Proceedings of the 4th International Conference on Educational Innovation and Philosophical Inquiries
DOI: 10.54254/2753-7048/11/20230757

# *Implicit and Explicit Depression in Chinese Adolescents and Adults*

**Xiaolan Tang**[1,a,*]

[1]*Hangzhou Foreign Language School, No.309, Liuhe Road, Xihu District, Hangzhou, Zhejiang Province, China*
*a. 1579075296@qq.com*
**corresponding author*

***Abstract:*** Depression is a common mental problem worldwide. To identify the factor that contributes to depression in Chinese people, we measured the implicit association of depression in 25 people, using the BDI-13 self-rating depression questionnaire to measure their explicit depression. No correlation was found between implicit and explicit depression. Furthermore, participants' gender will not influence the implicit depression score. Moreover, age was negatively correlated with an implicit depression score.

***Keywords:*** depression, implicit association test, adult, adolescent

## 1. Introduction

Depression is one of the most common mental health issues nowadays, ranging from unhappiness to extreme feelings of loneliness, sadness, and pessimism that interfere with daily life (APA). Continuous and long-term upset is the main clinical feature of depression; other features include altered eating or sleeping habits, lack of energy or motivation.

The diagnosis of depression is mainly based on medical history, clinical symptoms, disease duration, physical examination, and laboratory tests. And the diagnosis of typical cases is generally not difficult. The common international diagnostic criteria are generally the International Classification of Diseases-10 (ICD-10) and the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV, Bell, 1994). ICD-10 is the 10th revision of the international statistical classification of diseases and related health problems (ICD), a medical classification system recognized by the World Health Organization. It includes codes for diseases, signs, and symptoms. ICD-10 is mainly used in China, which refers to first-episode depression and recurrent depression, excluding bipolar depression. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), published by the American Psychological Association in 2013, is in its fourth edition. It is a method for categorizing psychiatric diseases with the aim of diagnosing, researching, and treating them when possible. Additionally, it is a tool used to carry out statistical research on general mental health.

Symptoms including poor energy or exhaustion, a sad mood, and a loss of interest and enjoyment are frequently present in patients. Other common symptoms are (1) diminished ability to focus and pay attention; (2) diminished self-evaluation; (3) self-guilt and feelings of worthlessness (even in mild episodes); (4) perception of a bleak and pessimistic future; (5) self-injurious or suicidal

© 2026 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2753-7048/11/20230757

thoughts or behaviors; (6) sleep disturbances; and (7) decreased appetite. The above symptoms lasted for at least 2 weeks (the DSM-IV).

Depression is one of the most common mental disorders in China, the U.S., and other countries. Based on a report from National Institute for Mental Health (NIMH) in 2020, an estimated 21.0 million adults in the United States had at least one major depressive episode, representing 8.4% of all U.S. adults (NIMH, 2020).

Depression is also one of mental health problems in adolescents. Fang and Hu adopted stratified random sampling with the "Life Experience Questionnaire for Senior High School Students," which consists of four parts: basic personal information [1]; a life pressure questionnaire for senior high school students; a coping style questionnaire for senior high school students; and a mental health scale for senior high school students. They aimed to explore whether objective life stress or subjective life stress has a greater impact on the mental health of high school students. They eventually received a total of 807 valid questionnaires. Through the results of the questionnaire data, they found that the higher the peer relationship and academic pressure are in the subjective life pressure of high school students, the higher the peer relationship and academic pressure are in the objective life pressure. The more likely they were to respond to stress with negative internal evaluations and fantasies, the worse their mental health was. Subjective life stress (peer pressure) and coping styles (internal negative evaluation and fantasy) have a greater impact on mental health than objective life stress. In the increasingly competitive social environment, the occurrence of stressful events in the lives of high school students is inevitable. The key for educators is to help students learn how to cope with stressful events in order to reduce the incidence of mental health problems.

The majority of prior research predominantly used the self-report method. More recent evidence indicates depression at an implicit, unconscious level [2]. For example, by Francesco et al [3], the Depression Implicit Association Test (Depression IAT) was looked at for its construct and criterion validity as a sign of an instinctive negative self-schema. It was given to a sample of 116 participants, aged 37.28 years, of which 72 were women, 56 had a history of suicidal ideation (SI), and 60 were college students.

## 2. The Present Study

To examine implicit and explicit depression among Chinese adults, we used the Depression Implicit Association Test (IAT) to measure implicit depression and the BDI-13 to measure explicit depression [4,5]. Based on previous research, we had three hypotheses. First, we hypothesized that Chinese adults would not show implicit and explicit depression. Second, age and gender would influence implicit and explicit depression. Last, there would be a strong correlation between participants' implicit and explicit depression.

### 2.1. Method

#### 2.1.1. Participants

25 participants were recruited. 9 of them are adults, and the remaining are teenagers. 7 of them are males, and the remaining are females. The average age is 21.65 years old. 14.34 is the minimum, and 48.92 is the maximum.

#### 2.1.2. Procedure

A questionnaire was posted online for people to fill out. Participants were asked to read the consent form to make sure they were willing to participate. Upon written approval, participants were

DOI: 10.54254/2753-7048/11/20230757

measured for their implicit and explicit depression. Additionally, participants were measured for their basic demographic information, including gender and age.

## 2.2. Materials

### 2.2.1. Depression Implicit Association Test (IAT)

IAT is a new research method of implicit social cognition that was proposed by Greenwald in 1998 [6]. It adopts a computerized discrimination and classification task, which takes reaction time as the index, and then indirectly measures the implicit attitude of individuals by evaluating the automated connection between concept words and attribute words. This method is in line with the latest development direction of modern psychometrics and will have strong vitality.

The depression IAT was modified based on the standard IAT. Instead of using typical attributes, such as good or bad, the depression IAT measures how quickly participants associate “Me or Not Me” with “Depression or Happiness”.

### 2.2.2. BDI-13

The BDI Self-rating Depression Questionnaire, which is also known as the Beck Depression Rating Scale, was developed by the famous American psychologist Beck AT in the 1960s and has since been widely used in clinical epidemiological surveys [7]. The early version of the BDI had 21 items, and its content was derived from clinical practice. Later, it was found that some patients with depression, especially those with severe depression, did not complete the 21-item assessment well, so Beck released a 13-item version in 1974 which had good reliability and validity.

Some people compared six depression assessment tools, including the Hamilton Depression Scale and SCL-90, and concluded that BDI-13 was the most sensitive in detecting depressive symptoms in drug addiction patients. The correlation coefficient between BDI-13 and BDI-21 was as high as 0.96, and the correlation coefficient between BDI-21 and clinician assessment was 0.61. In recent years, BDI has often been used to evaluate the inhibitory symptoms in some large cardiovascular disease studies abroad.

Leticia M. Furhmetto et al. studied this scale as a tool for screening and diagnosing moderate-to-severe depression in 2005 and confirmed its high sensitivity and positive predictive value. Zheng Hongbo et al. reported that BDI-21 had good construct validity and was significantly correlated with the total score of HAMD and the corresponding individual scores. The total score of BDI-21 was 29.7±10.9, and the total score of BDI-13 was 17.1±4.9. In 1999, Du Zhaoyun conducted a study on 1734 college students [8], which showed that the retest reliability of the questionnaire was good in domestic college students (126 students were spaced one week, the correlation between items and total score was 0.48 to 0.92,)><0.05), and the evaluation results were stable.

## 3. Results

## 3.1. Implicit Depression Result

To examine whether participants responded differently in Block 3 and Block 5, we conducted a paired-sample t test. The results showed that participants in B3 and B5 responded similarly, $t = -.47$, $p = .64$. These results suggest that there is no clear pattern whether participants connected themselves with “depression” words or “happiness” words.

To examine whether participants’ gender will influence the difference in response time in Block 3 and Block 5, we conducted an independent sample t test. Results indicated that both male and female participants responded similarly in B3 and B5, $t = -.78$, $p = .444$. These results suggest that

DOI: 10.54254/2753-7048/11/20230757

gender has no influence on participants' response times when connecting themselves with positive or negative attribution words.

We used Pearson correlational analysis to see if age is related to implicit depression score and discovered a negative correlation between age and implicit depression, r = -.48, p =.016. These results indicate that with increasing age, participants are more likely to associate me with happiness.

### 3.2. Explicit Depression Results

According to the BDI-13 criteria, 13 participants had no depressive symptoms, 4 had mild depressive symptoms, 6 had moderate depressive symptoms and 2 had major depressive symptoms.

### 3.3. Correlations Between Implicit and Explicit Depression

We conducted a correlational analysis to examine the correlation between implicit depression and explicit depression. Results showed no correlation between them, r =.09, p =.660. It means that there is no significant relationship between participants' results of implicit and explicit depression.

## 4. Discussion

The aim of this study was to investigate the development of implicit and explicit depression in adolescents. In this study, we used the implicit association test and the explicit Beck depression scale on 25 adolescents. Our study found that adolescents do not have an implicit depression problem, specifically because they do not tend to combine words related to "self" with words related to "depression" in the depression implicit association test. The study also found that adolescents had a certain degree of depression on the Baker scale; specifically, 52% of the subjects had no depressive symptoms, and 48% had mild, moderate, or severe depression. In addition, age and gender have different effects on the depression status of adolescents.

First of all, adolescents have a certain degree of overt depression on the Baker scale. Specifically, 52% of the subjects have no depressive symptoms, while 48% have mild, moderate, or severe depression. While there has been little research on Chinese adolescents, this finding is consistent with a few previous studies. Luo et al [9]. demonstrated that 48.1% of adolescents in Henan, a central Chinese province, present with mental health problems, with academic stress rated the highest. These students also presented with significant amounts of anxiety, depression, and obsessive-compulsive symptoms [9]. In contrast to the explicit results, no implicit depression was found among the adolescents tested.

Second, age, not sex, affects depression. The higher the age, the lower the implicit depression score. Adults may be more in control and able to cope with their emotions, while teenagers are still building their moral standards and personal thinking, which can be easily influenced by others like parents and peers. (Personally speaking, a lot of depression is due to problems with parents and families.) This finding is consistent with a few previous studies.

Finally, there was no significant correlation between implicit and explicit learning. The possible explanation for this result is that the dual-process theory exists widely in the fields of cognitive psychology and social psychology, with slightly different views put forward by different scholars, but the main idea is the same. Dual processing theorists believe that humans have two completely different cognitive processing modes: associative processing and reflective processing [10-14].

Associative processing is a fast, parallel, automated, and heuristic process that requires less conscious participation and cognitive effort. It can quickly and automatically identify environmental features and promote the assimilation of information and existing knowledge structures. In essence, it is a pattern completion mechanism [13]. When this system is dominant, people will usually base their thinking on the strong activation of memory instead of relying on logical processing. As a

DOI: 10.54254/2753-7048/11/20230757

result, irrational behavior, systematic errors, and biases can occur. Associative processing occurs at the preconscious level, and only its final results can be realized. These results can be experienced as intuition or emotional responses to stimuli, such as a child who has been bitten several times and becomes involuntarily afraid at the sight or sound of a dog.

Reflective processing is slow, sequential, controlled, and analytical, requiring the involvement of the working memory system. It endows human beings with a higher level of rationality in their thinking. Compared with associative processing, reflective processing requires more conscious effort and thinking and has more intentionality and awareness. It can not only consciously use symbolic representation and rule-based knowledge to guide processing, but also develop symbolic rules from conscious thinking and consciously try to learn them [14]. This feature allows people to respond flexibly to their environment and is a necessary step in obtaining accurate answers.

Although we used novel methods to examine implicit and explicit depression, several limitations need to be acknowledged. For example, if the sample size is relatively small, it may limit the validity or generalizability of the results. Second, the delivery of the depression IAT relied on the iPad and phones which might limit the validity of the method, which has been predominantly dependent on computers and keyboard response. Lastly, all participants are from China only. Future research needs to expand the sample to other cultures to explore the generalizability of the findings. Age was adversely correlated with all but one of the important indicators in the combined depressed patient group (depressed attempters and depressed non-attempters), according to Buerke et al [15]. Aggression (r = 0.25, p 0.001), rumination (r = 0.35, p 0.001), and borderline behaviors (r = 0.35, p 0.001) all decreased with age. Letter Fluency did not substantially change with age for neuropsychological measures (r = 0.08, p = 0.273), while Category Fluency did (r = 0.26, p 0.001). The strongest inverse relationship between age and remembering was found (r = 0.66, p 0.001).

## References


[1] *Fang, S. H., Hu, H. Y. (2009). The impact of high school students' life stress and coping styles on their mental health, 1008 - 0627(2007)02 - 0030 - 06.*

[2] *De Houwer J. (2002). The Implicit Association Test as a tool for studying dysfunctional associations in psychopathology: strengths and limitations. Journal of behavior therapy and experimental psychiatry, 33(2), 115–133.*

[3] *Francesco et al. (2016). Measuring the automatic negative self-schema: New evidence for the construct and criterion validity of the Depression Implicit Association. Self and Identity.*

[4] *Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. Journal of Personality and Social Psychology, 85(2), 197–216.*

[5] *Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. J. (2009). Understanding and using the implicit association test: III. Meta-analysis of predictive validity. Journal of Personality and Social Psychology, 97, 17–41.*

[6] *Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: the implicit association test. Journal of Personality and Social Psychology, 74(6), 1464–1480.*

[7] *Beck, A. T., & Beck, R. W. (1972). Screening depressed patients in family practice. A rapid technic. Postgraduate medicine, 52(6), 81–85.*

[8] *Du Zhaoyun, etc. An epidemiological study on depression in 1597 undergraduates. Chinese journal of Behavioral Medical Science, 1999, 8(3):172-173.*

[9] *Luo, Y., Cui, Z., Zou, P., Wang, K., Lin, Z., He, J., & Wang, J. (2020). Mental Health Problems and Associated Factors in Chinese High School Students in Henan Province: A Cross-Sectional Study. International journal of environmental research and public health, 17(16), 5944.*

[10] *Chaiken, S. (1980). Heuristic versus systematie information processing and the use of source versus message cues in persuasion. Journal of Personality and Social Psychology; 39, 752-766.*

[11] *Sloman, S. A. (1996). The empirical case for two systems of reasoning. Psychological Bulletin, 119, 3-22.*

[12] *Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate. Behavioral and Brain Sciences, 23, 645-126.*

DOI: 10.54254/2753-7048/11/20230757

[13] *Smith, E. R., & DeCoster, J. (1999). Associative and rule-based processing: A connectionist interpretation of dual-process models. In S. Chaiken, & Y. Trope (Eds.), Dual process theories in social psychology (pp. 323-336). New York, NY7 Guilford Press.*

[14] *Smith, E. R., & DeCoster, J. (2000). Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems. Personality and Social Psychology Review, 4, 108-131.*

[15] *Morgan Buerke, John G. Keilp, Arielle H. Sheftall, Ainsley K. Burke, Jeffrey A. Bridge, J. John Mann, Katalin Szanto. (2021). Age effects on clinical and neurocognitive risk factors for suicide attempt in depression — Findings from the AFSP lifespan study. Journal of Affective Disorders, 295(2021) 123-130.*