

# Emotion Regulation Strategies in the High and Low Social Anxiety Teenagers

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**【Abstract】** To explore the difference of emotion regulation between teenagers with low and high social anxiety. The Social Anxiety Subscale of the Self-Consciousness Scale was used to study social anxiety, and the Emotion Regulation Questionnaire was used to evaluate the frequency of emotion regulation strategy use, in 588 teenagers with age from 13 to 18. The frequency of emotion regulation strategy use(cognitive reappraisal and suppression) in teenagers with high and low social anxiety was compared. The results showed that high social anxiety teenagers used cognitive reappraisal less than low social anxiety teenagers, while suppression was more frequently used by high social anxiety teenagers. This result was moderated by age. In the 13-year-old group, participants with high social anxiety used less cognitive reappraisal, and more suppression, than low social anxiety participants. In 14- and 15-year-olds, high social anxiety participants used more cognitive reappraisal than low social anxiety participants, and there was no difference in the use of suppression. Finally, there were no differences in the use of these two strategies between high and low social anxiety teenagers aged 16-18.

**【Key words】** Social anxiety; Emotion regulation; Cognitive reappraisal; Suppression

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## 高、低社交焦虑青少年情绪调节策略使用比较

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**【摘要】** 本研究以13-18岁的青少年为研究对象,采用社交焦虑量表调查青少年的社交焦虑水平,采用情绪调节问卷调查青少年的情绪调节策略使用频率,比较高社交焦虑青少年和低社交焦虑青少年情绪调节策略使用(认知重评和表达抑制)情况。研究结果显示,高社交焦虑青少年使用认知重评策略的频率显著低于低社交焦虑青少年,使用表达抑制策略的频率显著高于低社交焦虑青少年,这种现象受年龄因素的调节,在13岁青少年组中,高社交焦虑青少年(n=40)使用认知重评策略的频率显著高于低社交焦虑青少年(n=40),使用表达抑制策略的频率显著低于低社交焦虑青少年;在14岁和15岁青少年组中,高社交焦虑青少年(n=40)使用认知重评策略的频率显著高于低社交焦虑青少年(n=40),两组被试在使用表达抑制策略的频率上不存在显著性差异;在15岁、16岁和17岁青少年组中,高社交焦虑青少年(n=40)和低社交焦虑青少年(n=40)使用认知重评和表达抑制策略不存在显著性差异。

**【关键词】** 社交焦虑;情绪调节;青少年;认知重评;表达抑制

## 1 Introduction

Social anxiety disorder(SAD) is an epidemic (Gold

in, Jazaieri, Ziv, Kraemer, Heimberg, & Gross, 2013; Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005; Magee, Eaton, Wittchen, McGonagle, & Kessler, 1996; Weeks, Heimberg, Rodebaugh, Goldin, & Gross, 2012; Werner, Jazaieri, Goldin, Ziv, Heimberg, & Gross, 2012), with 12.1% of people suffering for their entire life(Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). According to a survey by Magee et al., 14.9% of teenagers(aged 15-24) have

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life-long SAD(Magee, Eaton, Wittchen, McGonagle, & Kessler, 1996). SAD is associated with negative emotions, such as fear, shame, and embarrassment(Stein & Stein, 2008), and has serious effects on an individual's interpersonal interactions, career, and other aspects of social life(Aderka, Hofmann, Nickerson, Hermesh, Gilboa-Schechtman, & Marom, 2012; Stein & Kean, 2000). In this study, we investigated emotion regulation to determine whether there were differences in the frequency of emotion regulation strategy use between teenagers with high and low social anxiety in the hope of providing a reference for evaluating and intervening in SAD teenagers.

Cognitive-behavioral models of social anxiety claim that SAD individuals have negative beliefs about the world around them, for example, "I am unwelcome." Because of this belief, they interpret the social environment as dangerous(Boden, John, Goldin, Werner, Heimberg, Gross, 2012; Clark & Wells, 1995; Heimberg, Brozovich, & Rapee, 2010; Weeks, Heimberg, Rodebaugh, Goldin, & Gross, 2012). Clark and Wells(1995) argued that when people feel threatened, they take actions for self-protection, like suppressing their emotions. For instance, an individual with SAD cannot help blushing, because they think, "Others think I am useless," and they then use suppression to keep others from noticing them.

Based on the cognitive-behavioral model of social anxiety, we hypothesize that people with high social anxiety are less skillful in regulating emotions than individuals with low social anxiety. More specifically, high social anxiety individuals use cognitive reappraisal strategies less, and expressive suppression more. Cognitive reappraisal and expressive suppression are two different strategies that are frequently used to regulate emotion(Gross & John, 2003; John & Gross, 2007). Cognitive appraisal is an antecedent-focused strategy, occurring in the early stage of emotion. It changes the individual's understanding of emotional events, and thus reduces emotional reactions(Gross & John, 2003; John & Gross, 2007). Cognitive reappraisal is an effective emotion regulation strategy that can reduce an individual's negative emotional experiences, and increase positive emotional experiences(Gross & John, 2003;

McRae, Jacobs, Ray, John, & Gross, 2012). In contrast, expressive suppression is a response-focused strategy that happens at a later stage. It decreases an individual's emotional experience by suppressing expressive behaviors that follow emotions(John & Gross, 2007; Urry & Gross, 2010).

The present study focused on teenagers aged 13-18. The study manifested that the period known as adolescence was the critical developmental period of individual emotional regulation ability and strategy use (Casey, Tottenham, Liston, & Durston, 2005; Durston et al., 2006; Gogtay et al., 2004; Luna, Padmanabhan, & O'Hearn, 2010). At the same time, it also found that teenagers' regulation ability towards negative emotion caused by social stimulation was poor (Mcrae, Silvers, Gabrieli, & Gross, 2012). We compared emotion regulation strategy use between teenagers with low and high social anxiety using the Social Anxiety Subscale of the Self-Consciousness Scale to assess social anxiety, and the Emotion Regulation Questionnaire to evaluate the frequency of emotion regulation strategy use.

## 2 Methods

### 2.1 Participants

Participants were 1200 students from middle and high schools in Xi Ning, Qinghai, China. They were required to complete the Social Anxiety Subscale and Emotion Regulation Questionnaire. Of the 1089 valid questionnaires received, 524 respondents were boys (48.2%), 563 were girls(51.7%), and 2 were gender unknown(0.2%). As for ethnic identity, 908 were Han (83.4%), 175 were minorities(16.1%), and ethnic identity was unknown for 6 participants(0.6%). Education level and age for all participants are shown in Table 1.

According to the total Social Anxiety Subscale scores, participants were divided into high and low social anxiety groups. The top and bottom 27% of participants were classified into the high and low social anxiety groups, respectively, with 294 participants in each group. An independent sample t-test showed that the Social Anxiety Subscale score was significantly higher for the high( $M=16.59$ ,  $SD=2.52$ ) than the low social anxiety group( $M=4.04$ ,  $SD=1.96$ ),  $t(586)=-67.372$ ,  $P<0.01$ ,  $d=5.56$ . There were 141 boys and 153 girls in the

high social anxiety group, and 149 boys, 144 girls and 1 was gender unknown in the low social anxiety group. There was no significant difference in the sex distribution between the two groups,  $\chi^2(1) = 0.492, P=0.483$ . Participants in the high social anxiety group were 13–18 years old(average=15.65, standard deviation=1.65). Participants in the low social anxiety group ranged in age from 13–18(average=15.22, standard deviation=1.76). An independent sample *t*-test showed that teenagers in the high social anxiety group were significantly older than those in the low social anxiety level group,  $t(586)=-3.053, P<0.001, d=0.25$ .

To exclude the impact of age, stratified a random sampling procedure was adopted 150 participants(half boys and half girls) were randomly chosen from each age group(13, 14, 15, 16, 17, and 18 years old) according to their student number. Based on Social Anxiety Subscale scores, the top and bottom 27% were placed in the high and low social anxiety groups, respectively, with 40 participants in each anxiety group for each age group. Independent sample *t*-tests showed that in each age group, Social Anxiety Subscale scores were significantly higher for participants in the high compared to the low social anxiety group ( $P<0.001$ ).

A  $\chi^2$  test showed that there were no significant differences in sex distribution between high and low anxiety groups for any age group(See Table 3).

Table 1 Participants education levels and ages

Year of Education	Percentage	Age	Percentage
7	15.6%	13	15.6%
8	17.4%	14	18.3%
9	17.4%	15	14.2%
10	15.5%	16	15.5%
11	18.3%	17	21.1%
12	15.6%	18	15.2%
Unknown	0.2%		

## 2.2 Ethics Statement

This study was conducted after obtaining Institutional Review Board approval from the School of Psychology at Northwest Normal University. All experiments and procedures were approved by the School of Psychology at Northwest Normal University. Written consent was obtained from guardians on behalf of the participants.

Table 2 Scores of Social Anxiety Subscale for each age slice in high and low social anxiety level group

Age (years)	High social anxiety level group (n=40)		Low social anxiety level group (n=40)		<i>t</i>	<i>P</i>	<i>d</i>
	M	SD	M	SD			
13	16.43	2.44	3.73	2.03	25.343	<0.001	5.66
14	16.00	2.63	3.60	1.75	24.813	<0.001	5.55
15	16.98	2.43	4.55	1.96	25.146	<0.001	5.63
16	17.00	2.71	4.55	2.16	22.684	<0.001	5.08
17	16.65	2.55	4.80	2.27	21.978	<0.001	4.91
18	15.88	2.05	3.88	2.17	25.380	<0.001	5.68

Table 3 Gender distribution of high and low social anxiety level group in different age slice

Age (years)	High social anxiety level group (n=40)		Low social anxiety level group (n=40)		$\chi^2$	<i>P</i>
	Male	Female	Male	Female		
13	18	22	19	21	0.050	0.823
14	14	26	19	21	1.289	0.256
15	17	23	23	17	1.800	0.180
16	18	22	21	19	0.450	0.502
17	20	20	18	22	0.201	0.654
18	21	19	25	15	0.818	0.366

## 2.3 Measures

The Emotion Regulation Questionnaire(ERQ; Gross & John, 2003) was used to measure frequency of use of the two types of emotion regulation strategies: reappraisal(6 items, for example, I will change my standpoint when I am willing to feel good ) and suppression (4 items, for example, I will not show my feelings ). Participants responded to each item using a 7–point Likert scale(1= strongly disagree, 7= strongly agree ). Higher score indicate a higher frequency of using a particular strategy. This scale has been shown to have high validity and reliability in Chinese teenagers (Wang, Liu, Li, & Du, 2007).

The Social Anxiety Subscale from Fenigstein et al. s Self–awareness Scale(Fenigstein, Scheier, & Buss, 1975) was used. It includes 6 items(for example, a large crowd of people would make me nervous ) that are scored on a 5–point scale from 0( quite unsuitable to me ) to 4( quite suitable to me ). Total scores range from 0(low anxiety) to 24(high anxiety). The Chinese version of this scale has been verified, and it has high validity and reliability(Wang, Zhou, Fan, & Chen, 2013).

## 2.4 Procedure

The survey was a paper test that each participant completed in private. The Social Anxiety Subscale and

The Emotion Regulation Questionnaire were randomly delivered to the participants.

### 3 Results

Frequency of emotion regulation strategy use for high and low social anxiety groups are shown in Table 4.

Independent sample *t*-tests revealed that participants in the high social anxiety group had lower cognitive reappraisal scores than participants in the low social anxiety group,  $t(586)=3.349, P<0.01$ . In addition, suppression scores were higher for participants in the high than the low social anxiety group,  $t(586)=-4.100, P<0.01$ .

To exclude the impact of age, we conducted independent-*t* tests on Emotion Regulation Questionnaire

scores for high and low social anxiety participants for each age group(see Table 5). The results showed that high social anxiety participants aged 13–15 scored significantly lower on cognitive reappraisal than 13–15-year-olds in the low social anxiety group. No significant differences in cognitive reappraisal were found between social anxiety groups for participants 16–18 years old.

Independent sample *t*-tests on suppression scores from The Emotion Regulation Questionnaire for each age group(Table 5) showed that 13-year-olds with high social anxiety scored significantly higher on suppression than those with low social anxiety. There were no significant differences in suppression based on social anxiety for participants aged 14–18.

Table 4 Frequencies of using emotion regulation strategies(ERS), for high and low social anxiety level groups

ERS	High social anxiety level group(n=294)		Low social anxiety level group(n=294)		<i>t</i>	<i>P</i>	<i>d</i>
	M	SD	M	SD			
Cognitive Appraisal	4.73	0.91	4.98	0.92	3.349	<0.01	0.27
Expressive Suppression	3.85	1.11	3.46	1.19	-4.100	<0.001	0.34

Table 5 Frequencies of using ERS for high and low social anxiety level groups of subjects from different age slices

Age	ERS	High anxiety Group(n=40)		Low anxiety group(n=40)		<i>t</i>	<i>P</i>	<i>d</i>
		M	SD	M	SD			
13	Cognitive Reappraisal	4.38	0.92	4.93	1.07	2.482	0.015	0.55
	Expressive Suppression	3.77	1.12	3.09	1.23	-2.586	0.012	0.58
14	Cognitive Reappraisal	4.53	0.91	5.02	0.83	2.533	0.013	0.56
	Expressive Suppression	3.64	1.17	3.39	1.00	-1.025	0.308	0.23
15	Cognitive Reappraisal	4.55	1.03	5.02	0.90	2.193	0.031	0.49
	Expressive Suppression	3.73	1.08	3.60	1.11	-0.536	0.593	0.19
16	Cognitive Reappraisal	4.81	0.96	4.80	0.86	-0.041	0.968	0.01
	Expressive Suppression	3.97	1.19	3.75	1.19	-0.823	0.413	0.18
17	Cognitive Reappraisal	4.96	0.71	5.15	0.77	1.157	0.251	0.26
	Expressive Suppression	3.92	1.21	3.50	1.03	-1.663	0.100	0.37
18	Cognitive Reappraisal	4.93	0.77	5.05	0.71	0.733	0.466	0.16
	Expressive Suppression	3.94	1.07	3.90	1.07	-0.183	0.855	0.04

### 4 Discussion

In this study the use of emotion regulation strategies for high and low social anxiety teenagers aged 13–18 were compared. The results showed that teenagers with high social anxiety used cognitive reappraisal strategies significantly less than those with low social anxiety, consistent with our hypothesis.

The core of the cognitive model for SAD patients is that they have negative expectations for social occa-

sions; that is, they worry about their poor social abilities and negative comments from others, and they fail to control their anxiety(Clark & Wells, 1995). The negative thinking model indicates that SAD patients perceive social occasions as threatening, and their negative self-evaluation undermines their confidence in their social abilities. Greater worry and fear of the outside and inside world lead them to be more self-aware, and thus more sensitive to their own feelings and short-

comings(Rapee & Heimberg, 1997; Weeks, Heimberg, Rodebaugh, Goldin, & Gross, 2012).

Therefore, compared with low social anxiety individuals, people with high social anxiety are less likely to use cognitive reappraisal to regulate anxiety about social activities. That is, they less frequently regulate their negative emotions by changing their opinions about the emotional event. Our recent findings from another study also revealed such a phenomenon. We (Zhao, Shi, Fu, Cai, & Zhou, 2013) used the reappraisal subscale from the Emotion Regulation Questionnaire, and the social maladjustment subscale from the Minnesota Multiphasic Personality Inventory, to explore the relationship between social maladjustment and the frequency of using cognitive reappraisal in 199 Chinese teenagers. The results showed a significant negative correlation between the frequency of using cognitive reappraisal and social maladjustment( $r = -0.29, P < 0.01$ ). Results also showed that individuals who used cognitive reappraisal more frequently were more energetic, adaptive, inclusive, diplomatic, and optimistic, while those who used cognitive reappraisal infrequently experienced more shyness, timidity, cowardice, or bashfulness during social activities(Zhao, Shi, Fu, Cai, & Zhou, 2013). Thus, it seems that high social anxiety individuals prefer using suppression to deal with anxiety due to negative thoughts(Clark & Wells, 1995).

We found that high social anxiety teenagers used cognitive reappraisal less, and suppression more, than low social anxiety teenagers, and this effect was moderated by age. Specifically, 13-year-olds with high social anxiety used cognitive reappraisal more, and suppression less, than teenagers with low social anxiety. In contrast, for 14- and 15-year-olds, although high social anxiety teenagers also used cognitive reappraisal more often, the use of suppression was not significantly different from the low social anxiety teenagers. Moreover, for the 15-17-year-olds, there was no difference in the use of cognitive reappraisal or suppression. This might be because as emotion regulation strategies mature and develop in teenagers, more factors lead to social anxiety, for example peer relationships(Morris, 2001; La Greca, & Harrison, 2005; Starr & Davila,

2008). Social anxiety in teenagers can be predicted by the quality of their interpersonal relationships(La Greca, & Harrison, 2005). Therefore, the influence of emotion regulation may decrease as the impact of peer relationships increases

This study has some limitations. First, when comparing the frequency of emotion regulation strategy use between high and low social anxiety teenagers, the impact of factors like personality traits and emotional capacity should be controlled to increase the study's validity. Second, the current conclusions are based on a cross-sectional study. Future studies should use a longitudinal design to study the impact of development on the frequency of emotion regulation strategy use for high and low social anxiety teenagers. Finally, future studies should focus on other clinical groups, and social phobia should be studied to explore the relationship between social anxiety and emotion regulation.

#### References

- 1 Aderka IM, Hofmann SG, Nickerson A, et al. Functional impairment in social anxiety disorder. *Journal of Anxiety Disorders*, 2012, 26(3): 393-400
- 2 Boden MT, John OP, Goldin PR, et al. The role of maladaptive beliefs in cognitive-behavioral therapy: Evidence from social anxiety disorder. *Behavior Research and Therapy*, 2012, 50: 287-291
- 3 Casey BJ, Tottenham N, Liston C, Durston S. Imagine the developing brain: What have we learned about cognitive development? *Trends in Cognitive Sciences*, 2005, 9: 104-110
- 4 Clark DM, Wells A. *A cognitive model of social phobia*. New York, NY: Guilford Press, 1995
- 5 Durston S, Davidson MC, Tottenham N, et al. A shift from diffuse to focal cortical activity with development. *Developmental Science*, 2006, 9(1): 1-8
- 6 Fenigstein A, Scheier MF, Buss AH. Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology*, 1975, 43(4): 522-527
- 7 Gross JJ, John OP. Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 2003, 85: 348-362
- 8 Gogtay N, Giedd JN, Lusk L, et al. Dynamic mapping of human cortical development during childhood through early adulthood. *Proceedings of the National Academy of Sciences of the United States of America*, 2004, 101(21): 8174-8179
- 9 Goldin PR, Jazaieri H, Ziv M, et al. Changes in positive self-

- views mediate the effect of cognitive-behavioral therapy for social anxiety disorder. *Clinical Psychological Science*, 2013, 23: 1-10
- 10 Heimberg RG, Brozovich FA, Rapee RM. A cognitive-behavioral model of social anxiety disorder: Update and extension. In Hofmann SG, DiBartolo PM. *Social anxiety: Clinical, developmental, and social perspectives*. New York, NY: Academic Press, 2010. 395-422
- 11 John OP, Gross JJ. Individual differences in emotion regulation strategies: Links to global trait, dynamic, and social cognitive constructs. In Gross JJ. *Handbook of emotion regulation*. New York: Guilford Press, 2007. 351-372
- 12 Kessler RC, Berglund P, Demler O, et al. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry*, 2005, 62: 593-602
- 13 La Greca AM, Harrison HM. Adolescent peer relations, friendships, and romantic relationships: Do they predict social anxiety and depression? *Journal of Clinical Child and Adolescent Psychology*, 2005, 34(1): 49-61
- 14 Luna B, Padmanabhan A, O Hearn K. What has fMRI told us about the development of cognitive control through adolescence? *Brain and Cognition*, 2010, 72: 101-113
- 15 Magee WJ, Eaton WW, Wittchen HU, et al. Agoraphobia, simple phobia, and social phobia in the National Comorbidity Survey. *Arch Gen Psychiatry*, 1996, 53(2): 159-168
- 16 McRae K, Jacobs SE, Ray RD, et al. Individual differences in reappraisal ability: Links to reappraisal frequency, well-being, and cognitive control. *Journal of Research in Personality*, 2010, 7: 253-262
- 17 Mcrae K, Silvers JA, Gabrieli JE, Gross JJ. Age-related differences in emotional reactivity, regulation, and rejection sensitivity in adolescence. *Emotion*, 2012, 6(12): 1235-1247
- 18 Morris TL. Social phobia. In Vasey MW, Dadds MR. *The developmental psychopathology of anxiety*. New York: Oxford University Press, 2001. 435-458
- 19 Rapee RM, Heimberg RG. A cognitive-behavioral model of anxiety in socialphobia. *Behavior Research and Therapy*, 1997, 35: 741-756
- 20 Starr LR, Davila J. Differentiating interpersonal correlates of depressive symptoms and social anxiety in adolescence: Implications for models of comorbidity. *Journal of Clinical Child and Adolescent Psychology*, 2008, 37(2): 337-349
- 21 Stein MB, Kean YM. Disability and quality of life in social phobia: Epidemiologic findings. *American Journal of Psychiatry*, 2000, 157: 1606-1613
- 22 Stein MB, Stein DJ. Social anxiety disorder. *Lancet*, 2008, 371: 1115-1125
- 23 Urry HL, Gross JJ. Emotion regulation in older age. *Current Directions in Psychological Science*, 2010, 19(6): 352-357
- 24 Wang MZ, Zhou ZK, Fan CY, Chen W. Interparental conflict affects adolescents' social anxiety: Serial mediation analysis. *Psychological Development and Education*, 2013, 2: 166-173
- 25 Wang L, Liu HC, Li ZQ, Du W. Reliability and validity of emotion regulation questionnaire Chinese revised version. *China Journal of Health Psychology*, 2007, 15(6): 503-505
- 26 Weeks JW, Heimberg RG, Rodebaugh TL, et al. Psychometric evaluation of the fear of positive evaluation scale in patients with social anxiety disorder. *Psychological Assessment*, 2012, 24: 301-312
- 27 Werner KH, Jazaieri H, Goldin PR, et al. Self-compassion and social anxiety disorder. *Anxiety, Stress, and Coping*, 2012, 25: 543-558
- 28 Zhao X, Shi N, Fu L, et al. Emotional clarity and cognitive reappraisal predict social maladjustment. *Chinese Journal of Clinical Psychology*, 2013, 21(6): 1029-1032

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