



Social Anxiety and Study Engagement in Adolescents: The Role of Self Cognition Model

Aibao Zhou, Yanbing Hu, Xiaoyong Lu, Wei Li, Yingxin Zhou
and Pan Tao

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December 16, 2019

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1st Aibao Zhou
School of Psychology
Northwest Normal University
Lanzhou, China
zhouab@nwnu.edu.cn

4th Wei Li
School of Psychology
Northwest Normal University
Lanzhou, China
zhouab@nwnu.edu.cn

2nd Yanbing Hu
School of Psychology
Northwest Normal University
Lanzhou, China
zhouab@nwnu.edu.cn

5th Yingxin Zhou
School of Psychology
Northwest Normal University
Lanzhou, China
zhouab@nwnu.edu.cn

3rd Xiaoyong Lu
School of Psychology
Northwest Normal University
Lanzhou, China
zhouab@nwnu.edu.cn

6th Tao Pan
Department of information engineering
Lanzhou Resources and Environment
Voc-Tech College
Lanzhou, China
pant_revt@126.com

Abstract—Study engagement is a positively learning status among adolescents. The aim of this study was to test if self-concept clarity and intentional self-regulation mediate between social anxiety and study engagement. Participants were 1597 Chinese adolescents (48.2% male, aged 13–23 years, $M=17.45$ years, $SD=3.04$;) they completed measures of social anxiety self-concept clarity, intentional self-regulation and study engagement. The study used structural equation modeling to test for a mediating effect; self-concept clarity and intentional self-regulation were found to fully mediate between social anxiety and study engagement. ISR and SCC indirectly affected SE had no significant. These findings suggest that self-concept clarity and intentional self-regulation underlie social effect on adolescents' study engagement.

Keywords—social anxiety, study engagement, adolescents, self-concept clarity, intentional self-regulation

INTRODUCTION

Social anxiety (SA) refers to the constant worry or fear of negative comments when participating in social interaction or public performance [1]. SA is considered the most frequent form of social distress among adolescents, and SA disorder is highly prevalent in adolescents [2]. A consistent feature of cognitive behavioral models of social anxiety disorder is that the self plays a central role in the emergence and maintenance of the disorder. In a recent review of cognitive behavioral therapy (CBT) for SA indicated that changed in self-related constructs predict and/or mediate reductions in SA [3]. If an individual experiences SA during adolescence, it may show impairments in economic and employment stability, academic performance, and general mental health [4]. According to Liebowitz's theoretical consideration and empirical research indicated that Liebowitz social anxiety scale has two subscales that items of fear and avoidance. The researchers separated exploratory common factor analyses of the fear items and avoidance items yielded four similar factors for each (1) social interaction, (2) public speaking, (3) observation by others and (4) eating and drinking in public. Prior research assessed LSAS by calculating the summary score of LSAS, but it may lack sensitivity due to the multifactorial nature of anxiety [5]. According to Safren's research, this study organized the LSAS on four dimensions, the scoring method should not only provide clinically useful information, but also can improve the SA group evaluation anxiety sensitivity. Research results indicated that interventions could help adolescents cultivate their SE.

Cognitive models of social anxiety disorder assume that adolescents with SA focus and interpret the social world in ways that are not adaptive [6]. Therefore these adolescents with SA tend to have more negative or less positive cognition. Previous research has shown that CBT can reduce anxiety symptoms by changing the cognitive style of adolescent with SA [7]. Previous research has shown that the core of studying engagement is the use of motivation, effort and strategy in learning. Adolescents with a high level of engagement in studying will make greater efforts in learning, like to think deeply, have a strong thirst for knowledge, self-motivated, and have the courage to face the challenges in learning [8]. Therefore, SE is a more positive and vigor cognitive engagement. We hypothesized that SA directs adolescent's SE.

In summary, SA is negatively correlated with SE among adolescents. Meanwhile, SA and SE are in the development of adolescents Examination of SA's association with SE may extend the understanding of SE's causes and inform new interventions targeting SE.

Self-concept is defined as “a cognitive schema that organizes abstract and concrete memories about the self and controls the processing of self-relevant information [9]. Self-concept clarity (SCC) was proposed by Campbell et al., which was defined as “the content of individual self-concept”. For example, not only can a person clearly and explicitly define a property of the self, but the self is consistent with that definition and is stable in time [10]. Previous studies have linked adolescents' self-concept clarity to suicidal behavior, loneliness and life distress, and replicated the relationship between self-concept clarity and perceived stress and depression [11]. The relationship between SCC and mental health parallels the relationship between “essence” and “surface”

Previous studies have shown that SCC are associated with greater positivity, higher life goals, and greater autonomy [12]. Therefore, SCC and studying engagement have positive cognitive aspects. In a study of academic self-concept, the results showed that adolescents with a high self-concept clarity can enhance their learning interest and increase their studying engagement [13]. Therefore, SCC may be positively correlated with SE. In this context, this research predicated that SCC mediates between SA and SE.

Intentional self-regulation (ISR) involves the process of goal orientation that contributes to the changes in the relationship between individuals and situations. For example,

sometimes an individual will try to change the actual circumstance to achieve his goals and plans (assimilation process). Sometimes individual will change its goals and plans to adapt to the limitations of the actual situation (accommodation process)[14]. According to SOC theory, Selection refers that the individuals selection from a series of targets. Individual vigor and resources are limited, and focusing individual choice on limited goals is more conducive to successful development. Optimization refers to rationally optimizing the resources available for optimal results in order to achieve the selected objectives. Compensation refers to seeking alternative means to offset the loss and maintain the functional level when the individual suffers a temporary or permanent loss that threatens his or her functional level [15]. Prior research highlights studying engagement and ISR skills as related, yet distinct, actions, which mutually reinforce each other and promote academic success [16]. Additionally, Self-regulation can be used as a strategy to reduce social anxiety [17]. Moreover, ISR is a positive cognition, which is beneficial to mental health [18]. Therefore social anxiety may be correlated with adolescents' ISR. In this context, this study predicted that ISR importantly mediates between social anxiety and study engagement.

This study examined the associations between social anxiety, self-concept clarity, intentional and study engagement among Chinese adolescents. The study predicts that SA would be negatively correlated with adolescents' self-concept clarity and intentional self-regulation. The study also predicted that SCC and ISR would be positively correlated with adolescents' SE. Finally, the study predicated that SCC and ISR would mediate the association between SA and SE.

METHOD

A. Participants and procedure

In this study, 1597 adolescent students were recruited from two middle schools and two universities in Northwest. The two middle schools include a junior and a senior middle school. Participants were aged 17.45 ± 3.04 years (range: 13-23). Junior and senior middle school students comprised 512 and 614 participants, respectively. College students comprised 471 participants. Boys and girls comprised 769 and 820 participants, respectively, with 8 participants reporting no gender.

This study was approved by the ethics committee for psychological research at the author's institution. Written consent was first obtained from the heads of school and parents. Willing participants subsequently provided spoken consent. Participants completed a self-report questionnaire in a 30-minute class at school under the guidance of trained researchers. The researchers then collected the completed questionnaires.

B. Measures

Social anxiety: we examined Social anxiety using the revised version of Liebowitz Social anxiety Scale.(LSAS; [19]; translated into Chinese by He and Zhang [20]). The LSAS contains 40 items organized on two subscales and four dimensions. The dimensions: observed by others, eating in public, social communication, speaking in public (example items from each dimension: working while being

observed, eating in public places, participating in small groups, telephone in public). Responses used a four-point Likert scale (0= none/never, 3= severe/usually). Higher scores indicate greater social anxiety. The cut-off of score is 38. In the present study, internal reliability was $\alpha = 0.93$ for the total scale. CFA indicated that the LSAS was suitable for use in our sample ($\chi^2/df=2.76$, CFI=0.93, TLI=0.92, RMSRA=0.03, SRMR=0.04).

Self-concept clarity: we examined Self-concept clarity using the revised version of Self-concept clarity scale (SCCS, [10]; translated into Chinese by Wu [21]). The SCCS contains 12 items organized on two dimensions. The dimensions: stability and consistency (example items from each dimension: my beliefs about myself often conflict with one another, I spend a lot of time wondering about what kind of person I really am). Responses used a five-point Likert scale (1=strongly disagree, 5=strongly agree). Higher scores indicate greater self-concept clarity. In the present study, CFA indicated that the SCCS was suitable for use in our sample ($\chi^2/df=3.58$, CFI=0.98, TLI=0.93, RMSRA=0.04, SRMR=0.03) and the SCCS showed good internal reliability ($\alpha = 0.66$ for the total scale).

Intentional Self-Regulation: This study examined Intentional self-regulation using the revised version of Intentional Self-Regulation scale.(ISRS, [22]; translated into Chinese by Dai, et al. [23]).The ISRS contains 9 items organized on three dimensions. The dimensions: selection, optimization, and compensation (example items from each dimension: when I think about what I want in life, I commit myself to one or two important goals, I make every effort to achieve a given goal, For important things, I pay attention to whether I need to devote more time or effort). Responses used a seven-point Likert scale (1= Completely inconsistent, 7= Completely consistent). Higher scores indicate greater Intentional self-regulation. In the present study, CFA indicated that the ISRS was suitable for use in our sample ($\chi^2/df=2.01$, CFI=0.99, TLI=0.99, RMSRA=0.03, SRMR=0.02) and the ISRS showed good internal reliability ($\alpha = 0.84$ for the total scale).

Study engagement: We examined study engagement using the revised version of Utrecht Work Engagement Scale-student. The UWES-S contains 17 items organized on three dimensions. The dimensions: vigor, dedication, and absorption. (example items from each dimension: when I study, I feel like I am bursting with energy, my studies inspire me, I can get carried away by my studies). Responses used a seven-point Likert scale (1= never, 7= always). Higher scores indicate greater Study engagement. In the present study, CFA indicated that the UWES-S was suitable for use in our sample ($\chi^2/df=4.56$, CFI=0.97, TLI=0.97, RMSRA=0.05, SRMR=0.03) and the UWES-S showed good internal reliability ($\alpha = 0.94$ for the total scale).

C. Analytic strategy

SPSS21.0 was used to conduct a descriptive analysis of the total sample of variables of interest. This study used the method of self-report scale, which may cause the problem of common method bias. Therefore, this study strictly controls the test process, such as protecting the privacy of the subjects. Some items use the reverse scoring method. Moreover, this study used Harman single factor analysis to test the common method bias. The results indicate that

4 eigenvalues greater than 1, which accounting for 74.86% of the variation, and the first factor accounted for 31.03% of the variation, less than the critical value of 40%. The result indicated that the effect caused by the common method bias was not significant. Finally, SEM was carried out to test if SCC or ISR mediate between SA and SE (Fig. 1). Mplus 7.4 was used to evaluate the hypothetical model's data fit. SEM was performed using the robust

maximum likelihood (MLR) estimator to account for identified data non-normality. The estimator used bootstrap procedures tested Indirect effects. This study used the following indices to evaluate the model's data fit: CFI, TLI, RMSEA, and SRMR. Values >0.90 for the CFI and TLI and <0.08 and <0.05 for the RMSEA and SRMR indicated good model fit.

TABLE I. MEANS, STANDARD DEVIATIONS, AND CORRELATIONS BETWEEN SA, SCC, ISR, AND SE (N = 1597)

Variables	M	SD	1	2	3	4
1SA	1.17	0.46	-			
2SCC	2.99	0.53	-0.17***	-		
3ISR	3.51	0.68	-0.13***	-0.01	-	
4SE	3.99	1.16	-0.10***	0.14***	0.48***	-

Note: SA: social anxiety; SCC: self-concept; ISR: intentional self-regulation; SE: Study Engagement
* $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$

TABLE II. STANDARDIZED INDIRECT EFFECTS FROM SOCIAL ANXIETY TO STUDY ENGAGEMENT.

Indirect effect	β (standardized indirect effect)	SE	P	95% CI standardized indirect effect
Form SA to SE via SCC and ISR	-0.127	0.020	$P < 0.001$	-0.159, -0.093
via SCC	$(-0.228) \times (0.191) = -0.044$	0.010	$P < 0.001$	-0.063, -0.030
via ISR	$(-0.152) \times (0.550) = -0.083$	0.018	$P < 0.001$	-0.112, -0.054

Note: SA: social anxiety; SCC: self-concept; ISR: intentional self-regulation; SE: Study Engagement

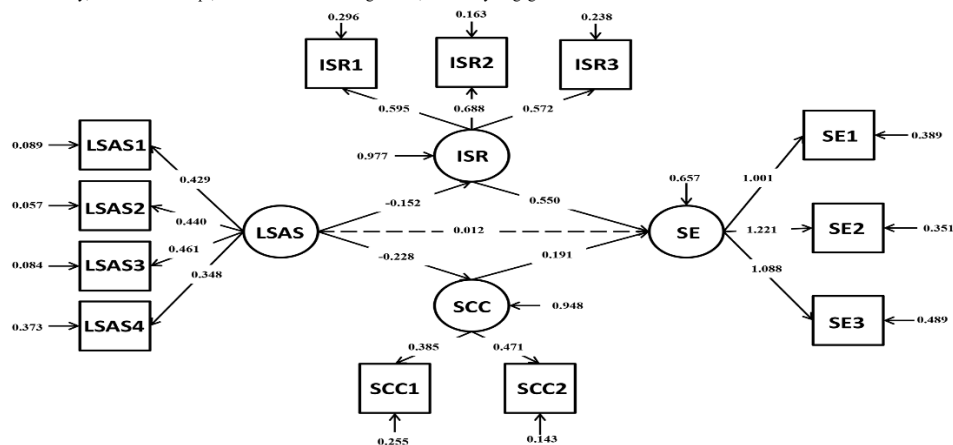


Fig. 1. STRUCTURAL EQUATION MODEL WITH STANDARDIZED PARAMETER ESTIMATES: LSAS AND SE. NOTE: LSAS LIEBOWITZ SOCIAL ANXIETY SCALE, LSAS1-LSAS4 OBSERVED BY OTHERS, EATING IN PUBLIC, SOCIAL COMMUNICATION, SPEAKING IN PUBLIC; ISR INTENTIONAL SELF-REGULATION, ISR1-ISR3 SELECTION, OPTIMIZATION, AND COMPENSATION; SCC SELF-CONCEPT CLARITY, SCC1-SCC2 STABILITY AND CONSISTENCY; SE STUDY ENGAGEMENT, SE1-SE3 VIGOR, DEDICATION, AND ABSORPTION.

($\beta = -0.083$, $SE = 0.018$, $P < 0.001$, $CI = -0.112$ to -0.054). We used bootstrapping in order to compare the mediation effects. ISR and SCC indirectly affected SE had no significant ($\beta = -0.093$, $SE = 0.049$, $p = 0.056$, $CI = -0.169$ to -0.013 ; Table 2)

RESULTS

A. Descriptive statistics of the variables of interest

See table 1.

B. Structural equation modeling

The associations between SA, SCC, ISR and SE examined by the model (see Fig 1). Results indicated that acceptable data fit, $\chi^2(49, N = 1597) = 136.44$ ($P < 0.001$), $\chi^2/df = 2.78$; CFI=0.990, TLI=0.987; RMSEA= 0.033 (90% CI=0.027,0.040); SRMR=0.028. Tests of the indirect effects indicated that SCC and ISR fully mediated between sushu and SA ($\beta = -0.127$, $SE = 0.020$, $P < 0.001$, $CI = (-0.159, -0.093)$), including specific indirect effects of SCC ($\beta = -0.044$, $SE = 0.010$, $P < 0.001$, $CI = -0.063$ to -0.030) and ISR

DISCUSSION

As hypothesized, this research found that social anxiety (SA) was significantly negatively correlated with adolescent's intentional self-regulation (ISR) and self-concept clarity (SCC), which in turn were negatively correlated with adolescents' study engagement (SE). Importantly, this study found that ISR and SCC fully mediated SA's effect on SE. Moreover, ISR and SCC indirectly affected SE had no significant, which indicated that they are equally important for intervention adolescents' SE.

The current study makes the following key contributions. First, it expands the understanding of the mechanisms underlying SA's effect on SE by supporting the role of ISR and SCC. Second, the study kept the subjects' privacy, the procedures met the requirements of the psychological ethics committee, the sample size of the subjects was large, and the sources of the subjects were diverse, such as cross-region, and the age span was large enough to cover the whole adolescence; these factors may have prevented or reduced common-method covariance and increased the study's internal validity. This study has the following limitations. First, this study uses a cross-sectional design, which cannot test possible causal relationships between examined variables. Therefore, future studies should use longitudinal or experimental methods. Second, the sample included only Chinese adolescents; this limits generality to other cultures or age groups.

The results of this study have the following theoretical and practical significance. Firstly, the current results may provide new interventions for the research on the improvement of SE in adolescents with SE. No previous studies have tested SE interventions in social anxiety disorder (SAD). Secondly, the results of this study show that adolescents with SA can improve SE by the mediating effect of SCC and ISR. This provides the possibility to improve the intervention of adolescent SE. Adolescence is a critical period for the development of self-awareness. The results of this study suggest that increasing SCC and ISR in adolescents can reduce SA and improve SE in adolescents. Therefore, future studies should test strategies to cultivate SCC and ISR to address SA and SE in adolescents.

Social anxiety is significantly indirectly associated with studying engagement among Chinese adolescents via intentional self-regulation and self-concept clarity. Intentional self-regulation and self-concept clarity fully mediate between social anxiety and study engagement. Intention self-regulation and self-concept clarity indirectly affected study engagement had no significant. These findings suggest that Intentional self-regulation and self-concept clarity underlie social anxiety on study engagement.

ACKNOWLEDGMENT

This research was completed as part of the academic requirements for the National Science Foundation of China (NSFC) under grant No. 31860285 and No. 31660281. Additionally, part of this work is performed in the Scientific Research Project in Higher Education Institutions of Gansu Province (Grant No. 2017A-165).

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