



# The Influence of Self-Compassion on Cognitive Appraisals and Coping with Stressful Events

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## Abstract

We investigated the influence of self-compassion on stress coping processes using a short longitudinal design. Specifically, we hypothesized that the association between self-compassion and stress coping would be mediated by cognitive appraisals (perceived threat and controllability) of stressful events. At Time 1, Japanese undergraduates ( $N = 217$ ; 126 women, 90 men, and 1 unknown; mean age 18.57 years,  $SD = 0.96$ ) completed the Japanese version of the Self-Compassion Scale. One month later (Time 2), they recalled a stressful event that had happened in the past month and completed measures of cognitive appraisals of the event and coping strategies that they had employed. Structural equation modeling showed that self-compassion at Time 1 was negatively related to avoidance-oriented coping at Time 2. Moreover, self-compassion promoted adaptive coping via reduced threat toward and greater controllability of the stressful event. The current study provides additional evidence that cognitive appraisals (threat and controllability) could mediate the influence of self-compassion in stress coping processes.

**Keywords** Self-compassion · Stress · Cognitive appraisal · Coping

Compassion toward oneself is helpful and beneficial in dealing with painful experiences people face. Based on Buddhist practices and philosophies about suffering and its alleviation, Neff (2003a) defined self-compassion as a self-to-self relationship embraced by warmth and compassion, measured through three key dimensions with their negative counterparts: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification. Self-kindness means a capacity to treat oneself with kindness and compassion rather than being critical or harsh during challenging situations. Common humanity involves recognizing that painful and difficult experiences are a part

of the human condition rather than feeling isolated in one's suffering. Mindfulness refers to taking a balanced perspective on one's negative emotions, rather than becoming over-identified and embroiled within them.

Research indicates that self-compassion is related to positive mental health outcomes, including lower levels of depression and anxiety, and higher life satisfaction and self-worth (e.g., Leary et al. 2007; Neff and Vonk 2009; Raes 2010; Yamaguchi et al. 2014). MacBeth and Gumley (2012) employed a meta-analysis to explore associations between self-compassion and mental health and found a large effect size for the relationship between compassion and mental health ( $r = -.52$  for depression;  $r = -.51$  for anxiety;  $r = -.54$  for stress). Similarly, Zessin et al. (2015) found a large effect size of the relationship between self-compassion and well-being ( $r = .47$ ) by using meta-analysis. Incidentally, some studies revealed that self-compassion is a better predictor of symptom severity and quality of life than mindfulness (Van Dam et al. 2011; Woodruff et al. 2014).

Some studies have suggested that highly self-compassionate people keep and enhance prominent levels of mental health because they cope with stressful situations adaptively. Allen and Leary (2010) reviewed previous studies on relationships between self-compassion and coping strategies. They concluded that self-compassionate people are more

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likely to employ positive reframing coping and are less likely to use avoidance and escape coping than people low in this trait; however, they do not appear to differ in the degree of problem-focused coping or self-distraction. Moreover, existing evidence does not show a clear relation of self-compassion and support-seeking (Allen and Leary 2010). For instance, Neff et al. (2005) examined the relations of self-compassion to diverse types of coping strategies in the context of academic failure among undergraduates. They found that self-compassion was positively related to positive reframing and acceptance, whereas it was negatively related to venting of negative emotions, denial, and self-distraction.

Subsequent research to Allen and Leary (2010) supports their literature review. For example, Sirois et al. (2015) examined self-compassion and coping strategies in the context of chronic illness. They found that self-compassion was positively associated with all adaptive coping strategies (active coping, positive reframing, and acceptance) and coping efficacy, and negatively associated with the maladaptive coping strategies (behavioral disengagement and self-blame). Similarly, Mizuno et al. (2017) reported that self-compassion was positively related to planning and positive reframing, and this relation remained significant even after controlling for self-esteem. In sum, self-compassion is positively associated with emotion-focused coping (particularly positive reframing) and negatively associated with avoidance-oriented coping (e.g., denial, behavioral disengagement, and self-distraction).

Lazarus and Folkman's (1984) model is a useful framework for a better understanding of the relationship between self-compassion and coping strategies. In this model, self-compassion is considered as one personality trait that facilitates adaptive coping strategies. Furthermore, the relationship between self-compassion and these strategies could be mediated by cognitive appraisal of stressors, which has been largely missed in previous studies addressing self-compassion.

A key consideration missing from previous studies is whether cognitive appraisals, such as threat, importance, and controllability, mediate the relationship between self-compassion and coping strategies. Lazarus and Folkman (1984) defined cognitive appraisal as a process by how people evaluate whether an encounter with the environment is relevant to their well-being, and, if so, in what ways. According to Lazarus and Folkman (1984), cognitive appraisal occurs when people consider two major factors that contribute to their responses to stress. These two factors include the threatening tendency of the stressor to the person and the assessment of resources required to minimize, tolerate, or eradicate the stressor and the stress it produces. In general, cognitive appraisal is divided into two stages: primary and secondary appraisal. During primary appraisal, people evaluate whether they have anything at stake in this encounter. The contents include significance, desirability, and threatening/challenging. During secondary appraisal, people evaluate what, if

anything, can be done to overcome or prevent harm or to improve their prospects of benefiting from it. For example, if an undergraduate received a poor grade, they may feel that the grade is either “annoying” or “important” at first (primary cognitive appraisal); then, they may start to recognize that they can “overcome this situation” (secondary appraisal).

Previous studies imply that cognitive appraisals could be mediators between self-compassion and coping. Leary et al. (2007) showed that self-compassion helps people acknowledge their role in negative events without feeling overwhelmed with negative emotions. Gillanders et al. (2015) explored cancer-related cognition, avoidance-oriented coping, self-compassion, and cognitive fusion as predictors of distress and quality of life after cancer. They found that self-compassion buffered the aversive influence of threat on avoidance-oriented coping. These studies imply that primary cognitive appraisals such as perceived threat can mediate associations between self-compassion and coping strategies.

Regarding secondary cognitive appraisal, it is assumed that controllability of stressful events would mediate the relation between self-compassion and coping strategies. Finlay-Jones et al. (2015) found a mediating role of emotion regulation difficulties (low controllability) in the self-compassion-stress relationship. In addition, Breines and Chen (2012) indicated that participants in a self-compassion condition, compared to the other conditions, expressed greater belief that their personal weaknesses could be controlled by their own efforts. Such individuals' feelings of perceived control over a stressful situation promote problem-focused coping strategies (Compas et al. 1991). Folkman (1984) also proposed that problem-focused coping efforts are directed toward situations that are perceived as controllable.

We sought to examine the role of self-compassion in stress coping processes based on Lazarus and Folkman's theory (Folkman et al. 1986; Lazarus and Folkman 1984). We focused on primary and secondary appraisals to the stressful events participants encountered as mediators between self-compassion and coping strategies. We hypothesized that self-compassion would be negatively related to threat and positively related to controllability, which promotes adaptive coping strategies. To examine these coping processes, we adopted a short longitudinal method over a 1-month lag by assessing self-compassion as a baseline trait. To detect mediating effects of cognitive appraisals, we used a path analysis with structural equation modeling, which is a method employed to determine whether a multivariate variable set (e.g. independent, mediating, and dependent) fits well with a causal model. This approach can explore what extent the mediating variables have significant mediating (indirect) effects. We hypothesized that perceived threat and controllability of stressful events would mediate associations between self-compassion and coping strategies.

## Method

### Participants

Participants were recruited from five universities in urban and rural areas in Japan. The final sample consisted of 217 Japanese undergraduates (126 women (58.3%), 90 men (41.7%), and 1 unknown (0.5%)). Their mean age was 18.57 ( $SD = 0.96$ ) years (range = 18–22 years). Participants were enrolled in their 1st to 4th year of university (1st = 82.5%, 2nd = 3.2%, 3rd = 10.1%, and 4th = 4.1%). Prior to analysis, we excluded data from participants who were judged to respond carelessly, who wrote about stressful events within 2 days, or who did not describe any stressful events. The stressful events within 2 days were judged too recent to practice appropriate coping because of their strong impact on participants. We also excluded mismatched data at Time 1 and Time 2.

### Procedure

Participants completed two questionnaire surveys at a 1-month interval. Some previous studies retrospectively assessing stress coping adopted comparable intervals (e.g., Zimmaro et al. 2016). If the interval was longer, it would be difficult for participants to precisely recall the stressful event. On the other hand, if it was shorter, participants may have not had enough time to cope with the event; therefore, we deemed 1 month as an appropriate span for this study. The first survey (Time 1) was conducted in May 2016; the second survey (Time 2) was conducted in June 2016.

Researchers explained that participation was voluntary, that it was acceptable to refuse to answer or to stop responding, and that there would be no consequences in the event of refusal to answer or ceasing to respond. Participants were asked to write the last four digits of their cellphone number, which were used only to identify and match their sequential data. Researchers also announced that participants could refuse to provide this information.

### Measures

A Time 1, the questionnaire included the Self-Compassion Scale (SCS), demographic information, and a space to write down four digits of their cellphone number. A Time 2, questionnaires required participants to recall their stressful event in the past month and complete measures of cognitive appraisal and coping strategies.

**Self-Compassion** Self-compassion was assessed by the 26-item SCS (Neff 2003b), which is composed of six subscales: self-kindness (five items; e.g. “When I experience emotional pain, I try to show love to myself”), self-judgment (five items; e.g. “I never accept and am always

critical of my own defaults and imperfections”), common humanity (four items; e.g. “When I am in difficulty and it seems to me that everything is going downhill, I think that everyone has such experiences”), isolation (four items; e.g. “When I think about my imperfections, I tend to cut myself from the outside world and feel like separating myself”), mindfulness (four items; e.g. “When I am annoyed at something, I try to maintain emotional balance”), and over-identification (four items; e.g. “When I am depressed, I tend to dwell upon and worry about all of the things I’ve done wrong”). These items are rated on a 5-point scale ranging from 1 (*almost never*) to 5 (*almost always*). The negative subscale items (self-judgment, isolation, and over-identification) were reverse-scored. The SCS has consistently high reliability and validity scores across various populations (Neff et al. 2017). Arimitsu (2014) translated this scale into Japanese and provided reliability and validity evidence in support of the SCS scores in a Japanese sample.

We assessed self-compassion as a total score. Recently, some researchers have claimed that the scale should be divided by positive (self-kindness, common humanity, and mindfulness) and negative aspects (self-judgment, isolation, and over-identification) (e.g., Körner et al. 2015; López et al. 2015; Muris and Petrocchi 2017; Wong and Yeung 2017). However, Neff et al. (2017) examined the bi-factor model of the SCS and validated the use of its total score as an overall measure of self-compassion. They showed that the bi-factor model had acceptable fit in some samples and estimates suggested a general self-compassion factor accounted for at least 90% of the reliable variance in general factor scores. Tóth-Király et al. (2017) also obtained comparable results by adopting the bi-factor ESEM model and support to use total scores. Additionally, Neff (2016) suggested that the scale is theoretically coherent and recommended not to exclude negative aspects. Following Neff et al.’s standpoint, we adopted the scale to measure overall self-compassion and used six subscales to examine the differences between positive/negative aspects of self-compassion or among each subscale.

**Stress Events** Stress events were assessed only at Time 2. We asked participants to recall and write about a stress event they faced within the last month. Instructions were as follows: “Please recall the most stressful situation you have experienced within the last month. ‘Stressful situation’ indicates a situation wherein you felt strong strain (e.g. feeling sad and disappointed, and finding it difficult to deal with), then describe your event as vividly as possible.” This instruction was based on the modified version of the Lazarus Type Stress Inventory (Japanese Institute of Health Psychology 1996). Next, participants answered the elapsed days from their stressful event.

**Cognitive Appraisals** We assessed cognitive appraisals of the stressful event when they faced the event by using an existing scale (Kato 2001), which was developed with reference to previous relevant studies (Major et al. 1998; Okayasu 1992; Peacock and Wong 1990; Stone and Neale 1984; Terry 1994). Although this scale was developed to assess cognitive appraisals of interpersonal stress events, this could be adapted to general stress events (Chishima et al. 2017). This scale comprised three subscales: threat (e.g. “I thought this event was annoying for me”), significance (e.g. “I thought this event had an important influence on me”), and controllability (e.g. “I thought I could change this situation”). The threat and significance subscales were interpreted as primary appraisal, and controllability as secondary appraisal (Lazarus and Folkman 1984). These were rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), to indicate how participants appraised the stressful event they reported. Kato (2001) provided reliable and valid scores in a sample of Japanese undergraduates.

**Stress Coping Strategies (the Brief COPE)** As a coping scale, we used the Brief COPE (Carver 1997) which assesses problem-focused, emotion-focused, and avoidance-oriented coping strategies. The COPE (Carver et al. 1989) is the most predominant scale in coping studies (Kato 2015). Kato (2015) revealed that 20.2% of all studies on coping strategies from 1998 to 2010 employed either a brief or revised version of the COPE. The Brief COPE includes 28 items to measure different behaviors and cognitive activities commonly used to cope with stress. It comprises 14 subscales: active coping, planning, using instrumental social support, using emotional social support, positive reframing, acceptance, venting, denial, behavioral disengagement, self-distraction, humor, self-blame, substance use, and religion; however, we excluded substance use and religion because Japanese law prohibits people aged younger than 20 years from drinking alcohol, and over half of Japanese people are not members of any religion (Hackett and Grim 2012).

Based on previous literature (Carver et al. 1989; Neff et al. 2005), we classified these subscales into three types of coping strategies: problem-focused (active coping, planning, and using instrumental social support), emotion-focused (emotional social support, positive reframing, acceptance, and venting), and avoidance-oriented coping (denial, behavioral disengagement, and self-distraction). These items were rated on a 4-point scale ranging from 1 (*I was not doing this at all*) to 4 (*I was doing this a lot*), to indicate how much participants used each strategy to deal with the stressful event they reported. Otsuka (2008) translated this scale into Japanese and provided acceptable reliability and validity evidence in support of the scores in a Japanese sample.

## Data Analyses

Data were analyzed using SPSS and AMOS 24.0. Scores for items on each subscale were summed and divided by the number of items to yield their mean scores. Several indicators of fit were used to evaluate the models. These included (a) chi-square ( $\chi^2$ ), which tests the hypothesis that there is a discrepancy between model-implied covariance matrix and the original covariance matrix; (b) the Goodness-of-fit index (GFI), which assesses the relative amount of the observed variances and covariance explained by the model. For a good fit, the recommended value should be  $GFI > 0.95$  (Hu and Bentler 1999); (c) the adjusted goodness-of-fit index (AGFI), which considers differing degrees of model complexity and adjusts the GFI by a ratio of the degrees of freedom used in a model to the total degrees of freedom; (d) the comparative fit index (CFI), which represents the amount of variance that has been accounted for in a covariance matrix while considering sample size. In practice, the CFI should be close to 0.95 or higher (Hu and Bentler 1999); (e) the root mean square error of approximation (RMSEA), which is an index of misfit, with smaller values indicating better fit. RMSEA values less than .08 are indicative of acceptable fit and values below .05 are indicative of close fit (Marsh et al. 2004); and (f) the Akaike information criterion (AIC), which is measure from the perspectives of model selection. AIC offers a relative estimation of the information lost when the given model is used to generate data.

## Results

Means and standard deviations of all scores are presented in Table 1. Cronbach’s alpha was used to assess the internal consistency of scores, which means how closely related a set of items are as a group. Cronbach’s alpha estimates for the subscales of the SCS were in the .69 to .84 range, and the alpha estimate for total SCS score was .88. Moreover, although the cognitive appraisal subscales showed high internal consistency ( $\alpha \geq .80$ ), there were some poor alpha estimates for the coping subscales. Positive reframing ( $\alpha = .51$ ) and self-distraction ( $\alpha = .54$ ) showed inadequate estimates. These results might be due to the small numbers of items. When we calculated three coping factors (problem-focused, emotion-focused, and avoidance-oriented coping) by summing the corresponding subscales based on previous research (Carver et al. 1989; Neff et al. 2005), acceptable estimates were obtained ( $\alpha = .81$  for problem-focused,  $\alpha = .70$  for emotion-focused, and  $\alpha = .67$  for avoidance-oriented coping).

Correlations among self-compassion and the other scores are shown in Table 2. We focused on the self-compassion total score and its association with coping processes as the main results. As can be seen, self-compassion was correlated negatively with threat and positively with controllability. Total self-

**Table 1** Descriptive statistics and Cronbach's  $\alpha$  of all variables

	<i>M</i>	( <i>SD</i> )	$\alpha$	$\omega$	Item numbers
Self-compassion	2.73	(0.53)	.88	.95	26
Self-kindness	2.68	(0.72)	.83	.85	5
Common humanity	2.69	(0.82)	.74	.79	4
Mindfulness	2.89	(0.70)	.69	.71	4
Self-judgment	3.46	(0.83)	.84	.81	5
Isolation	2.88	(0.97)	.79	.72	4
Overidentification	3.51	(0.83)	.72	.70	4
Elapsed days from stressful event	9.60	(6.95)	—		1
Primary appraisals					
Threat	3.66	(1.01)	.80	.73	3
Significance	3.41	(1.22)	.85	.78	2
Secondary appraisal					
Controllability	2.82	(1.04)	.88	.89	4
Problem-focused coping	2.41	(0.79)	.81	.92	6
Active coping	2.50	(0.89)	.64	.76	2
Planning	2.52	(1.02)	.81	.77	2
Using instrumental social support	2.19	(1.12)	.91	.88	2
Emotion-focused coping	2.22	(0.60)	.70	.88	8
Using emotional social support	2.19	(1.09)	.85	.82	2
Positive reframing	1.84	(0.83)	.51	.51	2
Acceptance	2.89	(0.86)	.60	.65	2
Venting	1.96	(0.87)	.61	.61	2
Avoidance-oriented coping	1.69	(0.55)	.67	.88	6
Denial	1.17	(0.48)	.65	.84	2
Behavioral disengagement	1.65	(0.86)	.77	.81	2
Self-distraction	2.24	(0.91)	.54	.50	2
Other coping					
Humor	1.53	(0.79)	.72	.78	2
Self-blame	1.99	(1.05)	.86	.67	2

compassion scores did not have significant relationships with any subscales of problem-focused coping, while they had a

positive correlation with positive reframing and a negative correlation with venting. Moreover, regarding avoidance-

**Table 2** Correlations among self-compassion, cognitive appraisals, and coping

	Total SC	SK	CH	MF	SJ	IS	OI
Primary appraisals							
Threat	-.23**	-.11	.00	.00	.25***	.27***	.25***
Significance	.02	.01	.02	.05	-.02	-.07	.02
Secondary appraisal							
Controllability	.27***	.21**	.15*	.26***	-.18**	-.18*	-.15*
Problem-focused coping	.03	.14*	.14*	.17*	-.01	.09	.16*
Active coping	.07	.09	.13	.14*	-.07	-.01	.07
Planning	.00	.08	.10	.13	.02	.11	.11
Using instrumental social support	.00	.16*	.10	.13	.01	.09	.19**
Emotion-focused coping	.06	.15*	.17*	.14*	-.01	.04	.13
Using emotional social support	.07	.16*	.14*	.12	-.06	.03	.14*
Positive reframing	.14*	.16*	.16*	.20**	-.08	-.02	.00
Acceptance	.09	.12	.13	.12	.00	-.05	-.03
Venting	-.15*	-.05	.00	-.07	.12	.13	.22**
Avoidance-oriented coping	-.29***	-.12	-.05	-.13	.25***	.33***	.29***
Denial	-.21**	-.14*	-.05	-.09	.10	.25***	.14*
Behavioral disengagement	-.25***	-.22**	-.10	-.19**	.22**	.20**	.15*
Self-distraction	-.19**	.06	.02	-.02	.20**	.28***	.30***
Other coping							
Humor	.00	-.01	.14*	.03	.00	.12	.00
Self-blame	-.35***	-.14*	-.07	-.08	.33***	.33***	.28***

SC self-compassion, SK self-kindness, CH common humanity, MF mindfulness, SJ self-judgment, IS isolation, OI over-identification

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



oriented coping, all subscales were related to total self-compassion negatively, and self-blame, as with the other coping strategies, had a relative strong negative relationship with self-compassion.

We hypothesized that the association between self-compassion and stress coping would be mediated by cognitive appraisals of stressful events. When we performed the path analysis that explains the stress coping process, we divided and ordered cognitive appraisal variables as primary appraisals (threat and significance) and secondary appraisal (controllability) based on coping theory (Folkman 1984). Figure 1 represents the links between the variables established in the path analysis. Notably, if there are missing data, AMOS does not calculate estimates of indirect effects by bootstrapping method; therefore, we omitted some data that had missing values in each variable; consequently, the number of participants was 209 in the path analysis only. Jackson (2003) suggested examining sample size by 10 cases per parameters. In the current model, there were 21 free parameters including covariance and variance. Additionally, Fritz and MacKinnon (2007) suggested, when standard regression estimates are .20, that 162 samples are required in detect indirect effects for 0.8 power by percentile bootstrapping test. Therefore, we judged a sample of 209 as acceptable.

The model fit indices showed excellent estimates ( $\chi^2 = 8.045$ ,  $df = 7$ ,  $n.s.$ ,  $GFI = .989$ ,  $AGFI = .956$ ,  $CFI = .996$ ,  $RMSEA = .027$ ). In addition, we examined whether each indirect effect was significant in this model by using a percentile bootstrapping method (sample = 5000) with reference to Cheung and Lau's (2008) recommendations (all estimates are presented in Table 3). The indirect effects of self-compassion to controllability (.09) and to avoidance-oriented coping ( $-.10$ ) were significant. Additionally, the indirect effects of threat to problem-focused ( $-.08$ ) and to avoidance-oriented coping (.08) were significant. We also used multi-group analyses to examine sex differences in the model. Results indicated that the model, in which all paths and covariances were constrained equally between male and female participants ( $AIC = 84.941$ ), showed better fit than the model

in which there were no equality constraints ( $AIC = 95.148$ ). These results imply that the model is invariant across sex.

## Discussion

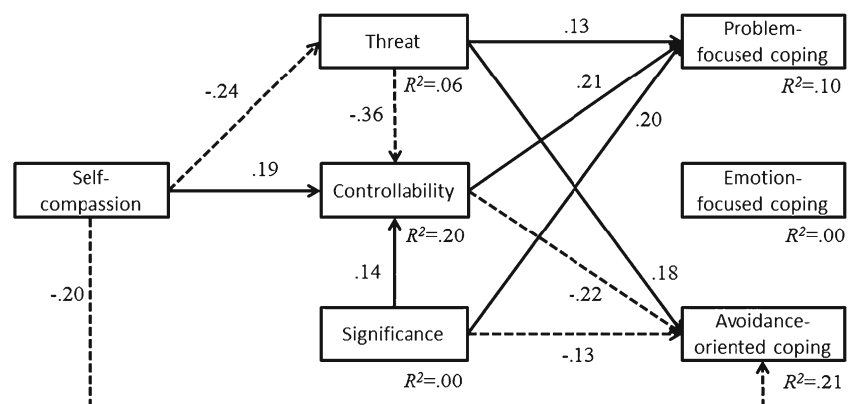
We examined the role of self-compassion in stress coping processes. Results indicated that cognitive appraisals of stressful events mediated relationships between self-compassion and coping with them.

Although most correlations between total self-compassion, cognitive appraisals, and coping were consistent with previous studies (Allen and Leary 2010; Neff et al. 2005; Wong and Yeung 2017), especially in Neff et al. (2005), correlation estimates of positive reframing, acceptance, and venting were all significantly higher than in the current study, while the correlation of behavioral disengagement was slightly lower (though nonsignificant). Notably, while we focused on general stressful situations that were gathered by participants spontaneously, Neff et al. (2005) used a modified version of the full-item (not brief) COPE that was adapted only to academic failures. Moreover, the current study applied a 1-month longitudinal study, whereas Neff et al. (2005) assessed self-compassion and stress coping simultaneously in the same questionnaire. Therefore, it could be interpreted that the differences in correlations shown occurred because of such methodological differences.

In this study, emotion-focused coping had no association with self-compassion, unlike the other two coping strategies. This is because positive reframing and venting, which are included in emotion-focused coping, had opposite relationships with self-compassion. Self-compassion had a positive relationship with positive reframing and a negative relationship with venting. These results are consistent with previous studies (e.g. Allen and Leary 2010; Neff et al. 2005).

Furthermore, correlational analyses showed that self-compassion subscales were differently related to other variables in some parts. For example, threat and avoidance-oriented coping were significantly related mainly to negative

**Fig. 1** Relationships among self-compassion, cognitive appraisal, and stress coping. All path values are standardized and significant ( $p < .05$ ). Solid lines indicate positive relationships and dashed lines indicate negative relationships. Error variables and covariance of errors are omitted from the diagram



**Table 3** Indirect effects among self-compassion, cognitive appraisals, and coping

	Estimates	95% CI
Self-compassion to controllability	.09**	[.03, .15]
Self-compassion to problem-focused coping	.03	[−.02, .07]
Self-compassion to avoidance-oriented coping	−.10**	[−.16, −.03]
Threat to problem-focused coping	−.08***	[−.14, −.03]
Threat to avoidance-oriented coping	.08**	[.03, .14]
Significance to problem-focused coping	.03*	[.00, .07]
Significance to avoidance-oriented coping	−.03*	[−.08, .00]

CI confidence interval

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

aspects of self-compassion (self-judgment, isolation, and over-identification). On the other hand, problem and emotion-focused coping were related to positive aspects (self-kindness, common humanity, and mindfulness). Similarly, Wong and Yeung (2017) showed similar evidence that positive aspects of self-compassion were more strongly related to positive reframing and acceptance than negative aspects. Future research is needed to explain why these differences in self-compassion aspects were shown.

The path model revealed that self-compassion was negatively related to avoidance-oriented coping. This finding replicated and extended comparable results found by other researchers in various samples (Allen and Leary 2010; Krieger et al. 2013; Neff et al. 2005). Krieger et al. (2013) revealed that more self-compassionate people tend to function in a less avoiding manner and, as a result, are less likely to experience depressive symptoms; therefore, this result addressed the reason that those in high self-compassion tend to be better at dealing with stressful situations and maintain their well-being.

Moreover, as hypothesized, threat and controllability mediated between self-compassion and stress coping, showing significant indirect effects. That is, we revealed that self-compassion has key influences that reduce feelings of threat and promotes controllability of stressful events; then, adaptive coping strategies are induced accordingly. High self-compassion people are likely to think that stressful events are less threatened and controllable because they recognize that difficulties are part of the human condition; therefore, they take a balanced view, rather than over-identifying with them. Consequently, this mindset helps them employ adaptive coping strategies, and our results explain the potential mechanism underlying between self-compassion and stress coping. In previous studies of self-compassion, primary and secondary cognitive appraisals in coping process have been overlooked, even though they are emphasized in coping theory (Folkman et al. 1986; Lazarus and Folkman 1984). This study highlighted the vital role of being kind to oneself in the stress coping “process.”

## Limitations and Future Directions

This study had several limitations. First, participants were all undergraduate students; therefore, the results may not be generalized to other populations. Specifically, the stress events recalled in this study might be limited to those typically experienced by undergraduates (e.g. studying daily, taking examination, having close friendships, starting to live on their own, etc.). Therefore, future studies require larger and more diverse samples. Examining the generalization of the model obtained in this study is essential for future self-compassion and stress research. Second, some previous studies of self-compassion in Japan indicated cultural differences. For example, Arimitsu (2014) reported that Japanese undergraduates tend to be less self-compassionate than American undergraduates, and inter-correlations between positive and negative aspects of subscales in SCS (e.g. self-kindness/self-judgment) were lower than results from a Western sample. In other examples, Yamaguchi et al. (2014) showed that the relationship between internalized self-criticism and self-compassion in a Japanese sample was weaker than for Americans. These reports could be interpreted as a unique way of looking at self-criticism; that is, some research indicates that Japanese tend to regard self-criticism as necessary for self-improvement (Heine et al. 2000; Kitayama et al. 1997). Future studies need to examine whether our results are common and invariant across cultures by including samples from other countries.

Third, all variables were measured by self-report questionnaires. To avoid a common method bias (Podsakoff et al. 2003), we need to collect information from several sources or methods including objective assessments. Fourth, our results were obtained by a retrospective questionnaire survey at Time 2. Some researchers claimed that this method has concerns because it is hard to assess participants' actual and real coping clearly because people have memory biases (Pearson et al. 1992; Smith et al. 1999). Therefore, a daily process methodology would resolve this point and focus precisely on within-person processes. Recently, this methodology has been used in self-compassion research (Hope et al. 2014; Kelly and Stephen 2016; Krieger et al. 2015).

Despite these limitations, our findings contribute to progress in self-compassion research. Previous studies have focused on the influences of self-compassion on stress coping strategies. However, they have not fully accounted for cognitive appraisals toward stressful events. Therefore, we provide additional evidence that cognitive appraisals (threat and controllability) could be mediators and key factors to clarify the role of self-compassion in stress coping processes. These findings are useful not only for researchers but also for practitioners who engage in clinical interventions to improve clients' mental health.

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## Compliance with Ethical Standards

**Conflict of Interest** The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**Ethical Statement** This research was approved by the research ethics committee of the University of Tsukuba, Japan.

**Informed Consent** The participants consented to participation in the study by completing the questionnaires.

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