RE-EXAMINATION OF THE EFFECTS OF THE “FINDING POSITIVE MEANING” COPING STRATEGY ON POSITIVE AFFECT AND HEALTH

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This study examined the effects of “finding positive meaning” coping on positive affect (PA) and health with methodological modifications to overcome limitations in Yamasaki et al. (2009). Participants in the intervention group (14 men and 15 women) reported the most stressful event during the past three days and its positive meaning, while those in the control group (16 men and 15 women) reported only the most stressful event. Both groups reported twice a week for nine successive weeks via e-mails. Four self-report questionnaires measuring the intervention effects were administered to all participants. Results showed that PA and two of the health variables (social dysfunction and depression) were improved in both men and women by this intervention. Furthermore, hierarchical regression and mediation analyses showed that the enhanced coping following intervention increased PA, which in turn improved mental health status. Study limitations and possibilities for a self-control type of primary prevention were discussed.

Key words: “finding positive meaning” coping strategy, positive affect, intervention, health status

In recent years, inspired by Positive Psychology movement (see Seligman & Csikszentmihalyi, 2000, for an outline), an increasing number of studies have focused on the role of positive affect (PA). In many of those studies, it has been shown that PA is associated with improvement in various aspects of life or abilities, such as attention, memory, social activities, and health (for reviews, see Aspinwall, 1998, and Isen, 2000, 2002). Specifically, cumulative research findings have clarified the relationships between PA and health (see a review by Pressman & Cohen, 2005). In line with the relations of PA to health, previous research has shown that several coping strategies are associated with developing and maintaining positive affect (PA). Those strategies include positive reappraisal, goal-directed problem-focused coping, and the infusion of ordinary events with positive meaning (Folkman, Moskowitz, Ozer, & Park, 1997; Moskowitz, Folkman, Collette, & Vittinghoff, 1996). These three coping strategies have been collectively titled “searching for and finding positive meaning” (e.g., Folkman, 1997; Fredrickson, 2000).

Regarding directional relationships between coping and PA, Yamasaki, Uchida, and Katsuma (2009) have revealed, using an intervention method for enhancing “finding positive meaning” coping, that enhancement of “finding positive meaning” coping increased PA but did not improve health status. Meanwhile, Yamasaki, Uchida, and...
Katsuma (2008) tested the reverse directional relationships between PA and coping by increasing PA in their intervention research, showing that increases in PA improved health status but did not enhance “finding positive meaning” coping. These two findings suggest that the relationship between PA and “finding positive meaning” coping is not bidirectional—a conclusion contrary to Fredrickson and Joiner’s (2002) and Burns et al.’s (2008) identifications of a bi-directional relationship.

Concerning the inconsistent findings in the bi-directionality between PA and the coping, Yamasaki et al.’s findings are likely to be more reliable because, in addition to the general consideration that intervention research methods are more powerful in predicting causality than prospective research ones Fredrickson and colleagues employed, Fredrickson and Joiner (2002) had a limitation. The separation between the two measurement points in their prospective study was five weeks, so their target period (the past year) for measuring coping may not have been situationally sensitive enough to capture changes in this period, especially if the coping strategy had been used long before those two times in their study (see Yamasaki et al., 2009, for more details). On the other hand, Burns et al. (2008) is not likely to have this limitation. The separation between the two measurement points in their prospective study was eight weeks, and the coping was measured for the recent problem their participants had. However, the word “recent” is so subjective that this problem could happen far before those two times in their study. Additionally, because the target coping subscale named “Positive Coping” in Burns et al. (2008) included various coping strategies other than “finding positive meaning” coping, it is unclear whether their results are attributable to “finding positive meaning” coping per se.

With regard to the relationships between PA and health, the finding by Yamasaki et al. (2009) that PA enhanced by the coping did not improve health status is discordant with Yamasaki et al.’s (2008) finding that increasing PA directly by intervention did improve health status. Despite certain methodological limitations identified in prior research studies (Cohen & Pressman, 2006), multiple published studies still demonstrate that PA is associated with both physical and mental health (see Pressman & Cohen, 2005, for a review). In light of these other studies, an analysis of the discrepancies between the Yamasaki et al. (2009) and the Yamasaki et al. (2008) studies was undertaken, which identified two limitations in the latter study. One limitation was that the duration of increased PA might have been too short to produce health improvement. The second limitation was that the study required participants to inhibit their expression of negative emotions during their reporting of stressful events and associated positive meanings. Thus the consequences of unnaturally inhibiting expression of negative emotions might have overshadowed the effects of PA on health. Indeed, previous research has shown that inhibiting the expression of negative emotions is negatively associated with health improvement (e.g., Scuteri, Parsons, Chesney, & Anderson, 2001; Spielberger et al., 1985; Steffen, McNeilly, Anderson, & Sherwood, 2003).

Therefore, this study re-examined the effects of “finding positive meaning” coping on PA and health with methodological modifications to overcome these two limitations in the expectation that enhancing coping through intervention would be associated with both increased PA and improved health. Additionally, using hierarchical regression and
mediation analyses, we examined (a) whether enhanced coping yielded increased PA, and (b) which enhancements of coping and PA led to health improvement, taking into consideration the possibility that coping might improve health status via PA.

**METHODS**

**Participants**

Participants included 64 Japanese undergraduate and graduate students at Naruto University of Education in Japan, age 18 to 44 ($M = 22.42, SD = 3.78$), who were paid 8,000 yen (approximately equivalent to $73 U.S. at an exchange rate of 110 yen per dollar) for their participation. Participants were randomly assigned to the intervention group (14 men and 17 women) or the control group (18 men and 15 women). Four participants (two women in the intervention group and two men in the control group) were excluded from the data analyses because they did not complete all of the required sessions. The remaining 60 participants who completed all of the required sessions were included in the data analyses.

**Measures**

**Positive Affect.** PA was measured using the Japanese version of the Positive and Negative Affect Schedule (PANAS) scales (Sato & Yasuda, 2001). The alphas are .83 and .82 for the PA and Negative Affect (NA) scales, respectively, and the validity of these scales was established by a study in which PA, NA and neutral affect were experimentally manipulated (Sato & Yasuda, 2001). Unlike the original version (Watson, Clark, & Tellegen, 1988), the Japanese version contains eight items for both PA (e.g., enthusiastic, proud, excited) and NA (e.g., afraid, jittery, scared), which are rated on a 6-point Likert scale (“not at all” to “extremely”). Thus, scores of the PA and NA scales each range from 8 through 48. In this study, participants were instructed to indicate the extent to which each item represented the way they felt over the prior two-week period. Although measurement of NA was not related to an explicit purpose of the present study, NA was also measured because the PANAS questionnaire measures both the PA and the NA scales. In addition, measuring NA was useful for determining whether changes in PA, if any, were independent of changes in NA.

**Coping.** Coping was assessed by the situational version of the General Coping Questionnaire (GCQ; Sasaki & Yamasaki, 2002, 2004). This self-report questionnaire consists of four subscales: Emotion Expression (e.g., I give an outward expression when I feel bad); Emotional Support Seeking (e.g., I have someone comfort me); Cognitive Reinterpretation (e.g., I try to think positively about problems); and Problem Solving (e.g., I strive to overcome difficulties). Each of the four subscales contains eight items, which participants rate on a 5-point Likert-type scale ranging from 1 (“not doing at all”) to 5 (“always doing”). Thus, the scores for each subscale range from 8 to 40. The instructions were as follows: “Describe the most stressful event you are currently facing. How are you coping with this event?” The alphas for the four subscales range from .90 to .93 (Sasaki & Yamasaki, 2004), and the validity of these subscales is based primarily upon peer ratings (Sasaki & Yamasaki, 2002). In this questionnaire, Cognitive Reinterpretation represents “finding positive meaning” coping. Although the other three coping strategies did not fit the present purpose, they were measured because the GCQ was developed to measure all of the four scales, and additionally, they were analyzed in comparison with Cognitive Reinterpretation.

**Health Status.** Health status was assessed with the 28-item Japanese version of the General Health Questionnaire (GHQ; Nakagawa & Daibo, 1985), the original version of which was developed by Goldberg and Hillier (1979). The GHQ consists of four subscales: Somatic Symptoms (SS) (e.g., Have you recently been getting any pains in your head?), Anxiety and Insomnia (AI) (e.g., Have you recently been feeling nervous and strung-up all the time?), Social Dysfunction (SD) (e.g., Have you recently been satisfied with the way you’ve carried out your tasks?), and Severe Depression (D) (e.g., Have you recently been thinking of yourself as a worthless person?). Each subscale has seven items, measured on a 4-point Likert scale (e.g., from “much worse” to “better”). The alphas are .74, .76, .68, and .91 for SS, AI, SD, and D, respectively (Sasaki & Yamasaki, 2002). The validity of the scales has been established principally with respect to concurrent and discriminant validity (Nakagawa & Daibo, 1985). Participants were asked to rate how they felt during the prior two-week period.
In addition, the Japanese version of the CES-D (Center for Epidemiologic Studies Depression Scale; Shima, Shikano, Kitamura, & Asai, 1985), which was originally developed by Radloff (1977), was also utilized to measure depression. A scale like the CES-D that is more sensitive to milder levels of depression than the Severe Depression subscale in the GHQ was needed for this study because the study participants were not patients under treatment for depression. The CES-D is a 20-item self-report scale inquiring about the participant’s mood during the previous week. Each response is graded on a 4-point scale from 0 = “rarely or none of the time” to 3 = “most or all of the time.” Shima et al. (1985) demonstrated the reliability of CES-D using correlations by test-retest and split-halves methods and demonstrated validity by comparisons between normal participants and patients.

Procedure

Participants were randomly divided between intervention and control groups. All participants first completed the PANAS, GCQ, GHQ, and CES-D in small groups (ten or less). Thereafter, participants in the intervention group were instructed to report the most stressful event during the prior three days. Participants were further instructed to search for, find, and write down positive meanings in the event. Unlike Yamasaki et al. (2009), participants were not instructed to inhibit negative emotions while reporting stressful events and positive meanings. To assist participants in defining positive meaning, participants were given the following list of suggestions: think about something good coming out of experiencing this event; think about a long-term benefit of this event; think about something you could learn from this experience; look for the good side of this experience; and think about how this event could change your life in a positive way. This list was adopted with some modifications from a study by Fredrickson, Tugade, Waugh, and Larkin (2003) in which they measured the extent to which participants found positive meaning within their problems and stressors. We asked participants to actually think and feel the positive meaning that they were writing down in their reports.

On the other hand, participants in the control group were instructed only to report the most stressful event alone. Control group participants were not given any instruction to search for, find, and write down positive meaning in the event. Also, they were not given any instructions to inhibit negative emotions while reporting stressful events. All reports were submitted via e-mails to the authors of this article. The submitted reports were checked each time, confirming that participants wrote them according to the instruction. Although stressful events reported in both groups were widely diverse, they mainly concerned problems on interpersonal relations, academic activities, and future careers.

Fig. 1 shows an outline of the procedure in the current study. Participants in both groups started their report sessions one week following the above instruction session. Participants reported twice a week for the

![Fig. 1. An outline of the procedure in the current study.](image-url)
In addition, all participants visited an experimental room every other week during the intervention, four times in total, to have their reports checked by one of the authors in terms of whether they were written according to the instruction. All participants completed the same four questionnaires (PANAS, GCQ, GHQ, CES-D) in the middle of the intervention (five weeks after the start of the intervention), and just after the conclusion of the intervention. Thereafter, participants were briefed about this intervention study. Although the study investigators offered an intervention session to members of the control group out of a sense of moral responsibility, no control group participant accepted the offer.

**RESULTS**

Table 1 lists the mean raw scores for the GCQ, PANAS, GHQ, and CES-D with their SDs for each period (pre-, mid-, and post-intervention), for men and women. We conducted a series of $2 \times 2 \times 3$ (intervention and control groups $\times$ sex $\times$ pre-, mid-, and post-intervention periods) analyses of variance (ANOVAs) in terms of the variables measured in this study. In describing the results, we focused on group-related effects (Group, Group $\times$ Sex, Group $\times$ Period, and Group $\times$ Sex $\times$ Period) that fit the present purposes. For Cognitive Reinterpretation in the GCQ, PA in the PANAS, Social Dysfunction in the GHQ, and Depression in the CES-D, only the Group $\times$ Period interactions were significant, $F(1, 56) = 7.60, p < .01$, partial $\eta^2 = .119$; $F(1, 56) = 4.16, p < .05$, partial $\eta^2 = .071$; $F(1, 56) = 4.14, p < .05$, partial $\eta^2 = .068$; $F(1, 56) = 5.01, p < .05$, partial $\eta^2 = .082$, respectively. No other measures showed significant group-related effects.

Because significant Group $\times$ Period interactions were identified for Cognitive Reinterpretation, PA, Social Dysfunction, and Depression with no significant interactions of Group $\times$ Sex and Group $\times$ Sex $\times$ Period, we conducted post hoc tests with Bonferroni corrections using the data collapsed over men and women. Results showed no significant differences between groups in the pre-intervention period for these four outcome measures. These findings, along with the results from the above ANOVAs, suggest that the intervention and control groups were homogeneous in the pre-intervention period with respect to affect, coping, and health status measured in this study.

Furthermore, results identified significant differences between groups in the mid- and post-intervention periods for Cognitive Reinterpretation: i.e., Cognitive Reinterpretation was significantly higher in the intervention group than in the control group for both periods. Moreover, Cognitive Reinterpretation showed no significant differences between the mid- and post-intervention periods in the intervention group. These findings suggest that the manipulation for enhancing “finding positive meaning” coping worked effectively into the post-intervention period with no changes in the manipulation effect from the mid- to post-intervention periods.

With regard to the intervention effects of enhancing “finding positive meaning” coping, the post hoc tests showed significant differences between groups in the mid- and post-intervention periods for PA, Social Dysfunction, and Depression: i.e., PA was significantly higher and the other two were significantly lower in the intervention group than in the control group for both periods. These findings regarding Social Dysfunction
and Depression mean that compared with the control group, the intervention group participants became significantly more satisfied with their daily activities and less depressed in response to the intervention. Additionally, PA, Social Dysfunction, and Depression showed no significant differences between the mid- and post-intervention periods in the intervention group, suggesting that the intervention effects on these three outcome measures continued into the post-intervention period with no changes from the mid-intervention period.

Next, we tested whether the increase in Cognitive Reinterpretation following intervention led to the increases in PA, using the data collapsed over men and women in the intervention group. Hierarchical regression analyses were conducted with PA at the mid- or post-intervention periods regressed on Cognitive Reinterpretation at the mid- or post-intervention periods. In the hierarchical regression analyses, using PA at the mid-
post-intervention period as a dependent variable, PA and Cognitive Reinterpretation at the pre-intervention period were entered in the first step, followed by Cognitive Reinterpretation at the mid- or post-intervention period. Table 2 shows three patterns resulting from these analyses. For all of the results, Cognitive Reinterpretation in the second step showed significant $\beta$s along with significant $R^2$ changes. Especially, the results in the middle part of Table 2 in which PA at the post-intervention was regressed on Cognitive Reinterpretation at the mid-intervention are the most reliable predictors of directional relationships between Cognitive Reinterpretation and PA because of the time lag between these two variables.

Furthermore, hierarchical regression analyses similar to the above ones were conducted to examine whether an increase in Cognitive Reinterpretation or an increase in PA led to a decrease in Social Dysfunction or Depression. Tables 3 and 4 show the results for Social Dysfunction and Depression, respectively. Regarding PA, all of the results reveal that PA had significantly negative $\beta$s to Social Dysfunction and Depression along with significant $R^2$ changes, suggesting that it was the increase in PA which led to the decreases in these two health outcomes. Meanwhile, Cognitive Reinterpretation had significantly negative $\beta$s to Social Dysfunction ($-.53, p < .01$) and Depression ($-.32, p < .05$), with significant $R^2$ changes ($-.30, p < .01$, for Social Dysfunction; $-.16, p < .05$, for Depression) only for the result in which Social Dysfunction (or Depression) and Cognitive Reinterpretation at post-intervention were dependent and independent variables, respectively.

Finally, we examined the possible mediation effect of Cognitive Reinterpretation enhancing health status via PA. Kenny and colleagues (Baron & Kenny, 1986; Judd & Kenny, 1981) showed that mediation effects can be tested using a combination of
correlation and regression analyses. They described a four-step procedure for testing mediation. The first step is to show a significant correlation between a predictor (Cognitive Reinterpretation) and an outcome (Social Dysfunction or Depression). The second step is to show a significant correlation between a predictor (Cognitive Reinterpretation) and a mediator (PA). Using the data collapsed over men and women in the intervention group, we utilized residual change scores from the pre- to mid-intervention periods for the predictor and the mediator and from the pre- to post-intervention period for the outcome. Thus, we set a time lag between the predictor (or mediator) and the outcome to predict causality. With respect to correlations between the predictor and the outcome, Cognitive Reinterpretation significantly correlated with Social Dysfunction ($r = -0.44, p < .05$) and with Depression ($r = 0.39, p < .05$). Second, with respect to a correlation between the predictor and the mediator, Cognitive Reinterpretation also significantly correlated with PA ($r = 0.44, p < .05$). Thus, the requirements of the first two steps were fulfilled.

The third step is to show that the mediator affects the outcome when the predictor is controlled. The fourth step determines whether the mediation is complete or partial. Complete mediation is indicated by demonstrating that the effect of the predictor on the outcome is vitiated when the mediator is controlled. If the first through third steps are satisfied but the fourth step is not, the mediation is partial. The final two steps are

<table>
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<th>Step 1β</th>
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<td>Step 2 Mid-Intervention</td>
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* $p < .05$, ** $p < .01$
accomplished with one regression analysis, with the outcome as a dependent variable and with the mediator and predictor entered simultaneously as independent variables. The regression analyses in this study showed that complete mediation occurred both for Social Dysfunction and Depression: i.e., PA was significantly associated with Social Dysfunction ($\beta = –.43, p < .05$) and with Depression ($\beta = –.45, p < .05$), but Cognitive Reinterpretation was not significantly associated with Social Dysfunction ($\beta = –.35, n.s.$) or with Depression ($\beta = –.09, n.s.$).

**DISCUSSION**

In this study, PA was enhanced by the manipulation to enhance “finding positive meaning” coping, which was measured by Cognitive Reinterpretation in the GCQ. Moreover, an increase in “finding positive meaning” coping directly led to an increase in PA, demonstrating a directional relation between these two variables. This finding is consistent with Yamasaki et al. (2009), which identified a robust directional relationship between “finding positive meaning” coping and PA.

The main purpose of this study was to re-examine the effects of “finding positive meaning” coping and PA on health status by revising two methodological limitations in
Yamasaki et al. (2009) that may have prevented demonstrable improvements in health status. One of the limitations was the too short duration of increased PA, and the other was the inhibition of negative emotions while reporting stressful events and associated positive meanings. Results of this study demonstrated improvements in two health outcomes: social dysfunction in the GHQ and depression in the CES-D. Furthermore, hierarchical regression analyses showing that PA at the mid-intervention period was negatively associated with health outcomes at post-intervention when PA and health outcomes were controlled at pre-intervention suggest that increased PA directly led to the observed health improvements. The time lag between predictor and outcome in these analyses indicates a likelihood of causal relationships between PA and health outcomes.

With respect to the relationship between “finding positive meaning” coping, PA, and health status, mediation analyses suggested that the effect of coping on health status was completely mediated via PA. However, a direct effect of coping on health status was also suggested by the finding that coping in the post-intervention period was negatively associated with health status in the post-intervention period when coping and health status in the pre-intervention period were controlled. The finding that coping in the mid-intervention period was not associated with health status in the post-intervention period indicates that coping might take longer than PA to influence health status. However, because the data indicating a direct effect of coping on health status had no time lag between predictor and outcome, future research would be needed to determine whether coping truly has a direct effect on health status.

No physical health variables (e.g., physical symptoms in the GHQ) showed improvement in this study. Regarding physical health, for example, PA has been associated with prompt recovery of physiological responses (e.g., Fredrickson, Mancuso, Branigan, & Tugade, 2000; Tugade & Fredrickson, 2004), enhanced immune systems (e.g., McClelland & Cheriff, 1997; Valdimarsdottir & Bovbjerg, 1997), and fewer reported physical symptoms (Pettit, Kline, Gencoz, Gencoz, & Joiner, 2001). It is possible that the GHQ was not suitable for measuring physical health because it is a scale designed primarily to assess mental health. Future research of the effect of PA on physical health will require other measures besides self-report questionnaires, such as diagnosis of illness by medical examinations, direct measurements of physiological changes (e.g., blood pressure and immune functions), or examination of rates of absenteeism from work and school due to illness.

Moreover, with respect to promising topics for future research, it should be indicated to examine whether the present intervention is also valid for traumatic stressful events. In this study, few participants reported such traumatic events. Writing about traumas has often been demonstrated to be effective to improve health problems (see Smyth, 1998, for a meta-analytic work). Moreover, King and Miner (2000) revealed that participants who wrote about the perceived benefits of traumatic events showed significantly fewer health center visits throughout five months after writing. Although their procedure was different from the present one in that their participants wrote about traumas and perceived benefits for 20 minutes each day for three consecutive days, both studies utilized a similar method of “finding positive meaning.” Thus, it is suggested that “finding positive meaning”
coping can also be effective via enhancement of PA for traumatic events. However, methodological differences between King and Miner (2000) and the present study need future research in which the present procedure should be applied to traumatic events.

Mental health diseases—specifically, depression—have been drastically increasing in recent years (see Lambert, 2006 and Parker, Gladstone, & Chee, 2001, for reviews). Determining the roles of primary and secondary preventions for these diseases is becoming ever more important. The results of this study suggest that “finding positive meaning” coping and PA have a beneficial effect on health status. The manipulation for enhancing “finding positive meaning” coping in this study is especially promising for primary and secondary preventions because it can be controlled by the subjects themselves without outside help from treatment specialists. Manipulation by oneself of PA is also possible through techniques such as watching comedy films (e.g., Homenover, 2003), listening to cheerful music (e.g., Erber, Wegner, & Therriault, 1996), writing about positive experiences (e.g., Burton & King, 2004), writing word associates to positive-valenced words such as “beautiful” and “joy” (e.g., Isen, Johnson, Mertz, & Robinson, 1985), recalling happy events (Urada & Miller, 2000, Experiment 1), etc. One of the next steps for following-up this study would be to develop a self-controlled type of primary prevention program utilizing manipulations of “finding positive meaning” coping and PA.

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