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## Links Between Emotion Regulation Strategies and Internalizing and Externalizing Problems in Chinese American Adolescents

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Adolescents from immigrant families are at risk for psychological health issues due to acculturative stress and the marked increases in internalizing and externalizing problems accompanying adolescence. Emotion Regulation (ER) may be an important protective resource for these adolescents. The present study tested the links between ER and internalizing and externalizing problems in 131 first- and second-generation Chinese American adolescents. Adolescents' reappraisal was associated with less internalizing and externalizing problems; adolescents' suppression was associated with more internalizing and externalizing problems. These links were somewhat more pronounced in adolescents high in American cultural orientation as well as in adolescents low in Chinese cultural orientation. Our results advance our understanding of the links between ER and psychological health in Chinese American youth.

**Key words:** emotion regulation – psychological health – adolescence – acculturation

Adolescence is often marked by increased emotional lability and intensity and higher prevalence of behavioral problems (Costello, Copeland, & Angold, 2011; Rosenblum & Lewis, 2003). While emotion regulation (ER) and psychological health links have been established in adults and primarily Western samples (Aldao, Nolen-Hoeksema, & Schweizer, 2010), little research has examined these relationships in adolescents from immigrant families, who often face increased risk for maladjustment due to acculturative stress (Dimitrova, Chasiotis, & van de Vijver, 2016). The present study sought to understand the links between two well-studied ER strategies, reappraisal and suppression, and behavioral problems in a sample of first- and second-generation Chinese adolescents in the United States.

Reappraisal involves changing the way one thinks about an emotional stimulus to alter one's emotional response (Gross, 1998). In contrast, suppression involves inhibiting one's emotional expression. While this is not always the case in all contexts, a meta-analysis of research on adults has found that generally reappraisal tends to be associated with less

symptoms of depression and anxiety, while suppression tends to be associated with more symptoms of depression and anxiety (Aldao et al., 2010). The limited prior research suggests that reappraisal use generally increases in early adolescence and decreases in mid to late adolescence, whereas suppression use decreases through adolescence (Gullone, Hughes, King, & Tonge, 2010; Sai, Luo, Ward, & Sang, 2016). So how does adolescents' ER relate to their psychological health?

Two recent meta-analyses that examined the links between ER and psychological health in children and adolescents produced somewhat mixed results. Compas et al. (2017) found that in adolescents, but not school-age children (age 5–9), reappraisal was associated with fewer internalizing problems (e.g., anxiety/depression, withdrawal, somatic complaints) and suppression was associated with more internalizing problems. In relatively fewer studies, the authors found no link between reappraisal or suppression and externalizing problems (e.g., rule-breaking, aggressive behavior). Similarly, Schäfer et al., (2017) found that reappraisal was associated with fewer internalizing problems and that suppression was associated with more internalizing problems in adolescents. Taken together, these studies provide support for the links between ER and psychopathology during adolescence.

Cultural values may be a critical moderating factor in the link between ER and psychological health. For example, individuals from East Asian cultures may employ suppression to maintain social harmony, consistent with their interdepen-

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dent cultural values (Markus & Kitayama, 1991). As such, using suppression may be less harmful to psychological health in Asian cultural contexts compared to Western cultures, given the potential benefits to social relationships. Consistent with this hypothesis, suppression was unrelated to depressive symptoms and well-being in Chinese-origin college students (Soto, Perez, Kim, Lee, & Minnick, 2011; Su et al., 2015). However, suppression was positively associated with depression in a study of Chinese adolescents in China (Sai et al., 2016). Very few studies have examined these questions in adolescents from immigrant families.

Sociocultural norms can shape ER development (Thompson, 2011). Adolescents in immigrant families are simultaneously exposed to values, beliefs, and socialization practices in their host and heritage cultures. Acculturation (adopting the host culture) and enculturation (maintaining one's heritage culture) may play a role in the use of ER strategies and their association with psychopathology. For example, adolescents who are more acculturated may exhibit a similar relationship between ER and psychological health to US-born adolescents, whereas adolescents who are less acculturated may exhibit different patterns from those observed in US-born adolescents.

The present study examined the links between ER (i.e., reappraisal and suppression) and self-reported and parent-reported internalizing and externalizing problems in a sample of first- and second-generation Chinese American adolescents. Because these adolescents had resided in the United States for over 10 years, we expected that they would exhibit similar patterns to US-born adolescents: we hypothesized that adolescents' reappraisal would be associated with fewer internalizing and externalizing problems, whereas adolescents' suppression would be associated with more internalizing and externalizing problems. Furthermore, to examine the role of acculturation and enculturation in these links, we tested cultural orientation as exploratory moderators.

## METHODS

### Participants

All data were collected from the third wave of an ongoing longitudinal study<sup>1</sup> of 258 first-generation

(i.e., born outside the United States) and second-generation (i.e., born in the United States) Chinese American children in immigrant families and their parents (CPHS Protocol No. 2010-11-2570; "The Risk and Protective Factors for Mental Health Adjustment in 1st and 2nd generation Chinese American Immigrant Children") that started in childhood (Chen et al., 2014). The sample was recruited from the San Francisco Bay Area. One hundred and thirty-nine families completed this wave (52.5% daughters;  $M_{\text{age}} = 16.64$ ,  $SD = 0.60$ , age range = 15–18). Both parents and adolescents received up to \$25 for completing the surveys. Most participating parents were mothers (82.6%). Families' self-reported median income for the past year was \$50,001–\$55,000 (range  $> \text{ or } = \$5,000$  to  $> \text{ or } = \$120,000$ ,  $SD = 6.81$ ). Forty-two percent (42.7%) of parents did not complete high school, 31% of parents graduated high school, and 26.4% of parents completed at least some college. Eighty-eight percent (88.3%) of parents were married. Eight adolescents did not complete the measure of ER, thus the final sample consisted of 131 families.

### Procedure

Parents gave written consent for their adolescent to participate. After reading an information letter, adolescents completed an online survey that assessed their ER, internalizing and externalizing problems, cultural orientation, and other variables. After consenting, parents completed an online or paper survey that assessed their adolescents' internalizing and externalizing problems, and other variables. All adolescents completed the survey in English, while 81.7% of parents completed the survey in Simplified or Traditional Chinese.

### Measures

**Emotion regulation.** Adolescents reported on their habitual use of reappraisal and suppression using the Emotion Regulation Questionnaire, rated on a 1–7 Likert scale (ERQ; Gross & John, 2003). Reappraisal was assessed with six items (e.g., *I control my emotions by changing the way I think about the situation I'm in*) ( $\alpha = .83$ ). Suppression was assessed with four items (e.g., *I keep my emotions to myself*) ( $\alpha = .65$ ). Higher scores indicate greater habitual use.

**Internalizing and externalizing problems.** Parents reported on their adolescents' internalizing and externalizing problems in the last 6 months via

<sup>1</sup>Prior waves of the study did not include measures of ER or self-reports of internalizing and externalizing problems, limiting the current study to cross-sectional analyses.

the 113-item Child Behavior Checklist (CBCL Scale; Achenbach, Dumenci, & Rescorla, 2001). Parents rated each item on a 3-point Likert Scale from 0 (*Not true, as far as you know*) to 2 (*Very true or often true*). *Internalizing Problems* consisted of a sum of items from the Anxious/Depressed, Withdrawn-Depressed, and Somatic Complaints subscales (e.g., “Nervous, high strung, tense”) ( $M = 2.65$ ,  $SD = 4.24$ ,  $\alpha = .90$ )<sup>2</sup>. *Externalizing Problems* consisted of a sum of items from the Rule-Breaking and Aggressive Behavior subscales (e.g., “I break rules at home, school, or elsewhere”) ( $M = 2.27$ ,  $SD = 3.13$ ,  $\alpha = .83$ )<sup>3</sup>. Adolescents reported on their internalizing and externalizing problems in the past 6 months through the Youth Self-Report scale (YSR; Achenbach et al., 2001), which is comprised of 112 items that are comparable in content and scoring to those of the CBCL (*Internalizing problems*:  $M = 11.88$ ,  $SD = 8.40$ ,  $\alpha = .90$ , *Externalizing problems*:  $M = 9.39$ ,  $SD = 5.53$ ,  $\alpha = .82$ ).

**Cultural orientation.** Adolescents reported on their American and Chinese orientation using the Cultural and Social Acculturation Scale (CSAS; Chen & Lee, 1996). The CSAS assesses three domains of cultural orientation: English and Chinese language proficiency (e.g., *How well do you speak in English?*; 1 = *extremely poor*, 5 = *very good*), American and Chinese media use (e.g., *How often do you watch American movies?*; 1 = *almost never*, 5 = *almost every day*), and American and Chinese social affiliation (e.g., *How often do you invite American friends to your house?*; 1 = *almost never*, 5 = *more than once a week*). American and Chinese orientation consisted of an average of the Z-scored items assessing English language proficiency, American media use, and American social affiliation, and an average of the Z-scored items assessing Chinese language proficiency, Chinese media use, and Chinese social affiliation, respectively (American orientation  $\alpha = .78$ , Chinese orientation  $\alpha = .74$ ).

**Demographics.** Adolescents’ generational status (reported by parents) was dummy coded as 0 = first generation (born outside the United States), 1 = second generation (born in the United States). Adolescents’ sex was dummy coded as 0 = female, 1 = male. Family socioeconomic status was measured by averaging Z-scored family

income and a Z-score composite of mothers’ and fathers’ years of education.

## RESULTS

### Analytic Plan

Analyses were conducted using SPSS version 26 (IBM SPSS Statistics for Macintosh, Version 26.0, Released 2019; IBM Corp, Armonk, NY). Parent-reported internalizing and externalizing problems was highly skewed ( $skew > 3$ ); thus, we added a constant of 1 and log transformed the data to reduce the skewness (resulting skew  $< 0.60$ ). Because self- and parent-reports of adolescents’ internalizing and externalizing problems were not highly correlated ( $r_{\text{internalizing problems}} = .28$ ,  $r_{\text{externalizing problems}} = .33$ ), we analyzed them separately. To examine the unique relationship between suppression and internalizing and externalizing problems (above and beyond the associations with reappraisal) and vice versa, we entered reappraisal and suppression as simultaneous predictors in four regression models predicting: self-reported internalizing problems, self-reported externalizing problems, parent-reported internalizing problems, and parent-reported externalizing problems. We included adolescents’ generational status, sex, and family SES simultaneously as potential covariates in subsequent multiple regression analyses. To assess whether cultural orientation altered the link between ER and internalizing or externalizing problems, we ran eight multiple regressions predicting self- and parent-report of adolescents’ internalizing and externalizing problems from the interactions between suppression and Chinese orientation, and suppression and American orientation. We also ran eight multiple regressions predicting self- and parent-report of adolescents’ internalizing and externalizing problems from the interactions between reappraisal and Chinese orientation, and reappraisal and American orientation.

Simple slopes analysis (Aiken & West, 1991) was used to examine significant interactions. To control for the false discovery rate that is an issue when conducting several hypothesis tests, we include the  $p$ -values corrected using the Benjamini–Hochberg method (Benjamini & Hochberg, 1995).

### Associations Between ER and Internalizing and Externalizing Problems

See Table 1 for descriptives and correlations among study variables. Interestingly, Chinese orientation was negatively associated with parent-reported and self-

<sup>2</sup>One item had zero variance, and thus was excluded from analyses.

<sup>3</sup>Eight items had zero variance, and thus were excluded from analyses.

TABLE 1  
Descriptives and Relationships Among Study Variables

	Mean (SD)		Pearson's <i>r</i> 's										
	Female N = 68	Male N = 63	First-gen N = 33	Second-gen N = 98	1	2	3	4	5	6	7	8	9
	1. Adolescents' reappraisal	4.76 (1.17)	4.89 (0.99)	5.19 <sub>a</sub> (0.83)	4.70 <sub>b</sub> (1.14)	.05	-.09	-.06	-.16	.02	-.19*	-.04	.16
2. Adolescents' suppression	3.72 <sub>a</sub> (1.04)	4.13 <sub>b</sub> (1.15)	3.84 (1.25)	3.94 (1.07)	.06	.24**	.36**	.18*	.05	.18*	-.13	-.44**	
3. Family socioeconomic status	0.07 (0.75)	-0.06 (0.78)	-0.27 <sub>a</sub> (0.64)	0.10 <sub>b</sub> (0.78)		.16	.29*	.34**	.20*	.24**	.24**	-.18*	
4. Parent-reported internalizing problems	0.35 (0.38)	0.42 (0.34)	0.29 (0.32)	0.42 (0.38)			.28**	.18*	.53**	.18*	-.03	-.22*	
5. Parent-reported externalizing problems	0.28 <sub>a</sub> (0.31)	0.40 <sub>b</sub> (0.34)	0.30 (0.26)	0.35 (0.35)			.04	.33**	.04	.33**	.05	-.16	
6. Self-reported internalizing problems	13.93 <sub>a</sub> (9.03)	9.67 <sub>b</sub> (7.07)	9.85 (7.18)	12.56 (8.69)				.54**		.54**	-.08	-.29**	
7. Self-reported externalizing problems	9.46 (5.14)	9.32 (5.97)	7.76 <sub>a</sub> (4.19)	9.94 <sub>b</sub> (5.83)							.02	-.23**	
8. American orientation	0.09 <sub>a</sub> (0.47)	-0.09 <sub>b</sub> (0.46)	-0.11 (0.43)	0.05 (0.48)								.16	
9. Chinese orientation	0.03 (0.42)	-0.06 (0.52)	0.19 <sub>a</sub> (0.51)	-0.08 <sub>b</sub> (0.44)									

Note. Parent-report of adolescents' internalizing and externalizing problems was log transformed. Different subscripts indicate statistically significant differences.  
\**p* < .05; \*\**p* < .01.

TABLE 2  
Multiple Regressions Testing the Links Between ER and Internalizing and Externalizing Problems

	<i>Models without covariates</i>			<i>Models with covariates</i>		
	$\beta$	p	Corrected p	$\beta$	p	Corrected p
Regression 1: Predicting SR internalizing problems						
Suppression	.37	<.001	.005	.40	<.001	.008
Reappraisal	-.18	.028	.045	-.14	.067	.107
Adolescent generational status				.02	.828	
Adolescent sex				-.30	<.001	
Family SES				.22	.005	
Regression 2: Predicting PR internalizing problems						
Suppression	.24	.006	.005	.22	.015	.060
Reappraisal	-.07	.418		-.04	.650	
Adolescent generational status				.13	.166	
Adolescent sex				.09	.308	
Family SES				.12	.159	
Regression 3: Predicting SR externalizing problems						
Suppression	.19	.026	.045	.18	.038	.101
Reappraisal	-.20	.021	.045	-.16	.059	.107
Adolescent generational status				.08	.354	
Adolescent sex				.01	.916	
Family SES				.30	<.001	
Regression 4: Predicting PR externalizing problems						
Suppression	.05	.570		.00	.997	
Reappraisal	.01	.876		.03	.702	
Adolescent generational status				.06	.486	
Adolescent sex				.21	.017	
Family SES				.21	.018	

*Note.* Adolescent sex was dummy coded as 0 = Female, and 1 = Male; Adolescent generational status was coded as 0 = first generation and 1 = second generation; SR = self-report; PR = parent-report.

reported internalizing and externalizing problems, while American orientation was unrelated to them.

See Table 2 for the multiple regression results. Adolescents' suppression was associated with more self-reported and parent-reported internalizing problems and more self-reported externalizing problems but not parent-reported externalizing problems. When controlling for adolescents' generational status, sex, and family SES, these relationships remained comparable.

Adolescents' reappraisal was associated with fewer self-reported internalizing problems and fewer self-reported externalizing problems. Adolescents' reappraisal was not associated with parent-reported internalizing or externalizing problems. When controlling for adolescents' generational status, sex, and family SES, reappraisal was marginally associated with fewer self-reported internalizing and externalizing problems.

### Does Cultural Orientation Moderate the Relationship Between ER and Internalizing and Externalizing Problems?

American orientation did not moderate the links between suppression and self-reported internalizing

problems ( $\beta = -.03$ ,  $p = .687$ ), but significantly moderated the link between suppression and self-reported externalizing problems ( $\beta = .21$ ,  $p = .018$ , corrected  $p = .072$ ). As depicted in Figure 1, suppression was positively associated with self-reported externalizing problems at high levels of American orientation ( $\beta = .43$ ,  $p = .002$ ), but not at low levels of American orientation ( $\beta = -.07$ ,  $p = .616$ ). Chinese orientation did not moderate the links between suppression and self-reported internalizing or externalizing problems ( $ps > .097$ ). Neither Chinese nor American orientation moderated the links between suppression and parent-reported internalizing or externalizing problems ( $ps > .200$ ).

American orientation did not moderate the links between reappraisal and self-reported internalizing or externalizing problems ( $ps > .317$ ). Chinese orientation marginally moderated the link between reappraisal and self-reported externalizing problems ( $\beta = .17$ ,  $p = .047$ , corrected  $p = .094$ ) and significantly moderated the link between reappraisal

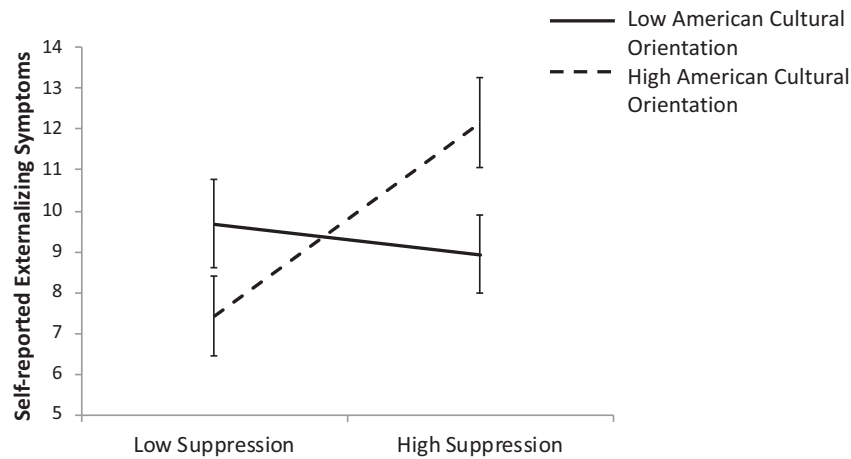


FIGURE 1 Interaction between suppression and American orientation on self-reported externalizing problems. *Note.* Error bars represent standard error.

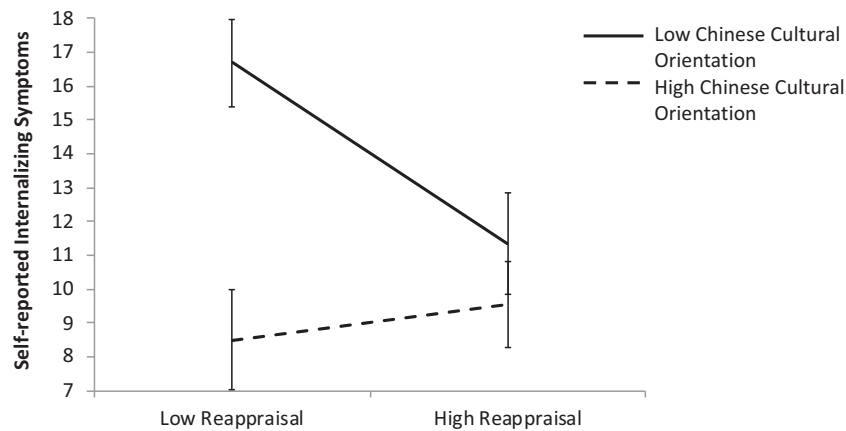


FIGURE 2 Interaction between reappraisal and Chinese orientation on self-reported internalizing problems. *Note.* Error bars represent standard error.

and self-reported internalizing problems ( $\beta = .21$ ,  $p = .013$ , corrected  $p = .052^4$ ). As depicted in Figure 2, reappraisal was negatively associated with self-reported internalizing problems at low levels of Chinese orientation ( $\beta = -.32$ ,  $p = .006$ ), but not at high levels of Chinese orientation ( $\beta = .06$ ,  $p = .578$ ). A similar pattern emerged in the marginal interaction between Chinese orientation and reappraisal on self-reported externalizing problems (see Figure 3). Neither Chinese nor American orientation moderated the links between reappraisal and parent-reported internalizing or externalizing problems ( $ps > .228$ ).

<sup>4</sup>While these interactions became marginal due to the correction, we believe that they are still useful to interpret for theory building.

## DISCUSSION

The present study tested the relationship between two well-studied ER strategies, reappraisal and suppression, and internalizing and externalizing problems in an understudied population: first- and second-generation Chinese American adolescents. Adolescents' reappraisal was associated with fewer self-reported (but not parent-reported) internalizing and externalizing problems. Adolescents' suppression was associated with more self- and parent-reported internalizing problems and more self-reported (but not parent-reported) externalizing problems. These patterns largely held controlling for family SES, generational status, and adolescent sex. These results indicate that, as expected, reappraisal is associated with less internalizing and externalizing problems, while

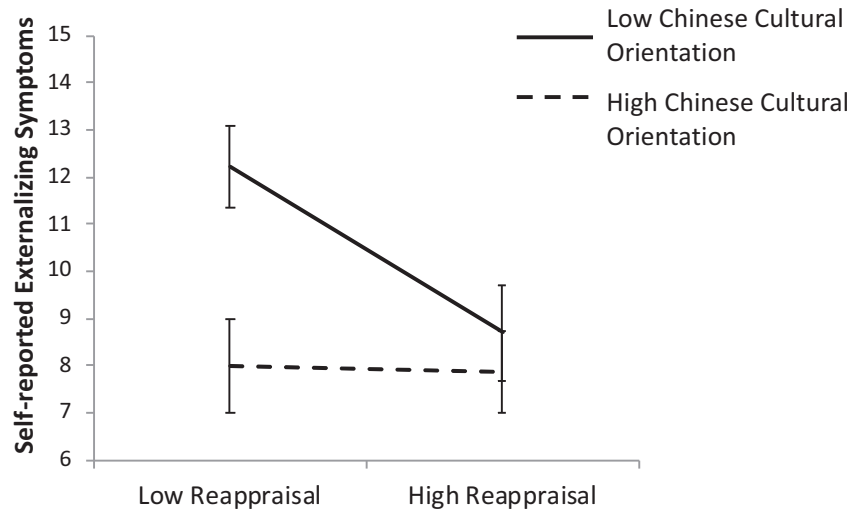


FIGURE 3 Interaction between reappraisal and Chinese orientation on self-reported externalizing problems. *Note.* Error bars represent standard error.

suppression is associated with more problems, particularly when self-reported. One reason for the lack of convergence between parent-reports and self-reports may be that parents are less aware of adolescents' internal emotional experiences or behavior outside the home. This research extends prior literature by demonstrating that the links between ER and psychological health generalize to an understudied population of adolescents from immigrant families.

Our study also explored whether enculturation and acculturation moderated the relation between ER and internalizing and externalizing problems within Chinese American adolescents. We found that adolescents high in American orientation reported more externalizing problems the more they used suppression, whereas adolescents low in American orientation did not. These results are consistent with prior research which suggests that suppression among Asian individuals is not necessarily harmful (Soto et al., 2011; Su et al., 2015). The present study also expands this research by examining whether within-group (vs. cross-cultural) variations in cultural orientation moderate the association between ER and psychological health. Furthermore, adolescents low in Chinese orientation exhibited a negative relationship between reappraisal and self-reported internalizing problems, whereas adolescents high in Chinese orientation exhibited no relationship. One possible explanation for these findings is that Chinese orientation buffers adolescents from internalizing problems, as evidenced by the negative relationship between Chinese orientation and behavioral

problems. We speculate that reappraisal may be a protective factor for adolescents low in Chinese orientation. Taken together, these results suggest that acculturation and enculturation may influence the links between ER and psychological health in immigrant samples.

Immigrant adolescents may be at increased risk for psychopathology due to the accompanying stress of immigration (Georgiades, Boyle, & Duku, 2007). However, not all immigrant youth exhibit poorer psychological health, and some actually exhibit more favorable outcomes than US-born youth (Dimitrova et al., 2016; Marks, Ejesi, & Coll, 2014). Our findings suggest that ER may be one factor that explains differences in psychological health among immigrant youth. Moreover, the present study advances our understanding of how sociocultural factors (i.e., acculturation and enculturation) may interact with ER to shape immigrant adolescents' psychological health.

### Limitations and Future Directions

This study had several limitations. First, the correlational and cross-sectional design limited our ability to test for the direction of ER–psychological health links. A recent study of adolescents found that depression preceded greater suppression use, while suppression did not lead to greater depressive problems (De France, Lennarz, Kindt, & Hollenstein, 2019). Future research should use longitudinal designs to examine directional links among ER, acculturation and enculturation, and psychological health in immigrant samples.



Second, an important future direction is to study whether the findings from the present study generalize to other immigrant or cultural samples. For example, some research has found that suppression of positive emotions is negatively associated with psychological health in Mexican Americans, but not Chinese Americans in the United States (Su et al., 2015; Young et al., 2021). Furthermore, our findings may not generalize to Chinese adolescents in China due to the unique experience of immigration and the cultural adjustments that come with it. For instance, adolescents from immigrant families may exhibit different levels of cultural orientation from their parents, which may cause conflict, putting them at greater risk for psychopathology.

Third, ER was measured using self-reports, which do not capture nuances in suppression. Individual differences in expressiveness may be shaped by socialization, cultural values, and underlying neurobiology (Gross & John, 1995; Mauss, Butler, Roberts, & Chu, 2010). Future studies should try to disentangle these overlapping constructs in order to understand their alternate impacts.

## CONCLUSION

The present study extends prior research by examining the links between ER and psychological health in Chinese American adolescents from immigrant families, an understudied population. We found that reappraisal was generally associated with less internalizing and externalizing problems, while suppression was associated with more internalizing and externalizing problems. These results were slightly more pronounced in adolescents high in American orientation or low in Chinese orientation, suggesting that acculturation and enculturation play a role in the relationship between ER and psychological health. These findings have implications for mental health services for Chinese American adolescents and suggest that cultural orientation is a factor that should be considered in future research on immigrant samples.

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