

# PSYCHOPATHOLOGY OF ABORIGINAL AND NON-ABORIGINAL ADOLESCENTS LIVING IN THE MOUNTAINOUS REGION OF SOUTHERN TAIWAN

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The aim of this study was to examine the hypothesis that Taiwanese aboriginal adolescents feature more severe psychopathology than non-aboriginal adolescents who live in the same mountainous region of southern Taiwan, and to test the hypothesis by controlling other individual and environmental factors. In this study, a total of 251 aboriginal and 79 non-aboriginal Taiwanese adolescents were enrolled. Their psychopathology was measured by the Symptom Checklist-90-Revised Scale; demographic and family characteristics, and their affinity with their peer group and with their school were also assessed. The results of the multiple regression analysis revealed that aboriginal adolescents feature more severe psychopathology than non-aboriginal adolescents, and indicated that females and adolescents perceiving higher levels of family conflict and lower family support were more likely to experience more severe psychopathology than those perceiving the contrary. Those who devise strategies to improve the mental health of adolescents living in impoverished regions must take into consideration their ethnicity, gender, and family context when devising such treatment strategies.

**Key Words:** aborigines, adolescent, psychopathology  
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Previous studies have indicated that aboriginal adolescents experience more serious mental health problems than do adolescents living in the general population [1,2]. Aboriginal adolescents were found to demonstrate high rates of suicide compared to the statistical norm [3], feelings of sadness and hopelessness [4], recreational use of both licit and illicit substances [5], and disorderly conduct and aggressive behavior [1,6]. Multiple factors, including racial discrimination and

growing up under particularly stressful circumstances may lead to mental health problems among aboriginal adolescents [1], although the label of an ethnicity must be examined in conjunction with the subject's socioeconomic status in order to take real lifestyle differences into account [7]. The aboriginal population of Taiwan is generally in regions in which deficiencies in economic and social opportunities may increase the level of stress in their daily lives, such that the lives of many aboriginal adolescents are often plagued by such stressors [2]. It has previously been reported that an individual's development, when examined, should be analyzed in the context of the cultural and/or societal mores of the time [8], and that such a framework is also applicable to the conduct of research on the psychopathology of such an individual, the

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results of much of which are influenced, to a great extent, by the macrolevel environment (e.g. medical, educational, and economic aspects). Thus, it would appear to be appropriate to examine the relationship between ethnicity and psychopathology by comparing the psychopathology of aboriginal adolescents with that of non-aboriginal analogs who live in the same geographical region.

Individual and environmental factors all contribute to the development of psychopathology among adolescents. Among the individual factors, female gender [9], older age [10], and a reduced level of religious belief [11] were associated with more severe psychopathology and/or problem behavior. Among environmental factors, family adversity, including low socioeconomic status, family disruption, family criminality, and poor family health have all been suggested to be responsible for increasing the risk of developing psychopathology among adolescents, while the presence of family support has been reported to reduce the risk for an individual to internalize such symptoms [6]. Feelings of connectedness to school were also significantly associated with adolescent emotional health [12]. Being able to discuss personal problems with friends has been reported to be somewhat protective against attempting suicide among native adolescents [13]. When examining the association between ethnicity and psychopathology, it would appear appropriate for such confounding effects both individually and environmentally to be considered and controlled for.

The aboriginal minority group in Taiwan consists of 12 different tribes with a total population of around 456,000 individuals, representing approximately 2% of the population of Taiwan [14]. Most Taiwanese aborigines live in the central mountain regions and in the Eastern coastal valleys. In the process of industrialization and economic development in Taiwan, the aboriginal population has suffered a number of adverse impacts, in particular, being accorded an inferior socioeconomic status and suffering from the virtual destruction of the individual traditional tribal social organization. In general, the average household income of aborigines is far below that of the average for Taiwan farmers; their per capita income is lower than 50% of the population as a whole [15,16]. The health status of Taiwanese aborigines is also not as good as that of the rest of the Taiwanese population [17], with an average life expectancy 6–8 years shorter than that of

the general Taiwanese population [18]. The reduction of health disparities between Taiwanese aborigines and the general Taiwanese population constitutes a major national health objective.

Many aboriginal people have moved from their ancestral home to the cities in search of employment opportunities, whereas a small number of non-aboriginal Taiwanese have moved to the mountainous regions of Taiwan in order to work in agriculture and related businesses. Such a social transformation provides an opportunity to compare the psychopathology of aboriginal and non-aboriginal adolescents who live in the same mountainous regions characterized by poor economic and educational resources. The aim of this study was to examine the hypothesis that Taiwanese aboriginal adolescents feature more severe psychopathology than do non-aboriginal adolescents who live in the same mountainous region of southern Taiwan, and to test the hypothesis by controlling other individual and environmental factors.

## **METHODS**

### *Study sample*

Adolescents from the three junior high schools in the study-selected mountainous region of Kaohsiung County in southern Taiwan were enrolled for participation in this study. This mountain region is characterized by a rather low population density, generally inconvenient transportation and a general lack of medical resources. Adolescents in this region typically live a very different lifestyle from those living in other more developed areas of Taiwan. There is no senior high school in this region, and those individuals who want to continue their education after graduating from junior high school have to make a long daily trip to attend a senior high school or move away from their hometown.

In April 2002, a total of 356 adolescents were attending the three junior high schools that were contacted for participants for this study. First, we contacted the parents of the students in order to obtain consent for their children's participation in this study. Following this, we explained the purpose and procedure of the study to the potentially participating adolescents in their classrooms and encouraged them to participate in the study. The study protocol was approved by the Institutional Review Board of Kaohsiung Medical

University. All subjects provided written informed consent prior to their participation in this study.

### Assessment

*Symptom Checklist-90-Revised Scale (SCL-90-R)*: The SCL-90-R was designed for use as a descriptive measure of psychopathology [19]. The Chinese version of the SCL-90-R was used to measure the mental health status with a five-point rating scale ranging from "not at all" (0) to "extreme" (4) [20]. Its validity in assessing neurotic symptomatology of patients and psychopathology of adolescents in Taiwan has previously been established [20,21]. A higher total score on the SCL-90-R indicates that a subject has a poorer mental health status.

*Adolescent Family and Social Life Questionnaire (AFSLQ)*: This study used five four-point subscales in the AFSLQ to evaluate adolescents' levels of family conflict (four items), family support (three items), the proportion of peers who exhibit delinquent behavior (seven items) and who use substances (five items), and connectedness to school (four items) [22], with Cronbach's  $\alpha$  values of 0.65 and 0.85. Higher subscale scores indicate a more severe level of family conflict, a lower level of family support, lower connectedness to school, and a greater number of peers who exhibit delinquent behavior and who use substances. Delinquent behaviors include the behaviors of aggression to people, destruction of property, deceitfulness or theft, and serious violations of rules. Substances refer to alcohol, tobacco, areca quid, sedatives/hypnotics, and all illicit drugs. The AFSLQ also assesses parents' alcohol consumption, where consumption of alcohol three times or more per week is labeled as "regular alcohol consumption".

*Social Status Rating Scale (SSRS)*: The SSRS classifies subjects' social status into five classes according to their educational level and occupation [23]. For statistical purposes, classes I to IV were labeled as "high social status" and class V as "low social status".

We also ascertained the salient sociodemographic factors, including gender, age, ethnicity, frequency of attending religious activities, parents' marital status, and number of siblings.

### Procedure and statistical analysis

We invited the adolescents to complete all questionnaires based on the explanations of the questions as provided by the research assistants and under their direction. Those who refused participation in

certain/all aspects of the questionnaire were entitled to leave the blank questionnaires on their desk. All the participants received a gift at the end of the assessment.

The associations between psychopathology and ethnicity, gender, religious belief, disruptive parenting, socioeconomic status, and parents' education and regular alcohol consumption were examined using Student's *t* test. Correlations between psychopathology and age, number of siblings, level of family conflict and support, and affinity toward peer group and to school were examined using Pearson's correlation. The associations between psychopathology and the factors indicated as being significantly influential as suggested by the results of the *t* test and Pearson's correlation were further examined by means of stepwise multiple linear regression analysis. The scores on the SCL-90-R subscales were further compared between aboriginal and non-aboriginal adolescents by Mann-Whitney *U* test. A *p* value of less than 0.05 was considered to be statistically significant.

## RESULTS

A total of 330 adolescents (92.7% of the initially selected 356 adolescents who attended the three junior high schools) completed all questionnaires and the interview. Those who were absent from class on the scheduled day of their participation ( $n=15$ ), those who refused to participate in this study or whose parents refused to allow them to participate ( $n=8$ ), or those who were not fully able to comprehend the content of the interview due to a below-average mental function ( $n=3$ ) were excluded from study participation. According to school records, there was no difference in ethnicity or gender between the groups who participated and those who did not participate.

Among the 330 adolescents included in this study, 251 adolescents (125 boys) had a mean age of  $14.8 \pm 1.0$  years and were aborigines, and 79 (33 boys) had a mean age of  $14.4 \pm 1.2$  years and were non-aborigines. No difference in gender was found between the two groups ( $\chi^2=1.552, p>0.05$ ), although the aboriginal group proved to be somewhat older than the non-aboriginal group ( $t=-2.859, p<0.01$ ). Among them, 121 participants (36.7%) seldom attended religious activities, 88 (26.7%) had disruptive parenting, and 298 (90.3%) came from low socioeconomic status families. Seventy-six (23.0%) participants' fathers and

**Table 1.** Association between psychopathology and ethnicity, demographic and family characteristics, and affinity for peer group and school

	Psychopathology		
	Mean (SD)	<i>t</i>	<i>r</i>
Ethnicity		-2.215*	
Aboriginal	77.5 (49.1)		
Non-aboriginal	62.8 (58.4)		
Gender		6.209 <sup>†</sup>	
Male	56.7 (39.5)		
Female	89.8 (56.4)		
Attends religious activities		0.620	
Seldom	71.6 (54.5)		
Frequently	75.3 (50.2)		
Age			0.055
Family characteristics			
Disruptive parenting		-1.244	
Yes	79.8 (55.3)		
No	71.8 (50.3)		
Low socioeconomic status		1.031	
Yes	82.9 (56.5)		
No	73.0 (51.2)		
Father's education		0.710	
>9 yr	77.7 (49.7)		
≤9 yr	72.9 (52.4)		
Mother's education		0.078	
>9 yr	72.6 (50.6)		
≤9 yr	73.9 (51.9)		
Parents drink alcohol regularly		-0.571	
Yes	77.5 (56.5)		
No	73.2 (50.8)		
Number of siblings			0.097
Family conflict			0.301 <sup>†</sup>
Family support			0.256 <sup>†</sup>
Affinity for peer group			0.111*
Affinity for school			0.082

\* $p < 0.05$ ; <sup>†</sup> $p < 0.001$ . SD = standard deviation.

34 (10.3%) participants' mothers had received more than 9 years of education, and 57 (17.3%) participants' fathers drank alcohol regularly. The mean number of siblings was  $4.2 \pm 1.9$ . The mean scores of family conflict and support were  $2.0 \pm 0.4$  and  $2.4 \pm 0.6$ , respectively. The mean scores of affinity for peer group and school were  $2.1 \pm 0.5$  and  $2.0 \pm 0.4$ , respectively.

The correlates of psychopathology among adolescents examined by *t* test and Pearson's correlation are presented in Table 1. The results indicated that adolescents who were aboriginal, who were female, who perceived a greater level of family conflict, who reported that they experienced a lower level of family

support, and who featured a lower affinity toward their peer group, were more likely to feature a more severe level of psychopathology. Age, religious commitment, disruptive parenting, socioeconomic status, parents' education and alcohol drinking behavior, number of siblings, and affinity for school were not associated with psychopathology.

Significant variables as revealed by the *t* test and Pearson's correlation were further analyzed using stepwise multiple linear regression analysis. By controlling for other factors, aboriginal adolescents still showed a more severe level of psychopathology than their non-aboriginal peers ( $\beta = 0.133$ ,  $t = 2.736$ ,  $p < 0.01$ ).

**Table 2.** Comparison of scores on the SCL-90-R subscales between aboriginal and non-aboriginal adolescents

	Aboriginal Mean (SD)	Non-aboriginal Mean (SD)	Z*
Somatization	0.734 (0.631)	0.588 (0.593)	-2.192 <sup>†</sup>
Obsession-compulsion	1.054 (0.683)	0.863 (0.778)	-2.758 <sup>‡</sup>
Interpersonal sensitivity	0.988 (0.636)	0.831 (0.750)	-2.598 <sup>‡</sup>
Depression	0.841 (0.631)	0.617 (0.667)	-3.623 <sup>§</sup>
Anxiety	0.867 (0.676)	0.664 (0.741)	-2.965 <sup>‡</sup>
Hostility	0.924 (0.795)	0.884 (0.903)	-1.060
Phobic anxiety	0.726 (0.711)	0.592 (0.742)	-2.526 <sup>†</sup>
Paranoid ideation	0.823 (0.662)	0.665 (0.719)	-2.466 <sup>†</sup>
Psychoticism	0.830 (0.636)	0.681 (0.752)	-2.755 <sup>‡</sup>
Others	0.841 (0.646)	0.673 (0.713)	-2.785 <sup>‡</sup>

\*Mann-Whitney *U* test; <sup>†</sup> $p < 0.05$ ; <sup>‡</sup> $p < 0.01$ ; <sup>§</sup> $p < 0.001$ .

Meanwhile, females ( $\beta = -0.281$ ,  $t = -5.687$ ,  $p < 0.001$ ) and adolescents who perceived higher family conflict ( $\beta = 0.239$ ,  $t = 4.857$ ,  $p < 0.001$ ) and lower family support ( $\beta = 0.209$ ,  $t = 4.263$ ,  $p < 0.001$ ) were more likely to suffer more severe psychopathology. These four variables accounted for 22.2% of the variance. Affinity toward peer group did not prove to be any more significantly associated with adolescents' psychopathology.

The scores on the SCL-90-R subscales were further compared between aboriginal and non-aboriginal adolescents (Table 2). Except for the "hostility" subscale, aboriginal adolescents had more severe psychopathology on all the SCL-90-R subscales than non-aboriginal ones. The association between psychopathology and demographic and family characteristics, and affinity for peer group and school were further examined regarding ethnicity (Table 3). Both aboriginal and non-aboriginal adolescents who were female, who perceived a greater level of family conflict, and who reported that they experienced a lower level of family support were more likely to feature a more severe level of psychopathology.

## DISCUSSION

In this study, we examined the association between ethnicity and psychopathology among the adolescent population living in a mountainous region characterized by deficiencies in economic and educational opportunities, a scenario that has previously been suggested to increase adolescents' distress and compromise their mental health. The results of this study

indicated that, by controlling for specific individual and environmental factors, aboriginal adolescents do feature a more severe level of psychopathology than their non-aboriginal peers. This discrepancy may be partially accounted for by the suggestion that as a minority ethnic group in Taiwan, aboriginal people may be likely to encounter more disadvantages in their daily lives than non-aboriginal people. For example, their various native languages are losing ground, which may result in some difficulties as regards the preservation of their traditional values and also result in making communication between elders and youths even more difficult. Meanwhile, there have been some stereotyped, even prejudiced, opinions relating to Taiwanese aborigines that have spread, and continue to circulate, within the general Taiwanese population. For example, some people believe that aborigines demonstrate a greater proclivity toward alcoholism and are generally less industrious than their non-aboriginal analogs [24]. These rather unjust opinions may discourage aboriginal adolescents and negatively impact their morale. Because adolescent psychopathology is suggested to be predictive of poor adjustment in adulthood [25], the results of this study further support the notion that the mental health of aboriginal adolescents is an important issue for clinicians, mental health workers, and public health experts.

In line with the results of previous studies of Asian [10,26] and Western adolescent populations [27], this study also found that female adolescents experience more severe psychopathology than age-matched males. Hankin and Abramson proposed

**Table 3.** Association between psychopathology and ethnicity, demographic and family characteristics, and affinity for peer group and school in aboriginal and non-aboriginal adolescents

	Psychopathology					
	Aborigines			Non-aborigines		
	Mean (SD)	<i>t</i>	<i>r</i>	Mean (SD)	<i>t</i>	<i>r</i>
Gender		5.746*			3.046 <sup>†</sup>	
Male	60.7 (38.5)			41.8 (40.6)		
Female	94.2 (52.8)			77.9 (64.6)		
Attends religious activities		0.148			-0.405	
Seldom	78.4 (49.5)			61.5 (53.7)		
Frequently	77.3 (49.5)			70.3 (53.6)		
Age			0.118			-0.161
Family characteristics						
Disruptive parenting		-0.707			-1.139	
Yes	81.1 (52.8)			75.6 (64.4)		
No	76.2 (47.7)			58.5 (56.1)		
Low socioeconomic status		0.671			0.712	
Yes	76.7 (48.0)			62.8 (58.4)		
No	82.9 (56.5)			64.3 (55.4)		
Father's education		0.510			-0.288	
> 9 yr	80.1 (50.4)			57.1 (40.5)		
≤ 9 yr	76.5 (48.7)			63.4 (60.2)		
Mother's education		0.469			-0.547	
> 9 yr	82.0 (55.9)			57.0 (30.3)		
≤ 9 yr	77.0 (48.4)			63.6 (61.5)		
Parents drink alcohol regularly		0.300			-1.539	
Yes	75.4 (52.8)			83.5 (67.5)		
No	77.9 (48.4)			57.9 (55.5)		
Number of siblings			0.066			0.097
Family conflict			0.280*			0.364 <sup>†</sup>
Family support			0.268*			0.226 <sup>‡</sup>
Affinity for peer group			0.095			0.196
Affinity for school			0.082			0.155

\* $p < 0.001$ ; <sup>†</sup> $p < 0.01$ ; <sup>‡</sup> $p < 0.05$ .

a developmentally sensitive, elaborate cognitive vulnerability–transactional stress model of depression to attempt to explain the emergence of a gender difference in depression [28]. McCauley et al also suggested that self-competence is partially responsible for the emergence of gender differences in depression and anxiety during early adolescence [9]. In Taiwan, it would appear to be fair to say that female adolescents are often suppressed by the stereotyped opinions toward traditional gender roles. For example, females may be asked to do more housework than their male siblings and to conduct their lives in a way commensurate with traditional beliefs as to “what

girls *should* do”. Meanwhile, they may also suffer from the stress of attempting to match public values/expectations as regards feminine “beauty”, such that all these factors may contribute to a gender difference in mental health. Except for the gender role socialization, biologic changes associated with puberty, cognitive coping styles, family support, and parenting style may also explain the gender differences in psychopathology [29].

Adolescent development is reported to be the result of multisystematic interaction [30]. Our study found that high family conflict and low family support were associated with a more severe level of psychopathology

among Taiwanese adolescents. From the view of adolescent development, for an individual to construct an emancipated identity is a major task during the period of adolescence [31]. Moderate conflict between parents and adolescents is viewed as a process that fosters adaptive forms of change within parent-adolescent relationships, and conflict encourages parents and adolescents to revise their expectations and renegotiate autonomy, without fundamentally changing their feelings of being connected to each other [32]. However, conflict requires intuitive or intentional forms of management to keep the frequency and severity of this process at moderate levels. Escalating conflict in terms of frequency and severity often becomes a central feature of troubled parent-youth relationships that leads to poor mental health and greater involvement in deviant behavior by the youth [33]. Families maintain a strong influence on adolescents, and adolescents turn to their families in times of need and ask parents for advice. Family closeness and attachment are major factors in predicting adolescents' adjustment and service as a buffer against engaging in unhealthy behaviors [34]. High family conflict and low family support may decrease an adolescent's will to look for support for their life difficulties from their parents and, thus, increase the difficulties in such individuals' daily lives, a problem which may further impair their mental health. Although this study found significant correlations between psychopathology and family conflict and support in adolescents, the *r* values for these associations were small, which indicates weak correlations between variables. This might have been due to the small sample size in this study.

Older age [10], a lower level of religious commitment [11], disrupted parenting [35], low socioeconomic status [36], parents' substance use [36], and low connectedness to school [12] have previously been reported to be associated with more severe psychopathology or problem-behaviour patterns among adolescents. Such variables, however, were not found to be associated with severity of psychopathology in this study, which suggests that the individual and environmental correlates of psychopathology may vary widely among different adolescent populations. Research has indicated that adolescents are at greatest risk for divorce-related problems both during the divorce crisis and for a time after their parents separate, with significant recovery occurring for the majority of youth by 1–2 years after the separation [37]. In this

study, the adolescents' mean age at the time of their parents' divorce was  $8.4 \pm 4.1$  years, which may partially explain why no association was found between disrupted parenting and psychopathology in this study. Meanwhile, external support outside the family may function as role models and sources of guidance. For example, some ethnic minority families (e.g. African American families) have long-standing traditions of providing external support for single-parent families, and external family relatives may become important sources of support and guidance for the youth [38]. In Taiwan, children whose parents are divorced often grow up in the care of their grandparents, together with other family members such as aunts or uncles. It may be that the fundamental modification in family structure resulting from divorce may result in similar family caring for adolescents as was the case prior to parental separation, and thus reduce the negative impact of disruptive parenting on adolescents' mental health.

Some potential limitations of this study should be considered. First, the cross-sectional nature of this study limited our ability to draw meaningful conclusions relating to the causal relationship between psychopathology and family factors, including family conflict and support. Second, we examined only adolescents' psychopathology on the SCL-90-R in the preceding week, but did not examine their psychiatric disorders by structured diagnostic interviews. Third, this study did not examine the psychopathology of adolescents who lived in the same mountainous region as that which was investigated who dropped out of school, although this proportion appeared to have been fairly small according to the available school records. Fourth, despite examination of various individual and environmental factors, some factors that may affect aboriginal adolescents' mental health, for example, acculturation, were not examined in this study. Finally, further studies are needed to examine whether or not the results of this study can be generalized to other adolescent populations living in other mountainous areas in Taiwan.

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# 居住於南台灣山地鄉之原住民和非原住民青少年精神病理程度比較

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本研究之目的為在控制可能影響精神病理的個人和環境變項後，比較同樣居住於南台灣山地鄉之原住民和非原住民青少年是否在精神病理程度上有所差異。研究對象為來自南台灣三個山地鄉 251 位原住民青少年和 79 位非原住民青少年，研究邀請所有參與研究的青少年填寫 Symptom Checklist-90-Revised Scale (SCL-90-R) 以評估其精神病理狀態，並填寫問卷以調查社會人口學、家庭特徵、與同儕和學校的連結程度等變項。多重迴歸分析顯示：在控制其他變項後，原住民青少年比非原住民青少年具有較嚴重的精神病理程度，此外，女性、感受家庭衝突程度較高、家庭支持度較低之青少年，具有較嚴重程度的精神病理。由本研究之結果可知：在擬定和執行提升山地鄉青少年之心理健康的促進策略時，必須考量到青少年的種族、性別、家庭互動等多方因素。

**關鍵詞：**原住民，青少年，精神病理

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