 and 7

Denial, items 3 and 8

Substance use, items 4 and 11

Use of emotional support, items 5 and 15

Use of instrumental support, items 10 and 23

Behavioral disengagement, items 6 and 16

Venting, items 9 and 21

Positive reframing, items 12 and 17

Planning, items 14 and 25

Humor, items 18 and 28

Acceptance, items 20 and 24

Religion, items 22 and 27

Self-blame, items 13 and 26

DIALECTICAL THINKING, MINE, COPING

1. I've been turning to work or other activities to take my mind off things.
2. I've been concentrating my efforts on doing something about the situation I'm in.
3. I've been saying to myself "this isn't real."
4. I've been using alcohol or other drugs to make myself feel better.
5. I've been getting emotional support from others.
6. I've been giving up trying to deal with it.
7. I've been taking action to try to make the situation better.
8. I've been refusing to believe that it has happened.
9. I've been saying things to let my unpleasant feelings escape.
10. I've been getting help and advice from other people.
11. I've been using alcohol or other drugs to help me get through it.
12. I've been trying to see it in a different light, to make it seem more positive.
13. I've been criticizing myself.
14. I've been trying to come up with a strategy about what to do.
15. I've been getting comfort and understanding from someone.
16. I've been giving up the attempt to cope.
17. I've been looking for something good in what is happening.
18. I've been making jokes about it.
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
20. I've been accepting the reality of the fact that it has happened.
21. I've been expressing my negative feelings.
22. I've been trying to find comfort in my religion or spiritual beliefs.
23. I've been trying to get advice or help from other people about what to do.
24. I've been learning to live with it.
25. I've been thinking hard about what steps to take.
26. I've been blaming myself for things that happened.
27. I've been praying or meditating.
28. I've been making fun of the situation.

Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet & Farley, 1988)¹⁷

Instructions: We are interested in how you feel about the following statements.

Read each statement carefully, and indicate how you feel about each statement on a scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*).

1. There is a special person who is around when I am in need.
2. There is a special person with whom I can share my joys and sorrows.
3. My family really tries to help me.
4. I get the emotional help and support I need from my family.
5. I have a special person who is a real source of comfort to me.
6. My friends really try to help me.
7. I can count on my friends when things go wrong.
8. I can talk about my problems with my family.
9. I have friends with whom I can share my joys and sorrows.
10. There is a special person in my life who cares about my feelings.
11. My family is willing to help me make decisions.
12. I can talk about my problems with my friends.

¹⁷ Items 3, 4, 8, & 11 assesses social support from their family, items 6, 7, 9, & 12 assess social support from their friends, and items 1, 2, 5, & 10 assesses social support from their significant others.

General self-efficacy scale (Schwarzer & Jerusalem, 1995)

In this scale, we are interested in how you feel about the following statements. Read each statement carefully then indicate how you feel about each statement.

Please use the following scale:

1 = Not true at all

2 = Hardly true

3 = Moderately true

4 = Exactly true

1. I can always manage to solve difficult problems if I try hard enough
2. If someone opposes me, I can find the means and ways to get what I want.
3. It is easy for me to stick to my aims and accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events.
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.
6. I can solve most problems if I invest the necessary effort.
7. I can remain calm when facing difficulties because I can rely on my coping abilities.
8. When I am confronted with a problem, I can usually find several solutions.
9. If I am in trouble, I can usually think of a solution
10. I can usually handle whatever comes my way.

Subjective Wellbeing (Diener, 1985)

Below are five statements that you may agree or disagree with. Read each statement and indicate your agreement with each of them on the scale below. Please be open and honest in your responding.

Please use the following scale: 1 (Strongly disagree) to 7 (Strongly agree)

1. In most ways my life is close to my ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

Appendix B

Tables

Table 4

Correlations Between Individuals' MINE Tendencies and Coping Styles Across Cultures

COPE measures	Canadians			Chinese		
	MINE Ave	MINE Process	MINE Belief	MINE Ave	MINE Process	MINE Belief
Positive Reframing	.369**	.268**	.350**	.419**	.334**	.399**
Acceptance	.275**	.208**	.252**	.387**	.354**	.338**
Self-Distraction	0.071	0.035	0.083	.146*	.163*	0.108
Active Coping	.417**	.390**	.311**	.172**	.178**	.137*
Denial	-0.073	0.012	-0.134	.239**	.222**	.206**
Substance Use	-.178**	-.233**	-0.066	.402**	.323**	.381**
Emotional Support	.245**	.205**	.206**	.407**	.363**	.361**
Instrumental Support	.231**	.209**	.179**	.273**	.310**	.197**
Behavioral Disengagement	-.236**	-.158*	-.236**	.272**	.282**	.215**
Venting	0.111	.138*	0.049	.277**	.283**	.222**
Planning	.416**	.361**	.337**	.354**	.336**	.300**
Humor	0	-0.085	0.083	.366**	.323**	.328**
Religion	0.021	.152*	-0.116	.432**	.426**	.356**
Self-Blame	-0.098	-0.021	-.143*	.448**	.433**	.375**

Note: ** $p < .001$

Table 5

QUARTIMIN Rotated Factor Loadings for the Nine Items on the MINE Scale and the Four Items on the Brief COPE using Maximum Likelihood Factor Analysis.

Factors	Factor Loadings		
	Factor 1	Factor 2	Factor 3
Active Process of Reflection on Negative Experience			
1. I actively take the time to reflect on the stressful events that happen in my life.	.617	-.033	.115
2. I prefer not to think about the meaning of the stressful life events that I encounter (R).	.053	-.088	-.002
3. I actively focus on the meaning of the stressful events that I encounter.	.821	-.093	.093
4. I usually find myself thinking about the value of the stressful events that I encounter.	.831	.002	.035
General Lay Beliefs about Negative experience			
5. Stressful life events can make my life meaningful.	.607	.437	.089
6. There can be value in stressful experiences.	.385	.610	.046
7. I think that experiencing stressful events in life is meaningful.	.416	.679	.043
8. I think that there is little value in experiencing stressful events (R).	-.036	.220	.029
9. I understand that experiencing stressful events can be beneficial.	.362	.600	.073
COPE Acceptance & Positive Reframing			
1. I've been accepting the reality of the fact that it has happened.	-.041	.011	.816
2. I've been learning to live with it.	-.023	-.053	.708
3. I've been trying to see it in a different light, to make it seem more positive.	.073	.022	.588
4. I've been looking for something good in what is happening.	-.009	.012	.508

Appendix C

IRB Materials

Consent & LOI Form

Study Title: Associations of Suffering and Resiliency

Name of Principal Investigators: Mark Khei & Li-Jun Ji, Faculty of Psychology, Queen's University

I am inviting PSYC 100 students in Psychology to take part in a research study. The purpose of this study is to explore your mental association of certain psychological ideas. For this study, we are interested in words/phrases/events that come to your mind when thinking about suffering and happiness. If you agree to take part, you will be fill up an online questionnaire. There are no known risks to the questions you will be answering. However, if you feel upset after the questionnaire, please call the Telephone Aid Line Kingston (TALK) at 613-544-1771. There are no direct benefits to you as a participant. Study results will help inform how individuals view suffering and improve our understanding in this phenomenon. You will receive 0.5 credit for participating.

Participation is voluntary. You do not have to answer any questions you do not want to. You can stop participating at any time without penalty. You may withdraw from the study up until 30th June 2019 by contacting me at 12zamk1@queensu.ca. You may request to have your data withdrawn from the study up until 30th August 2019 by contacting me at 12zamk1@queensu.ca.

Your confidentiality will be protected to the extent permitted by applicable laws. I will do this by replacing your name with a pseudonym in all publications and a study ID number in all study records. The study data will be stored on an encrypted hard drive on Queen's University servers. The code file that links real names with pseudonyms and study ID numbers will be stored securely and separately from the data on an encrypted USB key. I will keep your data securely for at least five years per Queen's University Policy, after which the de-identified data will be deposited into the Queen's University's Institutional Repository. The code file identifying your pseudonym and study ID number will be destroyed five years after study closure. The Queen's University General Research Ethics Board (GREB) may see your study data for quality assurance purposes.

I plan to publish the results of this study in academic journals and present them at conferences. I will not include any quotes or personally identifying information from the interviews when presenting my findings.

If you have any ethics concerns please contact the General Research Ethics Board (GREB) at 1-844-535-2988 (Toll free in North America) or chair.GREB@queensu.ca.

If you have any questions about the research, please contact me at Janessmith@queensu.ca or 613-533-6000 ext. 12345.

DIALECTICAL THINKING, MINE, COPING

This Letter of Information provides you with the details to help you make an informed choice. All your questions should be answered to your satisfaction before you decide whether or not to participate in this research study. Keep one copy of the Letter of Information for your records and return one copy to the Researcher, Dr. Jane Smith.

You have not waived any legal rights by consenting to participate in this study.

By signing below, I am verifying that: I have read the Letter of Information and all of my questions have been answered.

- Yes, you have my permission to use quotes
- No, you do not have my permission to use quotes

_____	_____	_____
Signature of Participant/Guardian/ Substitute Decision-Maker	PRINTED NAME	Date

_____	_____	_____
Signature of Person Conducting the Consent Discussion	PRINTED NAME & ROLE	Date

Debriefing Letter

This study aims to better understand people's responses to stressful situations by examining the current measures of coping and resilience in the literature. By answering these questions regarding how you generally feel and behave in the context of stress from these different scales will allow us to understand which factors better predict one's feeling of stress. If you would like to receive a copy of the results once data collection is finished, please contact Mark Khei.

We really appreciate your participation and hope that this has been an interesting experience for you. We would be appreciated it if you do not reveal the purpose of this study to others as this may bias their responses should they sign up for this study.

Please note once again that the questionnaires used in this study are for research purposes only and the confidentiality of your answers will be protected. Should the data be disposed of, or published, you will remain anonymous in all cases.

Also, please note that you have the right to withdraw your data at any point. Any questions about study participation may be directed to Mark Khei at 613-533-6000 ext. 75617 or z.khei@queensu.ca. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at (613) 533-6081 or email Chair.GREB@queensu.ca.

Thank you for your participation! Your interest in participating in this study is highly appreciated. If you would like to know more here is a reading that you have refer to:

Koopmann-Holm, Birgit; Tsai, Jeanne L. 2014. Focusing on the negative: Cultural differences in expressions of sympathy. *Journal of Personality and Social Psychology*, Vol 107(6), Dec 2014, 1092-1115.