

# Effects of Subjective Social Status and Self-Esteem in the Association Between Childhood Abuse and Adulthood Anxiety

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**Background:** Subjective social status influences anxiety, but at present, the mechanism is not fully understood. It has been reported that negative childhood experiences, such as abuse, can influence depressive symptoms through subjective social status and personality traits, such as self-esteem. A similar mechanism is presumed to underlie anxiety symptoms in adulthood. Therefore, we hypothesized that subjective social status and self-esteem are intermediate factors in the indirect effects of childhood abuse on state anxiety in adulthood, and analyzed the indirect effects via these factors using a path analysis.

**Subjects and Methods:** Child Abuse and Trauma Scale, Subjective Social Status, Rosenberg Self-Esteem Scale, and State-Trait Anxiety Inventory Form Y questionnaires were administered in a self-report format to 404 adult volunteers from January 2014 to August 2014. In addition, a path analysis was conducted to determine whether subjective social status and self-esteem are associated with the indirect effects of childhood abuse on anxiety symptoms in adulthood.

**Results:** Childhood abuse did not directly affect state anxiety in adulthood, but affected state anxiety via subjective social status and self-esteem. Subjective social status affected state anxiety via self-esteem. This model explained 25.2% of the variation in state anxiety in adult volunteers.

**Conclusion:** The present study demonstrated that childhood abuse affects anxiety in adulthood through subjective social status and self-esteem. Therefore, interventions that enhance subjective social status and self-esteem for adults who experienced childhood abuse may help reduce their anxiety.

**Keywords:** childhood abuse, subjective social status, self-esteem, anxiety

## Introduction

The association between subjective social status (SSS) and health has received much attention, and has been the subject of numerous studies.<sup>1-5</sup> SSS measures people's perception of their location in the social hierarchy.<sup>2,3</sup> SSS is known to affect several mental disorders, including depression, bipolar disorder, substance use disorder, anxiety disorders, and post-traumatic stress disorder, even after adjusting for the influence of objective social status.<sup>4</sup> SSS has also been found to influence subjective health status via its effect on self-esteem.<sup>5</sup> However, the mechanisms by which SSS affects mental disorders or psychiatric symptoms are not fully understood.

Anxiety is a common psychiatric symptom, as well as depression.<sup>6</sup> Excessive anxiety induced by stress leads to pathological anxiety, such as anxiety disorders.<sup>7</sup> As mentioned above, the association between low SSS and the development of anxiety disorders has been reported in a global epidemiological study.<sup>4</sup> In addition, low SSS was reportedly associated with strong anxiety symptoms in the study conducted in developing countries.<sup>8</sup> Thus, the association between SSS and anxiety is noteworthy, but there is a lack of reports on the mechanisms underlying this association.

Anxiety is influenced by multiple factors, and involves complex interactions among biological factors, environmental factors, such as childhood abuse experiences, and psychological mechanisms.<sup>9</sup> A meta-analysis found that childhood abuse experiences were significantly associated with anxiety disorders.<sup>10</sup> Another meta-analysis found that low self-esteem predicts anxiety, and anxiety predicts low self-esteem.<sup>11</sup> Furthermore, self-esteem has also been reported to mediate the effects of childhood abuse on anxiety in college students,<sup>12</sup> but this association has not yet been confirmed in adults other than college students.

Because of the long time interval between the experiences of adverse parenting and abuse in childhood and the status of mental health in adulthood, the involvement of some long-lasting intermediate factors is expected to be essential for this association. A theoretical framework for the mediation of anxiety by personality traits was proposed, as follows: childhood abuse affects state anxiety symptoms in adulthood via interpersonal sensitivity, which is a personality trait.<sup>13</sup> For depressive symptoms, SSS mediates the impacts of childhood abuse and parenting experiences on depressive symptoms in adults via personality traits, such as self-esteem and affective temperament.<sup>14,15</sup> However, although SSS and self-esteem are reportedly associated with childhood abuse and anxiety,<sup>4,8,10,11</sup> whether SSS and self-esteem are involved in the association between childhood abuse and state anxiety remains unclear.

Based on the previous research findings described above and the theoretical framework of the mediation effect of self-esteem and SSS,<sup>14,15</sup> in this study, we hypothesized that SSS and self-esteem are intermediate factors in the indirect effect of childhood abuse on adult state anxiety. Therefore, we conducted a cross-sectional questionnaire survey of adult volunteers, and analyzed the indirect effects by a path analysis. We built the path model considering the chronological order of events experienced in life (ie, abuse experienced in childhood, subjective social status and self-esteem in adulthood, and anxiety symptoms currently being experienced). This is why we chose state anxiety instead of trait anxiety in our path model. Both state and trait anxiety are similarly observed in patients with anxiety disorders, and can be decreased by treatment.<sup>16</sup>

## Subjects and Methods

### Subjects

A self-report paper-based questionnaire survey was administered to 455 adult volunteers, from January 2014 to August 2014. Of these volunteers, 51 subjects were excluded owing to many questions being left unanswered on their questionnaires. The 404 participants (220 men and 184 women; mean age:  $42.3 \pm 11.9$  years), who gave the written consent and completed valid responses, were included. The inclusion criterion was being at least 20 years of age, and the exclusion criteria were the absence of severe physical illnesses and severe psychiatric illnesses. Four questionnaires about childhood abuse, self-esteem, subjective social status, and anxiety and a demographic information questionnaire were administered anonymously. Subjects were informed that their participation in the study was not mandatory and was voluntary, that they would not be disadvantaged in any way by not participating, and that the information collected would be anonymized and managed in such a way that individuals could not be identified and that the information would not be disclosed to outside parties. Participation was incentivized with gift cards worth 500 Japanese yen. This study was conducted in accordance with the Declaration of Helsinki, and was approved by the Medical Ethics Committees of Tokyo Medical University (study approval no.: SH3308) and Hokkaido University Hospital (study approval no.: 013–0184).

### Questionnaires

#### Child Abuse and Trauma Scale (CATS)

CATS is a self-report questionnaire that retrospectively evaluates childhood abuse, including neglect/negative home atmosphere, punishment, and sexual abuse.<sup>17</sup> The Japanese version of CATS, translated by Tanabe,<sup>18</sup> consists of 38 items: sexual abuse, neglect, punishment, and other. It is evaluated on a 5-point scale (“0: never” to “4: always”). The sum score of the 38 items was used as the CATS total score. The Cronbach’s alpha for the total score of CATS was 0.906, indicating excellent internal consistency.

## Subjective Social Status (SSS)

SSS measures people's perception of their location in the social hierarchy. It is rated subjectively on a 10-point scale by asking respondents, "If you were to divide society into tiers from 10 to 1, top to bottom, where would you consider yourself to belong?".<sup>19</sup>

## Rosenberg Self-Esteem Scale (RSES)

RSES is a 10-item questionnaire that measures self-esteem.<sup>20</sup> It is measured on a 4-point scale ("1: strongly disagree" to "4: strongly agree"). A higher total score indicates higher self-esteem. The Japanese version of RSES was used in this study.<sup>21</sup> The Cronbach's alpha for the total score of RSES was 0.872, indicating excellent internal consistency.

## State-Trait Anxiety Inventory Form Y (STAI-Y) - State Anxiety

STAI-Y is a 40-item questionnaire on anxiety symptoms, consisting of 20 questions each on state and trait anxiety.<sup>22</sup> In this study, only state anxiety, a transient response to an anxiety-provoking event, was used. It is measured on a 4-point scale ("1: not at all" to "4: very much so"). Subjects are asked how they feel at that present moment. Higher scores indicate stronger state anxiety symptoms. The Japanese version translated by Hidano et al was used in this study.<sup>23</sup> The Cronbach's alpha for the total score of state anxiety was 0.928, indicating excellent internal consistency.

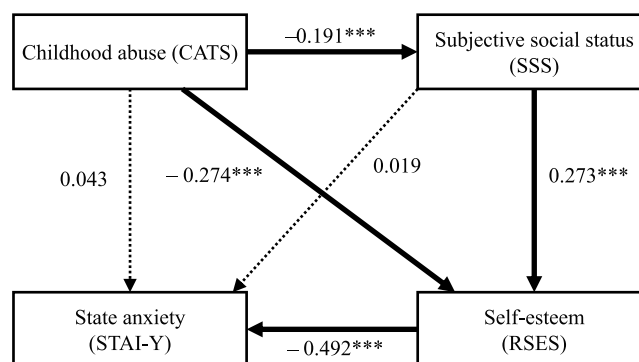
## Data Analysis

The 2-sample *t*-test or Pearson correlation coefficients analyses were conducted using SPSS Statistics 28.0J software (IBM, Armonk, NY, USA) to compare demographic information and questionnaire data.

Mplus version 8.5 software (Muthén & Muthén, Los Angeles, CA, USA) was used for a path analysis with the covariance structure analysis together with the robust maximum likelihood method. The Sobel test tested indirect effects for significance. In addition, all coefficients of the structural analysis of covariance were standardized.

The path model was developed using CATS, SSS, self-esteem, and state anxiety scores. Childhood abuse was hypothesized to directly affect SSS, self-esteem, and state anxiety, and to indirectly affect state anxiety via SSS and self-esteem (Figure 1). A *P*-value of less than 0.05 indicates a statistically significant difference.

Regarding the handling of missing values, as subjects with many questions being left unanswered on their questionnaires were excluded, the subjects included in the analysis had only a few missing values, and no missing values for the path analysis. Imputation methods were not used for the analysis.



**Figure 1** Results of covariance structure analysis using a path model, showing childhood abuse (CATS), subjective social status (SSS), self-esteem (RSES), and state anxiety (STAI-Y) of 404 adult volunteers. Solid arrows represent statistically significant pathways, and dotted arrows represent nonsignificant pathways. The numbers beside the arrows indicate the direct standardized path coefficients. Indirect effects via the variables are explained in the Results section. CATS, Child Abuse and Trauma Scale; RSES, Rosenberg Self-Esteem Scale; STAI-Y, State-Trait Anxiety Inventory form Y. \*\*\**P* < 0.001.

## Results

### Demographic Characteristics and CATS, SSS, RSES, and STAI-Y Scores of the Subjects

Table 1 shows the correlations and associations between demographic data and each questionnaire data and state anxiety scores on the STAI-Y in 404 adult subjects. No association or correlation was found between demographic data and STAI-Y state anxiety on the STAI-Y. CATS total scores were positively correlated with state anxiety scores on the STAI-Y. SSS and self-esteem (RSES) were negatively correlated with state anxiety scores on the STAI-Y.

### Analysis of the Path Model

The path model was analyzed by covariance structural analysis using childhood abuse, SSS, self-esteem, and state anxiety as observed variables (Figure 1). Correlations between the 4 variables before the path analysis are shown in Table 2.

Childhood abuse had a significant negative effect on SSS (standardized coefficient =  $-0.191$ ,  $P < 0.001$ ) and a significant negative effect on self-esteem ( $-0.274$ ,  $P < 0.001$ ), but the direct effect on state anxiety score was not significant ( $0.043$ ,  $P = 0.370$ ). The direct effect of SSS on state anxiety score was not significant ( $0.019$ ,  $P = 0.672$ ), but the direct effect of SSS on self-esteem was significant ( $0.273$ ,  $P < 0.001$ ). The direct effect of self-esteem on state anxiety score was significant ( $-0.492$ ,  $P < 0.001$ ).

Regarding indirect effects, childhood abuse had a significant indirect effect on state anxiety via the above path, including SSS and self-esteem ( $0.026$ ,  $P = 0.005$ ). Childhood abuse significantly indirectly affected state anxiety via self-esteem alone ( $0.135$ ,  $P < 0.001$ ). Furthermore, the indirect effect of childhood abuse on self-esteem via SSS was significant ( $-0.052$ ,  $P = 0.003$ ). The

**Table 1** Characteristics, CATS, SSS, and RSES, and Their Correlations with or Effects on STAI-Y State Anxiety Score in 404 Adult Volunteers

Characteristic or Measure	Number or Mean $\pm$ SD	Correlation with State Anxiety Scores ( $r$ ) or Effect on State Anxiety Scores (mean $\pm$ SD, $t$ -test)
Age (years)	42.3 $\pm$ 11.9	$r = 0.000$ , $P = 1.000$
Sex (men: women)	220: 184	Men (40.4 $\pm$ 10.1) vs women (40.0 $\pm$ 10.5), $P = 0.713$ ( $t$ -test)
Years of education	15.2 $\pm$ 2.0	$r = -0.010$ , $P = 0.847$
Employment status (employed: nonemployed)	341: 56	Employed (40.6 $\pm$ 10.2) vs nonemployed (37.8 $\pm$ 11.1), $P = 0.057$ ( $t$ -test)
Present marital status (married: unmarried)	287: 114	Married (39.8 $\pm$ 10.2) vs unmarried (41.5 $\pm$ 10.4), $P = 0.131$ ( $t$ -test)
History of psychiatric treatment (yes: no)	18: 386	Yes (41.3 $\pm$ 12.8) vs no (40.2 $\pm$ 10.2), $P = 0.666$ ( $t$ -test)
CATS (total score)	24.8 $\pm$ 16.3	$r = 0.200$ , $P < 0.001^{**}$
SSS (1, lowest; 10, highest)	6.1 $\pm$ 1.5	$r = -0.15$ , $P = 0.003^*$
RSES	35.9 $\pm$ 7.0	$r = -0.500$ , $P < 0.001^{**}$
STAI-Y state anxiety score	40.3 $\pm$ 10.3	

**Note:** Data are presented as means  $\pm$  SD or numbers.  $r$  = Pearson correlation coefficient;  $*P < 0.01$ ,  $**P < 0.001$ .

**Abbreviations:** STAI-Y, State-Trait Anxiety Inventory Form Y; CATS, Child Abuse and Trauma Scale; SSS, subjective social status; RSES, Rosenberg Self-esteem Scale.

**Table 2** Pearson Correlation Coefficient Between CATS Total Score, SSS, RSES Score, and STAI-Y State Anxiety

Score	CATS	SSS	RSES	STAI-Y State
CATS total score	1	$-0.191^{**}$	$-0.326^{**}$	$0.200^{**}$
SSS (1, lowest; 10, highest)		1	$0.325^{**}$	$-0.150^{**}$
RSES score			1	$-0.500^{**}$
STAI-Y state anxiety				1

**Notes:**  $*P < 0.05$ ,  $**P < 0.01$ .

**Abbreviations:** CATS, Child Abuse and Trauma Scale; SSS, subjective social status; RSES, Rosenberg Self-esteem Scale; STAI-Y, State-Trait Anxiety Inventory Form Y.

indirect effect of SSS on state anxiety via self-esteem was also significant ( $-0.134$ ,  $P < 0.001$ ). On the other hand, the indirect effect of childhood abuse on state anxiety via SSS alone was not significant ( $-0.004$ ,  $P = 0.681$ ).

In other words, childhood abuse did not affect state anxiety in adulthood directly. However, SSS and self-esteem may be intermediate factors through which childhood abuse indirectly increased state anxiety in adulthood. Self-esteem played an essential role in the pathway from childhood abuse and SSS to state anxiety in adulthood. With an  $R^2$  value of 0.252, this model explained 25.2% of the variability in state anxiety in adult volunteers.

We conducted a sensitivity analysis to analyze the impact of childhood abuse on male and female subjects separately (data not shown). The results for male subjects were consistent with those for the total subjects, but the findings for female subjects were somewhat different. In female subjects, childhood abuse did not have a direct effect on SSS, and the indirect effects on self-esteem and state anxiety via SSS were not significant. However, we found that SSS and childhood abuse had direct impacts on self-esteem and indirect impacts on state anxiety via self-esteem in female subjects, which was similar to the patterns observed in the total subjects and male subjects.

Considering the possibility of the reverse direction between SSS and self-esteem, another path model was analyzed ([SI Appendix. Supplementary Figure](#)). In this model, childhood abuse had an indirect effect on state anxiety via self-esteem, but SSS was not involved in the association among childhood abuse, self-esteem, and state anxiety.

## Discussion

By conducting a path analysis on 404 adult volunteers, this study found that childhood abuse affects adulthood state anxiety indirectly via influencing SSS and self-esteem. Previous studies have reported associations between childhood abuse and adulthood anxiety,<sup>10,13</sup> between SSS and adulthood anxiety,<sup>4,8,24</sup> and between self-esteem and adulthood anxiety.<sup>11</sup> In addition, it was also reported that childhood abuse affects anxiety in adulthood via self-esteem in college students.<sup>12</sup> However, the pathways through which SSS influences the indirect effects of childhood abuse on self-esteem and adulthood anxiety have not been reported in adults across a wide age range. Therefore, to our knowledge, this study is the first to suggest SSS as an intermediate factor in the effects of childhood abuse on self-esteem and adulthood state anxiety. This finding supports the theoretical framework of mediation by personality traits between childhood abuse and adulthood anxiety.<sup>13</sup>

The present study showed that childhood abuse is associated with low SSS. Consistent with this finding, we previously reported that childhood abuse affects SSS in the general adult population.<sup>14,15,25,26</sup> On the other hand, women who experienced childhood sexual abuse reportedly had a lower objectively evaluated socioeconomic status.<sup>27</sup> Childhood abuse was also associated with lower objective social status expressed by education, income, and employment levels in adulthood.<sup>28</sup> The correlation between objective social status and SSS<sup>29</sup> can explain the above common effects of childhood abuse between objective social status and SSS. However, because it is noted that SSS has effects on health above and beyond the effects of objective social status,<sup>2,4,30</sup> the results of our present and previous studies<sup>14,15,25</sup> on the effect of childhood abuse on SSS provides new and valuable perspectives. The interactive association between socioeconomic status and SSS is modified by other biological, social, and psychological factors, and SSS influences health beyond traditional socioeconomic status through sociological, psychological, and biological pathways.<sup>30</sup> Finally, childhood abuse may influence developmental trajectories in SSS, which reportedly changes greatly from adolescence to adulthood in a subset of socially disadvantaged youth.<sup>31</sup>

In the present study, self-esteem was suggested to be a possible complete mediator in the effect of SSS on state anxiety in adults. We previously reported a similar association for depression,<sup>14</sup> indicating that such an association belongs to the common phenomenon of feeling, emotion, or mood. Consistent with our present finding, SSS was reportedly related to self-esteem.<sup>5,14</sup> People with higher objectively evaluated socioeconomic status also have higher self-esteem.<sup>32</sup> One possible explanation for the association between social status and self-esteem is the role of education: higher education levels are associated with higher self-esteem.<sup>32</sup> High education levels reflect high objective social status and likely lead to social and economic success, which then increases self-esteem. In our study, education levels (years) were also significantly correlated with self-esteem (data not shown). Furthermore, previous studies have shown that low self-esteem predicts anxiety as well as depression.<sup>11</sup> Although it was indicated that low SSS is associated with the development of anxiety disorders,<sup>4</sup> the mechanism has remained unclear. The findings of our present study strongly

indicate that low self-esteem may be an intermediate factor by which SSS influences anxiety disorders or symptoms, and is a risk factor for developing anxiety disorders or symptoms.

Our present study suggests that SSS and self-esteem are intermediate factors in the effect of childhood abuse on adulthood state anxiety. Although childhood abuse experiences cannot be modified subsequently, SSS and self-esteem are factors that can be modified. As low SSS is closely associated with a reduced sense of personal control and an increasing sense of control moderates the influence of SSS,<sup>33</sup> such an intervention for SSS may lead to an increase in self-esteem following the path model of this study. In addition, in the present study, self-esteem was suggested to be essential for the effects of childhood abuse and SSS on anxiety in adulthood. Therefore, interventions for self-esteem may reduce state anxiety. Cognitive behavioral therapy using Fennell's approach,<sup>34</sup> which has been clinically shown to improve low self-esteem in randomized and nonrandomized controlled trials,<sup>35,36</sup> is a promising intervention for increasing self-esteem, thereby reducing anxiety.

There are some limitations to this study. Recall bias should be considered when interpreting the results of this study, because childhood abuse was assessed using a questionnaire based on the participants' memories. However, a certain level of accuracy and reliability of people's memories regarding their early experiences has been suggested by previously published studies.<sup>37,38</sup> Therefore, we did not consider recall bias to be a crucial problem. Secondly, this study was a cross-sectional study but not a prospective study; therefore, causal associations among factors cannot be concluded. To conclude a causal association, a long-term prospective study following subjects from childhood to adulthood, which would take several decades, must be performed. This indicates the difficulty of verifying the association between childhood abuse, SSS, self-esteem, and anxiety in a short time. The path analysis of this study has methodological limitations, but suggests a possible causal association of the cascade effects of these 4 variables, and indicates that a long-term prospective study lasting for several decades would be valuable. Thirdly, although personality traits are relatively stable, affective symptoms may cause slight changes in personality traits.<sup>39</sup> Therefore, there may be the possibility of reverse causality or reverse direction of the paths of our model. Fourthly, because the study was conducted on adult volunteers, its applicability to patients with anxiety disorders is unclear. Finally, the sensitivity analysis showed that SSS might not act as an intermediate factor between childhood abuse and self-esteem/state anxiety in female subjects. Owing to the limited sample size, the sex differences in the path analysis might not be reproducible, as the correlation between childhood abuse and SSS in female subjects was statistically significant and stronger than that in male subjects in our other unpublished study using a different population. Therefore, further investigation of these sex differences is warranted.

## Conclusions

This cross-sectional study of adult volunteers showed that childhood abuse is associated with low SSS, low self-esteem, and high state anxiety. Furthermore, SSS and self-esteem were suggested to be intermediate factors in the indirect impact of childhood abuse on state anxiety in adulthood, and to possibly link events in childhood with effects occurring in adulthood after a long time interval, as latent factors. The results suggest that interventions that improve SSS and self-esteem may be helpful for reducing the anxiety symptoms of adults who have experienced childhood abuse.

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## Author Contributions

All authors made a significant contribution to the work reported, whether in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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