



Research article

Regulating anger in different relationship contexts: A comparison between psychiatric outpatients and community controls

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ABSTRACT

Background: The capacity to regulate emotion is important for individuals' ability to adapt to society, the long-term lack of which can lead to related emotional disorders. However, evaluating whether an emotion-regulation strategy is appropriate requires consideration of the individual's distinct culture and situation. In this study, we compared the anger regulation strategies employed in various interpersonal situations by psychiatric outpatients and a community control group in Taiwan.

Methods: We surveyed 150 psychiatric outpatients (mean age = 45.30, SD = 12.48, 73.3% female) and 150 community controls (mean age = 45.05, SD = 12.24, 73.3% female) congruent in age and sex. Participants evaluated their emotion regulation in two interpersonal contexts by completing a set of questionnaires related to a recent incident of anger they experienced with family and friends, respectively.

Results: Outpatients used the emotion-regulation strategies of cognitive reappraisal and expressive suppression equally in various relationships; while the community control group made more use of cognitive reappraisal to regulate anger, which arose in their relationships with both family and friends. Relationship intimacy influenced the strategy adopted, and the community control group was more likely to use suppression to regulate anger towards friends than family members, which reflected a cultural belief—maintaining harmony in social relationships.

Limitations: Context-specific emotion regulation was assessed via a retrospective self-report measure, which is subject to recall bias.

Conclusions: Our findings highlight the importance of considering interpersonal contexts when studying emotion regulation and developing psychological interventions that target anger or other negative emotion regulation.

1. Introduction

Anger is a basic emotion (Shaver et al., 1987) which can be adaptive or maladaptive, depending on the context in which anger occurs and how it is regulated (Mauss et al., 2007). Nevertheless, numerous studies have documented the existence of a positive relationship between anger and mood disorder (Kashdan and Roberts, 2007; Rusting and Nolen-Hoeksema, 1998). Studies have found that depression, anxiety, and other mood disorders are significantly correlated with chronic emotion dysregulation (Aldao et al., 2010; Berking et al., 2014; Mennin et al., 2007; Pandey et al., 2011). To regulate emotion appropriately, one

needs to be aware of the emotional state of one's self and others (Gross and Jazaieri, 2014), to express (or not to express) emotion in words or nonverbal behaviors (Hofmann et al., 2012), and to skillfully use strategy to upregulate or downregulate current emotions to desired ones (Masthead and Fischer, 2000).

Among several identified emotion regulation strategies, cognitive reappraisal and expressive suppression are the most widely investigated. The two specific strategies derived from the process model of emotion regulation (Gross, 1998) which forms the theoretical basis of the present study. According to the model, emotion regulation strategies can be broadly divided into two groups: antecedent-focused, such as cognitive

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reappraisal, and response-focused, such as expressive suppression. Cognitive reappraisal involves changing perspectives or interpretation of the situation to alter the magnitude or impact of emotion, and it occurs either before or during the emotional reaction. Expressive suppression refers to the suppression of facial expression or behaviors triggered by certain emotional responses, and it is usually adopted by people after emotional generation (Gross, 1998; Gross and Levenson, 1993). Mounting evidence has shown that cognitive reappraisal is significantly correlated with more positive daily emotions, higher life satisfaction, and less anger or other negative emotions (Mauss et al., 2007). Previous work has also indicated that habitual inhibition of emotion expression predicts higher depression (Hofmann et al., 2012), more negative emotions (Gross and John, 2003), and fewer positive emotions (Carl et al., 2013).

A systemic review investigating the association between emotion regulation and psychopathology indicated that suppression had a small to moderate correlation with depression and anxiety disorders, whereas cognitive reappraisal had a small to moderate negative correlation with depression and anxiety disorders (Aldao et al., 2010). Aldao and Nolen-Hoeksema (2012) further classified adaptive versus maladaptive emotion regulation: the former represents reappraisal and acceptance, and the latter represents suppression and avoidance. They concluded that maladaptive emotion-regulation strategies were highly correlated with depression and anxiety disorders.

Every society has culturally defined rules concerning appropriate ways to express emotion. In a society where individualism is highly valued (such as Western European and North American), suppressing emotion may be viewed as emotion avoidance or self-protection, and can lead to poor interpersonal relationships (Butler et al., 2007); whereas in a society that emphasizes interdependence (such as East Asian countries), suppressing one's emotion to achieve interpersonal harmony is considered adaptive (Ford and Mauss, 2015). It is noteworthy that some studies found that suppression and depression are weakly or non-significantly correlated in Asian cultures (Su et al., 2015). Cole et al. (1994) also noted that how an individual regulates emotion may vary depending on the specific social context.

Even if people share similar cultural beliefs or expectations, individual differences exist in regulating emotion in everyday social interactions. D'Avanzato et al. (2013) compared group differences in emotion regulation between clinical patients and general community members (as controls) and found that participants in the clinical group (with either social anxiety or depression diagnoses) were more likely to use rumination and suppression, and less likely to use cognitive reappraisal than were the community group.

To date, only a few studies (e.g., Bell and Calkins, 2000; Marroquín and Nolen-Hoeksema, 2015) addressed emotion regulation in different relationship contexts by individuals with or without emotional disorders. The research findings shed light on the complicated dynamics of emotion regulation in daily life. However, the generalizability of these research findings to different cultural area needs to be examined. Furthermore, without assessing specific types of relationships, the mechanisms through

which relationship contexts influence emotion regulation cannot be examined. The aims of the current study were to investigate the self-reported emotion-regulation strategies of clinical outpatients diagnosed with emotion disorders and a community-dwelling sample with no psychiatric history. We specifically compared differences between the two groups in regulating anger in two interpersonal contexts: with family and with friends, respectively. In addition, outpatients and community controls were also compared for the effects of relationship-specific anger regulation on positive and negative emotions and depressed mood. We hypothesized that the association between the two emotion-regulation strategies and depression would be mediated by positive and negative emotions. The hypothesized structural model is shown in Figure 1.

2. Method

2.1. Participants

Participants were 300 individuals with a mean age of 45 years ($SD = 12.34$, range = 20–69). Among the participants, 150 were outpatients treated at the psychiatric clinic of a medical center in Eastern Taiwan. Inclusion criteria for the outpatient group were (a) aged 20–70 years and (b) being diagnosed with emotional disorders (including depression, anxiety, and panic disorders). Exclusion criterion included being diagnosed with schizophrenia or substance addiction as a comorbidity.

Additionally, 150 healthy controls were identified from a larger study of emotion regulation in the community. Inclusion criteria for controls were (a) aged 20–70 years and (b) no psychiatric history. The controls were matched for sex and age with each outpatient participant. Demographic variables for the two groups are shown in Table 1. More people in the control group worked full- or part-time jobs compared with outpatients. Regarding marital status, more participants in the control group were married or had a cohabiting partner compared with outpatients.

2.2. Measures

2.2.1. Context-specific emotion regulation

Participants were asked to recall a recent incident where they were angry with their (1) family or (2) friends. Then, they evaluated their associated emotion-regulation strategies by using the Emotion Regulation Questionnaire (ERQ; Gross and John, 2003). The ERQ is a 10-item measure designed to assess cognitive reappraisal (“When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm”) and emotion suppression (“When I am feeling negative emotions, I make sure not to express them”). Six items relate to cognitive reappraisal, and the other four to emotion suppression. Items are rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The total score for each subscale was divided by the number of items, with higher scores indicating a greater tendency to use this specific emotion-regulation strategy when dealing with anger in a specific relationship (i.e., with

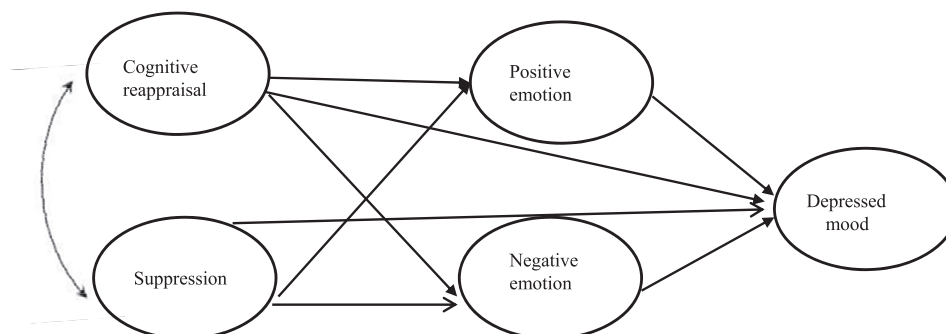


Figure 1. The hypothetical structural model.

Table 1. Participants' demographic characteristics.

	Outpatients (n = 150)		Control (n = 150)	
	n	%	n	%
Sex				
Female	110	73.3	110	73.3
Male	40	26.7	40	26.7
Age (years)				
20–35	37	24.7	37	24.7
36–50	61	40.7	61	40.7
>50	52	34.6	52	34.6
Education				
High school or less	97	64.7	54	36.0
2-year college to college degree	48	32	75	50.0
Graduate or professional school	5	3.3	21	14.0
Employment status				
Full- or part-time employee	75	50	122	81.4
Retired, unemployed, or student	75	50	28	18.6
Marital status				
Married or living with partner	60	40	88	58.6
Separated, divorced, or widowed	44	29.3	19	12.7
Never married	46	30.7	4	28.7

family or friends). Internal consistency for both suppression and cognitive reappraisal was moderate or above (Cronbach's α s = .68 to .72 for suppression and .75 to .82 for cognitive reappraisal). The retest reliability three months after was 0.69, indicating satisfactory reliability and validity.

2.2.2. Depression

Depression was measured with the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). A Chinese version of CES-D, which was translated by Chien and Cheng (1985), was used in the current study. The CES-D contains 20 items, including physical, emotional, interpersonal, and other depressive symptoms. Items are rated on a four-point scale ranging from 0 (*never/rarely, less than once a week*) to 3 (*frequently, five to seven times a week*) during the preceding week. Total scores range 0–60, with higher scores representing greater intensity of depressive experiences. A cut-off score of 16 has been used to identify depressive symptoms (Shean and Baldwin, 2008). The CES-D has shown good internal consistency in community and clinical populations (Cronbach's α s = .84–.90, Radloff, 1977; Chien and Cheng, 1985).

2.2.3. Positive and negative emotion

Participants' emotions were assessed via the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS consists of 20 items divided into two subscales: positive affect (“interested” or “excited”) and negative affect (“hostile” or “irritable”). Items are rated on a 5-point Likert-type scale from 1 (*very slightly or not at all*) to 5 (*extremely*). Subscales are summed, with higher scores indicating greater intensity of positive or negative affect. The PANAS has demonstrated good internal consistency: Cronbach's α s = .86–.90 for positive affect and .84–.87 for negative affect (Huebner and Dew, 1995).

2.3. Procedure

This research was approved by the Research Ethic Committee of Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation (nos. IRB105-47-B and IRB105-82-A).

Outpatients were recruited through their attending doctors, and healthy controls were recruited through advertisements posted on community bulletin boards or online social media. Written informed consent was obtained from all participants, and they were assured of the anonymity of the information they provided. Participants were asked to

complete a set of questionnaires including background information, the CES-D, and the PANAS. Then, they were instructed to recall a recent incident in which they experienced anger with (1) family and (2) friends, respectively. Next, participants were asked to evaluate their emotion regulation during that experience via the ERQ. Upon completion, each participant was given a voucher worth \$10.

2.4. Data analytic plan

We used structural equation modeling (SEM) to test the hypothetical models. A two-step approach (Anderson and Gerbing, 1988) was adopted: (1) confirmatory factor analyses were conducted to examine how well the measurement models fit the data, and (2) SEM was employed if the model fit the data well. The item parceling technique (Russell et al., 1998) was used to create observed indicators for the latent variables of the structural model except for emotion suppression, in which the four individual items of the subscale were used as indicators. The item-to-construct balance (Landis et al., 2000) method was used to obtain greater consistency of variance. For each latent variable, there were three parcels, and each parcel was formed concerning the magnitude of the loadings. The items were ranked from the highest to the lowest based on their factor loadings, and then distributed evenly to three item parcels.

All the models were analyzed using IBM SPSS statistics for windows, version 22.0 (IBM corp., Armonk, NY, USA), and maximum likelihood estimation was used to estimate the parameters. For the goodness-of-fit of the model, the following indices suggested by Hu and Bentler (1999) were adopted: a confirmatory fit index (CFI) greater than 0.96, a root mean square error of approximation (RMSEA) less than 0.06, and a standardized root mean square residual (SRMR) less than 0.08. Another goodness-of-fit index used was the chi-squared (χ^2) test; however, because this test is easily influenced by sample size, the χ^2/df (degrees of freedom) had to be smaller than 3, following the recommendation of Kline (2005).

3. Results

3.1. Descriptive statistics and group comparison

The mean and standard deviations of the study variables for the outpatient and control groups are presented in Table 2. An independent *t*-test was performed to determine whether the two groups differed in the

Table 2. Means and standard deviations of the research variables for clinical and community groups.

Variable	Outpatient (n = 150)		Controls (n = 150)		t
	M	SD	M	SD	
Depression	27.42	10.44	14.93	5.79	12.83***
Positive emotion	23.89	8.56	30.24	7.28	6.92***
Negative emotion	29.63	10.31	18.35	6.92	11.13***
Family reappraisal	4.122	1.37	5.25	1.06	7.24***
Suppression	4.28	1.44	4.18	1.37	.62
Friend reappraisal	4.37	1.50	5.47	0.88	7.77***
Suppression	4.42	1.48	4.79	1.20	2.46*

Note. * $p < .05$ *** $p < .001$.

outcome measures. The number of items for the two subscales of ERQ differed; for the purpose of comparison, the total score of each scale was divided by the number of items. The results indicated that the outpatient group was less likely to regulate their anger by using cognitive reappraisal than the control group in both interpersonal situations. Compared with the outpatient group, the controls tended to suppress their emotion more when they were angry with friends but not family.

To examine possible within-participant differences in emotion regulation, a dependent sample *t*-test was performed to compare cognitive reappraisal and suppression in the same interpersonal context. The results indicated that there were no significant differences between the two emotion-regulation strategies for the outpatient group with either family ($t(149) = .44, p = .66$) or friends ($t(149) = .37, p = .71$). For the control group, they tended to regulate anger by using more cognitive reappraisal than emotion suppression in both interpersonal contexts: family ($t(149) = 10.81, p < .001$) and friends ($t(149) = 7.64, p < .001$).

3.2. Measurement model

The measurement models for the two groups (outpatient and control) in different relationships (family and friend) were tested separately. The results indicated that the four models fit the data well (Table 3). All observed variables of these latent variables had significant factor loadings, and all the latent variables had coefficients of composite reliability greater than 0.6, as specified by Bagozzi and Yi (1988). Lastly, all latent variables had average variance extracted greater than 0.5, following the recommendation of Fornell and Larcker (1981).

3.3. Structural model

According to the hypothetical model, the exogenous variables, cognitive reappraisal, and emotion suppression are directly associated with positive and negative emotions and depression; further, the two emotion-regulation strategies also indirectly affect depression through positive and negative emotions.

The structural model was examined for the two groups (outpatient and control) in different interpersonal contexts (family and friend) separately; therefore, four models were tested. It is important to note that

we also examined the competing models in which the direct paths from cognitive reappraisal and emotion suppression to depression constrained to zero, and, by so doing, we examined the contributions of these paths to the model.

The four models (1A–1D) fit the data well: χ^2 ranged from 100.67 to 145.62 ($p < .01, df = 95$), χ^2/df ranged from 1.06 to 1.53, CFI ranged from 0.97 to 0.99, RMSEA ranged from 0.2 to 0.6, and SRMR ranged from 0.5 to 0.7 (Table 4). The alternative models (2A–2D), in which the paths from cognitive appraisal and emotion suppression constrained to zero, also fit the data well. However, when comparing the $\Delta\chi^2$ between hypothetical and alternative models, the non-significant chi-square differences indicated that the direct paths from cognitive reappraisal and emotion suppression to depression did not contribute significantly to the models. Therefore, the parsimonious models (2A–2D) were chosen as our models.

As can be seen in Figures 2 and 3, all the structural paths were significant with some exceptions: the path from suppression to negative emotion (for both outpatient and control groups), cognitive reappraisal to negative for the control group, and suppression to positive for the control group (only friends).

The results showed that outpatients who frequently used cognitive reappraisal to regulate their anger had more positive and fewer negative emotions. These associations applied to regulation of anger toward both family and friends. Suppressing anger toward friends was not significantly associated with positive or negative emotions, whereas suppressing anger toward family was found to significantly reduce positive emotions, but not negative ones. Regarding the structural models for the control group, using cognitive reappraisal to regulate anger toward both family and friends significantly increased positive emotions; however, the effects on negative emotion were non-significant. Using suppression to regulate anger significantly reduced positive emotions only for family (not friends).

3.4. Testing the significance of indirect effects

Positive and negative emotions were examined as mediators of the relationship between the two emotion-regulation strategies (cognitive reappraisal and emotion suppression) and depression. According to the

Table 3. Fit indices among the different measurement models.

Fit indices	CFI	RMSEA	SRMR	χ^2	df	p	χ^2/df
Outpatients							
Family	.99	.05	.04	95.05	94	.45	1.01
Friend	.97	.06	.06	135.64	94	<.001	1.44
Control							
Family	.98	.05	.05	124.05	94	.02	1.33
Friend	.97	.06	.06	145.17	94	.001	1.54

Note. n = 150 for outpatient group, n = 150 for control group. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual.

Table 4. Overview of the fit indices of the hypothetical models for outpatient and community groups.

Structural model	CFI	RMSEA	SRMR	χ^2	df	$\Delta\chi^2$	p
Outpatient							
Family							
1A	.97	.06	.06	145.62	95		
2A	.97	.06	.06	145.92	97	.30	.861
Friend							
1B	.98	.05	.05	133.80	95		
2B	.98	.05	.05	133.91	97	.11	.95
Control							
Family							
1C	.97	.05	.05	136.17	95		
2C	.97	.05	.05	137.49	97	1.32	.52
Friend							
1D	.99	.02	.07	100.67	95		
2D	.99	.02	.07	104.41	97	3.74	.15

Note. n = 150 for outpatient group, n = 150 for control group. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual; NS = non-significant.

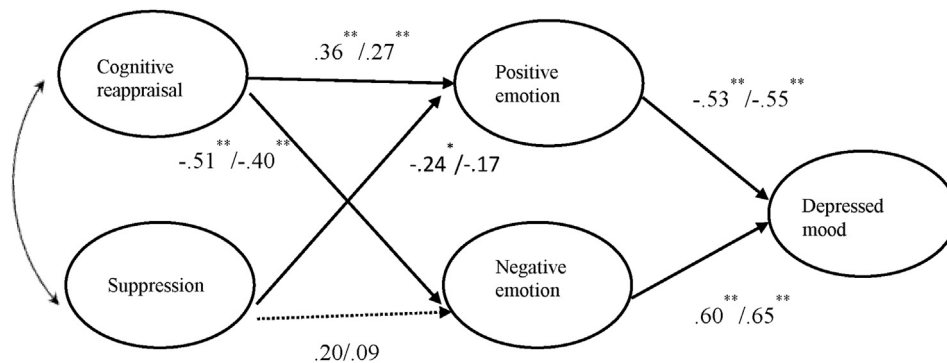


Figure 2. The final structural model for the outpatient group. Note. The dashed line indicates a non-significant path. Coefficients shown are standardized path coefficients. The left side of the slash represents the family model, and the right side of the slash represents the friend model. *p < .05, **p < .01.

recommendation of MacKinnon et al. (2002), bootstrap resampling was performed by repeatedly taking samples of the original data to obtain 1,000 samples for parameter estimation and inference. If the 95% bias-corrected confidence interval (95% CI) of the mean for indirect effect does not include 0, then the mediator effect is significant.

The bootstrap results for the outpatient group indicated that cognitive reappraisal had a significant indirect effect on depression through positive and negative emotions (family $\beta = -.52$, SE = .09, 95% CI = -.67, -.30; friends $\beta = -.41$, SE = .09, 95% CI = -.60, -.22), whereas suppression

had a significant indirect effect on depression through positive emotions only for anger toward family ($\beta = .25$, SE = .11, 95% CI = .06, .47).

In the control group, cognitive reappraisal had a significant indirect effect on depression through positive emotions (family $\beta = -.25$, SE = .10, 95% CI = -.45, -.06; friends $\beta = -.16$, SE = .07, 95% CI = -.32, -.01), whereas the indirect effect of suppression on depression through positive emotion was non-significant for anger toward family ($\beta = .11$, SE = .11, 95% CI = -.09, .41).

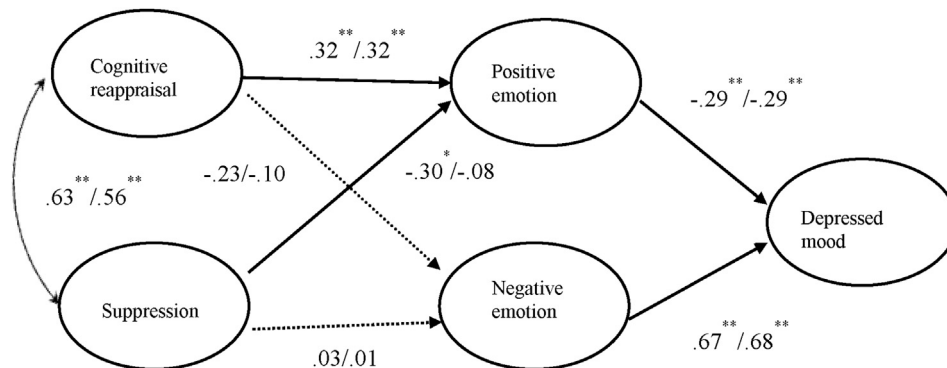


Figure 3. The final structural model for the community control group. Note. The dashed line indicates non-significant paths. Coefficients shown are standardized path coefficients. The left side of the slash represents the family model, and the right side of the slash represents the friend model. *p < .05, **p < .01.

4. Discussion

The main purpose of this study was to investigate the differences between psychiatric outpatients and a community control group concerning anger regulation in various types of interpersonal relationships, as well as to elucidate the relationship between emotion regulation, positive and negative emotions, and depression. We found that, in comparison to the community control group, the outpatients experienced significantly more negative and depressive emotions, and significantly fewer positive emotions, daily. It was also found that, in both their relationships with family and friends, the outpatients were less likely than the community control group to use cognitive reappraisal to deal with their anger. Interestingly, and contrary to our hypothesis, there was no significant difference between the two groups in suppressing anger towards family members; however, the community control group was much more likely to use suppression to regulate anger towards friends than were outpatients.

Both the outpatient and the community control groups reported that using cognitive reappraisal to deal with anger resulted in an increase in positive emotions; however, only for the clinical group did this strategy also help to significantly reduce negative emotions. Also contrary to our research hypothesis, for both groups, the use of suppression did not result in an increase in negative emotions; however, the suppression of anger towards family members corresponded to a decrease in positive emotions, while the use of suppression to deal with anger towards friends had no significant impact on positive emotions.

Psychiatric outpatients experienced significantly more negative emotions and significantly fewer positive emotions than did the community control group, which supports the findings of several previous studies about depression (e.g., Aldao et al., 2010; Gross and John, 2003; Lei et al., 2014; Llewellyn et al., 2013; Webb et al., 2012). An individual's emotions may be influenced by a variety of physiological, cognitive, psychological, and other factors, and research findings suggest that the ability to regulate emotion has a major influence on one's emotional life (Berkling and Wupperman, 2012). Moreover, when a situation gives rise to negative emotions such as anger or sadness, viewing the situation from a different perspective or focusing attention on its positive aspects can both decrease negative emotion and increase positive emotion.

Furthermore, experiencing relatively more positive emotions than negative ones can have a positive impact on one's mental health. Thus, cognitive reappraisal is a helpful strategy for dealing with negative emotions, such as anger. In the present study, we found that the outpatients were less likely to use cognitive reappraisal to deal with negative emotions than were those in the community control group, which supports the findings of Eftekhari et al. (2009), who also found that individuals who are less likely to use cognitive reappraisal are more susceptible to depression, anxiety, and post-traumatic stress disorder.

Several of the current findings differ from those of previous studies. Although those in the community control group used suppression less frequently to regulate anger than did the outpatient group, both groups were more likely to use suppression to mask their anger than were the participants in similar studies conducted in the West using the same questionnaire (Gross and John, 2003; Joormann and Gotlib, 2010; Paez et al., 2013). Tamir and Ford (2012) found that the appropriate expression of anger can be of help in reaching goals and in psychological adaptation. In contrast, owing to the pervasive emphasis in Confucian societies on maintaining harmony in social relationships and "saving face," public displays of anger are strongly frowned upon and rarely occur (Matsumoto et al., 2008). Indeed, in the Confucian societies of East Asia, the ability to control one's negative emotions to avoid "making a scene" in public is seen as a hallmark of maturity and adulthood. Thus, it comes as no surprise that the current participants made more frequent use of suppression than did their counterparts in similar studies conducted in the West. Furthermore, we found that such emotional suppression did not result in an increase of negative emotions, as indicated in studies conducted in the West, where emotional suppression is widely

seen as less desirable and even as having a deleterious impact on individuals' mental health and interpersonal relationships (Aldao and Nolen-Hoeksema, 2012; Butler et al., 2007; Carl et al., 2013; Gross and John, 2003).

We also found that the community control group had more flexibility in choosing a strategy for regulating anger in accordance with the situation and relationship, as indicated by their being more likely to make more of an effort to regulate anger (using either suppression or reappraisal) towards friends as compared to family members. A Chinese sociologist—Fei et al. (1992)—described Chinese individuals' network of interpersonal relationships as rippling outwards from the individual at the center, such that closer relationships are nearer the center and *vice versa*, with the degree of closeness being largely determined by kinship; and he asserted that the individual is more willing to express negative emotion towards those who are closer to the center. Similarly, Kalokerinos et al. (2017) asserted that regulation of emotion needs to give due consideration to various situational factors, since expression of certain emotions in an inappropriate situation can result in undesirable social consequences, such as a broken relationship.

We also found a positive correlation between the use of suppression and cognitive reappraisal; however, previous studies (Gross and John, 2003; Llewellyn et al., 2013) found a low or negative correlation between these two strategies for managing anger. However, in a cross-cultural study by Kwon et al. (2013), this same positive correlation was found for a sample of Korean university students. This positive correlation perhaps indicates that people in Confucian societies first use suppression to keep their anger under control, and then try to find a way to recast the situation in a more positive light to transform or reduce their negative emotions. Matsumoto et al. (2008) argued that, in a society that emphasizes social cohesion and maintaining harmony in interpersonal relationships, people are more inclined to employ a variety of strategies for managing the expression of emotions in accordance with social expectations. In such a society, it should be considered quite natural that an individual would use both suppression and reappraisal to regulate their emotions; when anger or some other negative emotion arises, suppression is used as a stopgap measure, preventing a harmful display of destructive emotion, and providing an opportunity to reassess the situation from a different angle. Moreover, key skills in emotion regulation include the ability to use an appropriate level of restraint to prevent the overt expression of negative feelings; and cognitive flexibility, which includes giving oneself ample time to fully consider the situation and how to respond in an appropriate manner (Malooly et al., 2013).

In sum, the present study compared psychiatric outpatients and a community control group in terms of emotion-regulation strategies employed in various interpersonal relationships, as well as examining how this relates to mental health. While cognitive reappraisal is generally a more suitable strategy for dealing with anger, suppression is also appropriate in certain situations. Moreover, the ability to flexibly use various strategies to regulate emotions in a variety of relational contexts likely has a major bearing on mental health.

4.1. Limitations

The current results need to be interpreted considering notable limitations. First, the context-specific emotion regulation was measured by asking participants to recall a recent incident in which they experienced anger in relation to family or friends. This form of assessment is subjected to social desirability and recall biases. Future research may consider adopting methods such as the Day Construction Method (Kahneman et al., 2004), in which participants are instructed to record their experience of the preceding day in a systematic way to reduce recall bias.

A second potential limitation concerns the psychiatric outpatient group, which consisted of participants diagnosed with a wide variety of psychiatric conditions including depression, panic disorder, and anxiety disorder. No attempt was made to study the possible correlation between diagnosis and the strategies employed for regulating anger; therefore,

future studies should investigate the association between these variables. Another factor that may have influenced the pattern of results pertains to possible demographic differences (e.g., employment and marital status) between psychiatric outpatients and the community control group. Future studies should examine how different demographic variables may affect the research findings reported here.

A final limitation is that the interpersonal relationships studied were limited to family and friends, without making any further distinctions as to the actual degree of relationship intimacy; although, this degree of closeness is likely to have an influence on the emotion-regulation strategies used.

4.2. Conclusion

Our findings are expected to serve as a valuable reference for clinical practitioners in the mental health field in two ways: first, by highlighting the contextual factors that require consideration when evaluating clients and assisting them in adopting and applying suitable strategies for managing anger or other negative emotions; and, second, by stressing the importance of helping clients increase their cognitive flexibility in adopting alternative perspectives on anger-provoking incidents, to decrease negative emotions and increase positive ones, as well as strengthen their ability to shift their attention away from the object of irritation. For example, a therapist can help clients hone their ability to disengage from strong negative emotions in a timely manner by engaging in such activities as exercising, taking a walk, or chatting with a close friend, to generate positive emotions while taking the edge off negative emotions.

We also found that the participants in the community control group were better than were outpatients at choosing a strategy for regulating negative emotion in accordance with the situation and relational context, such that they were more likely to express their negative emotions with family members, whereas with friends they were more likely to employ suppression or reappraisal to maintain a harmonious relationship. By contrast, those in the outpatient group were less flexible in choosing a strategy in accordance with the anger-provoking situation. The degree that this lack of flexibility impacts mental health is a topic requiring further research. Another topic that awaits further research is the extent that the choice of strategy for dealing with emotions is affected by the degree of intimacy inherent in various types of relationships, such as family, friends, and co-workers.

Declarations

Author contribution statement

W-L. Chen: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

J-J. Lin: Performed the experiments.

Y-C. Shen: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data.

C-T. Wang: Performed the experiments.

S-T. Chen: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data.

Y-L. Chao: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data.

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Competing interest statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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