

# THE DURATION OF ADOLESCENT PSYCHOLOGICAL DISTRESS AND ITS ASSOCIATION WITH EMPLOYMENT CHARACTERISTICS IN EARLY ADULTHOOD: EVIDENCE FROM THE MILLENNIAL GENERATION IN NORTHERN TAIWAN

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## Abstract

**Introduction:** The indirect selection hypothesis proposes that early-life factors contribute to socioeconomic position and health status through individual social interaction and development. Accordingly, the main objective of the present study is to explore the impact of adolescent psychological distress on adult employment, including income and job satisfaction. Particular attention has been paid to the duration of adolescent psychological distress. To be specific, four research questions are investigated. Is the duration of adolescent psychological distress associated with their achieved employment status in early adulthood? Is there a correlation between adolescent psychological distress and receiving employment assistance in early adulthood? Among the employed sample, is the duration of adolescent psychological distress related to their adult income and job satisfaction? Furthermore, are there any gender differences in the aforementioned associations?

**Method:** We used data from the Taiwan Youth Project (TYP), a longitudinal panel survey that followed two cohorts of adolescents (i.e., 7th graders (J1) and 9th graders (J3)) from Northern Taiwan. In this study, we restricted to those who gave information on all major variables (N=1866) and the sub-sample of the employed (N=1693). We dichotomized (i.e., 2 = symptom) the mean score of the short version of the Symptom Checklist 90 Revised (SCL-90-R) measured in 9th grade, 12th grade, and senior year of college. The duration of adolescent psychological distress was created into three categories across these three measures: “no exposure” (no symptoms), “short duration” (symptoms at one-time point), and “long duration” (symptoms at two or more time points). At age 31, we assessed employment status (employed or not), employment assistance, income (monthly), and job satisfaction which was measured on a 4-point Likert scale ( $\alpha = 0.95$ ). In addition, several essential covariates were included (e.g., sex and family SES). We conducted linear regression analyses for continuous outcomes and logistic regression analyses for categorical outcomes.

**Results:** Young adults with a short duration of adolescent psychological distress were more likely than those who had no exposure to be employed during early adulthood (OR=1.96,  $p<0.006$ ). Sex moderated the relationship between adolescent psychological distress and working status in the interaction analysis. Among the working sample, young adults with a long adolescent psychological distress duration were more likely to report poor overall job satisfaction than those with no exposure ( $\beta=-0.11$ ,  $p<0.001$ ). A similar pattern was also observed for cognitive ( $\beta=-0.04$ ,  $p<0.001$ ) and affective job satisfaction ( $\beta=-0.10$ ,  $p<0.01$ ).

**Conclusion:** The association between job satisfaction in early adulthood is affected by the duration of psychological distress experienced in adolescence. The findings of this research highlight the need for support during the transition from adolescence to early adulthood for those who suffer from long-duration.

**Keywords:** *Adolescence, psychological distress, early adults, employment, longitudinal.*

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## 1. Introduction

The incidence and prevalence of mental health issues have increased over the past decade. In 2019, 12.5% of people worldwide were experiencing any mental disorder (WHO, 2022). In Taiwan, approximately 16.5% of adolescents aged 12 to 18 years were at risk of developing mental health

problems in 2018, with anxiety and depression being the most prevalent (Ministry Health and Welfare, Health Promotion Administration, 2021). Psychological distress experienced during adolescence may be critical for developing and accumulating professional knowledge and skills needed to function in adulthood. Therefore, it is essential to consider the long-term effects of psychological distress on employment characteristics in young adulthood.

## 2. Method

The dataset for the study was obtained from the panel surveys of the Taiwan Youth Project (TYP), a multi-wave longitudinal study initiated in 2000 when the participants were in the 7th grade (J1) and 9th grade (J3). The adolescent period included the 9th grade to the 12th grade and the senior year of college. The analysis used a mean age of 31 years for the adult period. The final sample size was 1866 participants, and the employed sample was 1693. Dependent variable: Employment status was measured as 1 for "have a paid job" and 0 for all other responses. Employment assistance: "Have you ever received employment insurance assistance?". Monthly income, respondents were asked to report their average monthly income. We dichotomized as the upper quartile (Q3), < NTD 60,000 or  $\geq$ NTD 60,000 for analysis. Overall, Job satisfaction ( $\alpha= 0.95$ ) was divided into eight domains (income, work environment, work content, working hours, boss, colleagues, welfare, and promotion) on a 4-point Likert scale. Independent variable: Psychological distress was measured by the short version of the Symptom Checklist-90 Revised (SCL-90-R). The optimal cutoff score of two was used (Derogatis, 1992). We classified the duration of psychological distress as "no exposure," "short duration" (psychological distress one time), and "long duration" (psychological distress two or more times) for the three assessments during adolescence (Groot et al., 2021). Confounder: Age, parental education level, family composition, and individual education level were assessed as potential confounders in the analysis. Self-rated health status was measured on a five-point scale. Logistic regression examined associations with employment status, insurance assistance, and monthly income. Multiple linear regression was used to analyze job satisfaction. Interaction effects were created to examine whether sex significantly affects the class membership of adolescent psychological distress with outcomes. Statistical analyses were conducted using STATA version 16.0.

## 3. Result

The demographics of the participants are shown in Table 1. Compared to young adults with no exposure to adolescent psychological distress, young adults with a short duration of psychological distress were more likely to be in the workforce (OR= 1.96, 95% CI 1.22–3.14) (Table 2). Sex moderated the relationship between adolescent psychological distress and working status in the interaction analysis. An analysis of individuals with paid employment indicated a significant inverse correlation between a long duration of psychological distress in adolescence and job satisfaction levels in early adulthood (Table 2).

## 4. Discussion

Adolescent psychological stress duration affects early adulthood labor market involvement differently. Short-duration stress correlates with higher engagement, while long-duration stress shows no significant correlation, contrasting prior studies (Veldman et al., 2022). Female adolescents experiencing distress are more involved in the labor market. The challenge model of Resilience theory (Zimmerman, 2013) suggests moderate adversity exposure builds coping skills, influenced by societal expectations and gender norms (Wenhold & Harrison, 2021). This sheds light on gender differences in stress response and coping strategies. Persistent adolescent psychological distress correlates with lower job satisfaction in early adulthood, aligning with previous research (Howard et al., 2014). This stress may accumulate over time, perpetuating job dissatisfaction and reducing employability, potentially leading to further marginalization in the labor market (Alaie et al., 2022). Several limitations should be acknowledged. Firstly, data constraints may have hindered our ability to control all potential confounding variables fully. Secondly, we did not explore adverse factors affecting mental health and labor outcomes in adulthood, which could serve as confounders or mediators in the relationship between adolescent distress and early adulthood employment characteristics. Lastly, reliance on self-reported measures for assessing psychological distress introduces the possibility of recall bias.

Table 1. Characteristics of the analytical sample, including the percent or mean (SD) [Range].

Variable in baseline	Total sample (n=1866) n(%)	Employed sample (n=1053) n(%)
Psychological distress		
No exposure	537(28.78)	486(28.71)
Short duration	532(28.53)	492(29.06)
Long duration	806(43.19)	715(42.23)
Sex		
Male	972(52.09)	918(54.22)
Female	894(47.91)	715(45.78)
Age (Baseline) [mean(SD); range: 14-19 years]	15.52(0.49)	15.32(0.48)
Family composition		
Living with 2 parents	1657(88.86)	1508(90.07)
Not living with 2 parents	209(11.14)	185(10.93)
Parental education (either parent)		
Primary school or below	134(7.18)	123(7.27)
Middle high school	393(21.06)	344(20.91)
High school/associate's degree	971(52.04)	888(52.45)
Bachelor's degree or higher	368(19.72)	328(19.57)
Education		
High school or below	229(12.29)	198(11.70)
Associate's degree	136(7.29)	122(7.21)
Bachelor's degree	1114(59.79)	1007(59.48)
Master's degree or higher	396(21.22)	368(21.63)
Self-rated health [mean(SD); range: 1-5]	3.46(0.81)	3.47(0.81)
Employment status		
Currently employed	1093(58.72)	1093(100)
Not employed	173(9.27)	-
Employment assistance		
Ever received	157(8.41)	-
Have not received	1709(91.59)	-
Monthly income		
<NTD 60,000	-	1359(80.27)
≥NTD 60,000	-	334(19.73)
Overall Job Satisfaction [mean(SD); range: 1-4]	-	2.86(0.50)
Cognitive Satisfaction [mean(SD); range: 1-4]	-	2.92(0.49)
Affective Satisfaction [mean(SD); range: 1-4]	-	2.70(0.66)

Table 2. Prevalence and associations between the duration of adolescent psychological distress and employment outcomes in early adulthood.

Variables	No exposure group (N=537, 28.78%)	Short duration group (N=523, 28.03%)	Long duration group (N=806, 43.19%)	Short duration vs. No exposure	Long duration vs. No exposure	Sex interaction?
	N(%)	N(%)	N(%)	OR/B [95% CI]	OR/B [95% CI]	
Employed	486(28.71)	492(29.06)	715(42.23)	1.96 [1.22, 3.14]**	1.07 [0.73, 1.56]	significance
Employment assistance receipt	34(21.66)	39(24.84)	84(53.50)	1.09 [0.67, 1.76]	1.50 [0.98, 2.31]*	n on-significance
Income ≥NTD 60,000	97(29.04)	93(27.84)	144(43.11)	1.12 [0.80, 1.57]	1.27 [0.93, 1.74]	n on-significance
Overall job satisfaction [mean (SD)]	2.92(0.50)	2.88(0.47)	2.79(0.51)	-0.03 [-0.09, 0.03]	-0.11 [-0.17, -0.05]***	n on-significance
Cognitive job satisfaction [mean (SD)]	2.99(0.49)	2.94(0.47)	2.86(0.50)	-0.04 [-0.10, 0.02]	-0.12 [-0.17, -0.06]***	n on-significance
Affective job satisfaction [mean (SD)]	2.85(0.66)	2.82(0.63)	2.73(0.67)	0.02 [-0.10, 0.06]	-0.10 [-0.18, -0.03]**	n on-significance

All models are adjusted for sex, age, family composition, parental education, participant education and self-rated health.  
 \*p value<0.1, \*\*p value<0.05, \*\*\*p value<0.001

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