

# **The Nonlinear Effects of Self-Esteem on Adolescent Delinquency**

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Sociologists and psychologists have long considered self-esteem as an important correlate of delinquent behavior (Caldwell, Beutler, Ross, & Silver, 2006; Mason, 2001). A basic and widely accepted hypothesis is that all persons have a basic need to think and feel well about themselves; therefore, achieving self-esteem is a basic and fundamentally universal motive for human behaviors. The assumption has been adopted by sociologists, psychologists, and criminologists to account for diverse human behaviors, including criminal and delinquent behaviors. Furthermore, many programs for prevention and intervention of juvenile deviance are also based on this premise that low self-esteem is mainly a risk factor of antisocial and delinquent behaviors; a key element to successfully prevent and intervene juvenile delinquency is to enhance their self-respect, self-esteem, and self-confidence (Eastman, 2004; Wooldredge, Harman, Latessa, & Holmes, 1994).

Among the research on the relationships between self-esteem and delinquency, self-derogation theory of delinquency proposed by Kaplan (1975, 1980) has been very influential and drawn much attention. This theory is built on an assumption that all persons have a basic need to think and feel well about themselves, and avoid negative self-evaluations. The experience of negative self-feelings motivates people to reduce negative feelings and to restore positive self-regard. Especially in adolescence, most boys and girls develop positive views of self from participating in the conventional reference groups (e.g., family relationships and peer friendship network) and committing to conventional activities (e.g., school participation and performance). When they are not successful at conforming to the standards of these reference groups and conventional activities, they experience being rejected, devalued,

and negative self-evaluations. Such psychological discomfort, in turn, motivates individuals to seek alternative sources to restore self-regard. One alternative that is available to many youths is to associate with delinquent peers and engage in deviant behaviors because they have little to lose by deviating and something to gain in terms of self-esteem and being accepted by delinquent peers. In this way, delinquent behaviors constitute adaptive, defensive or self-protective responses to the low self-evaluations that result from rejection by conventional reference groups.

Generally speaking, Kaplan's theory depicts a developmental process that unfolds through time and a sequence of changes. Also, the theory suggests that there is a reciprocal relationship between self-regards and delinquent behaviors. Two main hypotheses can be derived from this theory. First, the self-defense hypothesis describes the motivation effect of low self-esteem on subsequent delinquency.

When boys and girls are rejected by conventional reference groups, they experience lowered self-esteem, diminished commitment to the conventional reference groups and activities, and increased motivation to associate with deviant peers and commit delinquent behaviors. Therefore, low self-esteem is expected to increase delinquent involvement. Second, the self-enhancement hypothesis depicts the enhancement effect of delinquent participation on subsequent increases in self-esteem.

Self-derogation theory asserts that associating with delinquent peers and involving in deviant behaviors would restore youths' sense of self that has been damaged by devaluing experiences. Delinquency functions as enhancement of self-esteem by allowing youths to (1) avoid further devaluing experiences from failures in meeting the conventional standards; (2) keep youths stay away from recognizing such failures and rejections by conventional reference groups; or (3) provide a new set of deviant standards that the youths can adopt to rebuild positive evaluations for themselves.

Consequently, delinquent participation is expected to lead to greater self-esteem (Kaplan, 1996).

Some of the early empirical test of this theory provided support for Kaplan's self-derogation theory, but the statistical and methodological limitations of the studies were criticized (Mason, 2001; Wells, 1989; Wells & Rankin, 1983); for example, early studies used cross-sectional data or two-wave panel data to test the theory and only weakly suggested causal relationships. The subsequent studies improved research design by adopting more elaborate multivariate, latent variable simultaneous structural equations modeling procedures. The results of these studies are mixed. Studies have found that the negative effect of self-esteem on delinquency were either supported (Mason, 2001) or rather small (Wells & Rankin, 1983), and the effect of delinquency upon self esteem was either self-enhancing(Wells, 1989), self-derogating (Soon J. Jang & Thornberr, 1998), or negligible (Wells & Rankin, 1983).

In order to deal with the conflicting results, Kaplan and colleagues have conducted a series of studies and respecified the causal structure of initial self-derogation model (Kaplan, Johnson, & Bailey, 1986; Kaplan, Martin, & Johnson, 1986). Specifically, regarding the self-defense hypothesis, Kaplan and colleagues speculated that self-esteem does not directly predict delinquent involvement. Rather, delinquent disposition plays as a mediator in the relationship between low self-esteem and delinquent behavior. Their results provided support to the respecified self-derogation model by illustrating that low self-esteem was positively related to delinquent motivations or dispositions, which in turn was positively related to delinquent behaviors. About the self-enhancement hypothesis, studies also suggested that the self-enhancing effect of delinquency on self-esteem is conditional by the initial level of self-esteem. For example, Wells (1989) found that the

self-enhancement effects of delinquent involvement occur mainly among the youths who have extremely low self-esteem and who whose self-esteem needs are especially strong.

Although Kaplan's self-derogation theory has been elaborated and attracted much research attention over the years, the existing research literature on the relationship between self-esteem and delinquency still lacks strong and dependable findings. The research literature so far represents a picture of weak associations and contradictions. In view of the mixed and doubtful findings, some scholars even have advocated to abandon the research on self-esteem and delinquency (e.g., McCarthy & Hoge, 1984). However, some important issues about the relationship between self-esteem and delinquency are still lack of investigation as well. For example, regarding the self-defense hypothesis, whether the effect of self-esteem upon delinquent involvement over time is linear or nonlinear is not discussed and examined yet in prior studies. Especially, adolescents with high level of self-esteem may commit more delinquent behaviors than researchers usually think. First, the effects of social control on adolescents with high self-esteem may be lower than those with regular or low self-esteem. Second, adolescent with high self-esteem may be more non-conventional and innovative, and it is very likely that they are more non-restricted to conventional boundaries. Thus, those adolescents with high self-esteem may commit more delinquent behaviors than what theories would expect. In other words, the effects on delinquency may be non-linear. The relationship between self-esteem and delinquency may be a U-shape in which adolescents with low self-esteem have high levels of delinquent involvement predicted by self-defense hypothesis. As the levels of self-esteem increase, the extent of adolescent delinquency decreases. However, those with high self-esteem may have an

increased tendency to engage in delinquent acts. The present study aims at examining this issue to get a fuller understanding of self-defense hypothesis by adopting the longitudinal data of a Taiwanese adolescent sample. Especially, this study intends to examine the following two hypotheses:

1. Are the effects of self-esteem on delinquency are nonlinear? Particularly, whether the relationships between self-esteem and delinquency are U-Shape?
2. If the relationship is U-Shape, whether the mechanisms leading to delinquency for adolescents with high self-esteem and those with low self-esteem are different?

## **Methods**

### **The Sample**

The data used in this study are derived from Taiwan Youth Project (TYP), a panel study conducted by the Institute of sociology, Academic Sinica, Taiwan. This project is a longitudinal research with repeated surveys each year since 2000. It consists of adolescents of two cohorts: 2,696 seventh graders (J1 sample) and 2,890 ninth graders (J3 sample). The goal of this project is to use comprehensive research design to cover different aspects of the interplay among family, school, and community, which shape adolescents' future development.

The adolescent sample was selected on a school-based, multi-stage stratified sample scheme. A sample of junior high schools in Taipei City, Taipei County, and Yi-Lan County, stratified by the level of urbanization was selected in the year of 2000. As Yi-Lan is a mostly agriculture-based county, Taipei City is the largest metropolitan city in Taiwan, and Taipei county is in-between these two regions. In the first stage of sampling, according to the level of urbanization, Taipei City and Taipei County were each divided into three strata, while Yi-Lan County was divided into two strata. In the second stage, the number of schools to be chosen from each of the three regions

was determined based on the number of students registered in each stratum. In total, 40 schools were chosen: 16 from Taipei City, 15 from Taipei County, and 9 from Yi-Lan County for both J1 and J3 samples separately. In each selected school, two classes were randomly chosen and all students in the class were surveyed.

In this study, the sample of the original ninth graders in the first wave (J3 cohort) is adopted. The data in Wave 1 (ninth grade), Wave 4 (twelfth grade) and Wave 7 (junior year in college) surveyed in 2000, 2003, and 2006 are analyzed. In Wave 1, 2,861 ninth graders completed student questionnaires. In Wave 4, when the original sample became twelfth graders, 2,072 were re-interviewed. When adolescents became junior students in college, 1,875 completed the questionnaires. Additionally, the respondents with missing values in the variables used in the study are listwised; the final sample size is 1,532.

The sample includes 770 male adolescents and 762 female adolescents. Among the adolescents in the final sample, 38.2% of them are from Taipei city, 38.5% from Taipei County, and the rest 23.4% from Yi-Lan County. About 24 percent of adolescents had some kind of deviant behaviors in the prior year before the first interview, while 18 percent and 32 percent of adolescents had deviant involvement one year before the follow-up two waves respectively.

## **Measures**

To examine the relationships between self-esteem and delinquent involvement, the data in Wave 1 (ninth grade), Wave 4 (twelfth grade) and Wave 7 (junior year in college) of J3 cohort are analyzed. Variables used in this study can be divided into three categories: delinquency, self-esteem, and control variables. All variables are derived from youths' reports in Waves 1, 4, and 7. Additionally, in order to

investigate whether the mechanisms of adolescents with low self-esteem and those with high self-esteem are different, adolescents' grades in the school are included in Waves 1 and 4.

**Delinquency.** The measure of delinquency consists of different behaviors to measure the extent of youths' delinquent involvement. The items of delinquent involvement in the survey are different in the three waves of data. In the first interview, youths were asked to report whether they had ever committed delinquent behaviors and frequency in the previous year, including running away from home, truancy, deliberately destroying something that was not their own, stealing, having sexual behavior, hitting someone or fighting, extorting, smoking cigarettes or drinking alcohol, chewing betel nuts, and using illegal drugs. In the interview of Wave 4 when the adolescents became twelfth grade, they were asked to report the frequency of following deviant behaviors, such as running away from home, stealing, hitting someone or fighting, smoking cigarettes or drinking alcohol, and using illegal drugs. When in the Wave 7, the youth subjects were asked to report the frequency of some different types of deviant behaviors, including deliberately destroying something that was not their own, stealing, using illegal drugs, cheating or deceiving, and drag racing. Their responses were coded in a five-point scale (1 = never, 2 = once or twice, 3 = sometimes, 4 = often, and 5 = always). Higher scores indicate that the youth subjects engaged in more deviant behaviors one year before the interview.

In dealing with the delinquency scale, this study adopts the Item Response Theory (IRT) to construct this scale. IRT is especially effective in dealing with delinquent behaviors, since that some delinquent items usually include a relatively skewed distribution. In this study, about 68% ~ 82% of the youth subjects reported that they had never engaged in any of the delinquent behaviors measured in the

questionnaire in the three waves. Additionally, the scale intervals of adolescents' self-reported delinquent behaviors are not always equal, since the criminal behaviors usually distribute in the more serious intervals. IRT can overcome the aforementioned problems by providing continuous latent scores, equal intervals, and an approximately normal distribution (Felson & Staff, 2006). Therefore, IRT can help to obtain a conclusion that better conforms to the fact. IRT scores are used as the measure of adolescents' delinquent behaviors to substitute mean scores. In so doing, the IRT scores can be taken as a basis of discriminating the seriousness of adolescents' delinquent involvement.

Furthermore, as shown in the TYP data, longitudinal studies do not usually adopt same items or scales to measure the same variables in each time point. Hence, it is not appropriate to indicate the levels of change by subtracting the original scores. Referring to Moller and colleagues' (2006) method in dealing with IRT scores of verbal and numerical abilities in a panel dataset, this study divides the IRT theta score of adolescents' delinquency by the total number of items in each year and uses the results as the basis of calculating adolescents' delinquent scores. Since the number and content of delinquency items in Waves 1, 4, and 7 are different in TYP data, this study utilizes the Rasch model (single-parameter model) in IRT to deal with the data. The respondents' ability values estimated by the Rasch model<sup>1</sup> have the property of interval scale. Therefore, the scores of different time points can be put together in a scale, and subtracting the scores directly can show the levels of change (Wang & Wu, 2003).

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<sup>1</sup> In longitudinal studies, the items appear repeatedly. Perhaps, the meaning of items may be different due to the change of time. Additionally, different items may be measured in different time points for the same constructs. So, scores in different time points could not be put in a scale to do the comparison (Wang & Wu, 2003). But, Rasch model has the characteristics of interval scale and objectivity, and it also can put items of different time points in a scale to compare. Therefore, Rasch model is an appropriate tool to deal with the different number and content of delinquency items in the repeated questionnaires in this model.



**Self-Esteem.** This is a measure of multiple dimensions reflecting adolescent respondents' self-concept and self-evaluation. This measure adopts nine items from Rosenberg's (1965) Self-Esteem Scale, including following items: (1) I could not solve some of my problems; (2) I could not control what happens to me; (3) I feel very powerless that I have to deal with all problems in my life; (4) I am a valuable person; (5) I do not have many things to be proud of; (6) I use a very optimistic attitude to view myself; (7) I am satisfied with myself; (8) I certainly feel useless at times; and (9) Occasionally, I think I am no good at all. Youths' responses are measured by a four-point scale (1 = highly agree, 2 = agree, 3 = disagree, and 4 = quite disagree). Responses are coded in a way that higher scores present that adolescents hold more positive evaluations toward themselves. After the factor analysis, the items 1, 2, 3, and 5 have high loadings in a factor (namely, "self-efficacy"); items 4, 6, and 7 have high loadings in a factor (namely, "self-worth"); and items 8 and 9 have high loadings in a factor (namely, "self-satisfaction"). These three factors and a general index of self-esteem are used in the following analyses.

**Control Variables.** Three major socio-demographic background characteristics that previous researchers identify as most relevant to the study of delinquency (Sung Joon Jang, 2002; Loeber & Stouthamer-Loeber, 1986; Sampson & Laub, 1993; Thornberry, 1987) are included in the analysis as well. These structural variables are controlled when the effects of self-esteem on delinquency are estimated, including sex (1 = male and 2 = female), school location (1 = Taipei City, 2 = Taipei County, and 3 = Yi-Lan County), and adolescents' age<sup>2</sup>.

**Grades.** In order to investigate whether the mechanisms of committing delinquency for adolescents with low self-esteem and those with high self-esteem are

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<sup>2</sup> Youth participants' age is calculated by the following formula: age=2000-(1911+ birth years) in the first wave.

different, adolescents' grades in the school are included. This measure was available in Waves 1 and 4. Youth subjects were asked to report their average grades in the last semester before the interview. Their responses were coded into five categories in Wave 1: ranked the top five in the class, ranked number 6 to 10 in the class, ranked number 11 to 20 in the class, ranked number 21 to 30 in the class, and ranked after number 30 in the class. Their responses were also coded into five categories in Wave 4: excellent (ranked the top five in the class), good (ranked number 6 to 10 in the class), middle (ranked number 11 to 20 in the class), middle-last in the class, and very last in the class.

### Data analysis

To estimate the effects of self-esteem upon delinquent involvement over time, the current study adopts three waves of data to estimate a random-effects Poisson model with youths' age, gender, and school locations controlled. The random-effects Poisson model accommodates unobserved heterogeneity by allowing each individual to have his or her own mean rate of delinquent involvement. The discrete random variable  $Y_{it}$  is a variety score of delinquent behavior that is distributed Poisson, with conditional density:

$$f(Y_{it}|\theta_{it}) = \frac{\exp(-\theta_{it}) \theta_{it}^{Y_{it}}}{Y_{it}!} \quad (1)$$

The parameter  $\theta_{it}$  is made up by a linear predictor ( $\beta X_{it}$ ) and a random, person-specific, unobserved effect ( $u_i$ ) that enter the conditional mean function multiplicatively. That is,

$$\begin{aligned} \theta_{it} &= \exp(\beta X_{it} + u_i) \\ &= \exp(\beta X_{it}) \exp(u_i) \\ &= \lambda_{it} \alpha_i \end{aligned} \quad (2)$$

where  $\lambda_{it}$  is  $\exp(\beta X_{it})$  and  $\alpha_i$  is  $\exp(u_i)$ . When taking logs, the log-linear formulation of the Poisson model is obtained:

$$\ln \theta_{it} = \beta X_{it} + u_i \quad (3)$$

The individual effect  $u_i$  accommodates heterogeneity in  $\theta_{it}$  across individuals. By assumption,  $\alpha_i = \exp(u_i)$  is distributed as a gamma random variable, with moments  $E(\alpha_i) = 1$  and  $V(\alpha_i) = 1/\delta$ , where  $\delta$  is a parameter to be estimated. In the random-effects formulation, the covariance between the random effect and the regressors is assumed to be zero:  $E(X_{it}u_i) = 0$ . Note that the first and second moments of the Poisson random variable  $Y_{it}$  are  $E(Y_{it}) = \lambda_{it} = \exp(\beta X_{it})$  and  $V(Y_{it}) = \lambda_{it} + \lambda_{it}^2/\delta$ , respectively.

To relax the assumption that the individual effect ( $u_i$ ) is uncorrelated with the explanatory variables, this study focuses on within-individual variation in self-esteem. This study adopts the method suggested by Raudenbush and Bryk (2002) and Brame, Bushway, and Paternoster (1999) to examine the within-individual variation and interpret the following results. The following analyses are done with STATA 11.0.

## Results

Results for the random-effects model with within-individual variation are provided in Table 1. A significant within-individual coefficient indicates that a change in self-esteem has an important impact on delinquent involvement.

(Table 1 is about here)

In the first two columns of Table 1, the results show the effects of general self-esteem upon youths' delinquent involvement over time. Here, youths' scores on

self-esteem scale are divided into five quantiles from the lowest to the highest scores. In the first column, the results show that the male adolescents had more delinquent involvement than females did; the extent of delinquent involvement was broader for older adolescents than youngsters. Also, the adolescents from Taipei City, Taipei County, and Yi-Lan County had different levels of delinquent engagement. In terms of self-esteem, the significant coefficient of  $-.124$  indicates that with increase of self-esteem by one standard deviation, the extent of youths' delinquent involvement decreased by 26.4%.

In the second column, the squared term of self-esteem was added into the model to predict delinquency. The significant coefficient of the squared term ( $0.047$ ) denotes that the relationship between self-esteem and delinquency is nonlinear. That is, the effects of self-esteem on youths' delinquent engagement over time are not linear in the TYP sample. Figure 1 shows the nonlinear relationships over the three waves of data, while Figure 2 shows the nonlinear relationships in each wave. From the figures, it is worthy to note that youths with the highest scores of self-esteem had a tendency to engage in more delinquent behaviors. A result kind of contradicts to the self-defense hypothesis of Kaplan's self-derogation theory.

(Figure 1 is about here)

(Figure 2 is about here)

For the rest of columns in Table 1, the results show the effects of each factor of self-esteem on youths' delinquent engagement. In the third column, the coefficient of  $-.076$  reaches statistical significance and implies that, with self-efficacy increase by one standard deviation, youths' delinquent involvement would decrease by 23.9%. In the fourth column, as the squared term of self-efficacy was added into the model, the result denotes that, as the one in general self-esteem, the effects of self-efficacy on

delinquency over time are not linear. Figure 3 also shows the nonlinear relationship between self-efficacy and delinquent engagement in three different time points.

(Figure 3 is about here)

For the second factor of self-esteem, self-worth, the effects upon youths' delinquent involvement are shown in the following columns in Table 1. Before the squared term was added, the significant coefficient (-.172) indicates that youths' delinquent engagement would reduce by 36.2% with the increase of self-worth by one standard deviation. After the squared term of self-worth was added into the model, the coefficient of .037 reaches statistical significance. This denotes that the effects of self-worth on youths' delinquency are not linear either. The nonlinear relationships between self-worth on delinquency in Waves 1, 4, and 7 are shown in Figure 4.

(Figure 4 is about here)

In the last two columns of Table 1, the effects of self-satisfaction upon delinquent involvement are examined. In the first column, the coefficient of -.033 is not statistically significant. When the squared term of self-satisfaction was added to the model, the statistically significant coefficient (0.023) expresses that the effects of self-satisfaction on youths' delinquent involvement are not linear. Especially, the nonlinear relationships between youths' feelings of self-satisfaction on delinquent engagement in their ninth grade, twelfth grade, and junior year in college are delineated in Figure 5 much more obviously.

(Figure 5 is about here)

In order to further investigate the differences between adolescents with high self-esteem and those with low self-esteem, this current study compares the types of delinquent involvement for adolescents with highest self-esteem score in the five

quantiles with those with lowest self-esteem scores (Tables 2~4). The results show that, adolescents with high self-esteem committed the similar delinquent behaviors as those with low self-esteem did. In Wave 1, adolescents with lowest self-esteem scores mainly engaged in destroying something not their own (23.4%), truanting (21.6%), smoking or drinking (15.9%), hitting someone or fighting (11.9%) and stealing (10.6%), while adolescents with highest self-esteem scores mainly engaged in destroying something not their own (23.2%), truanting (22.2%), hitting someone or fighting (17.5%), and smoking or drinking (16.5%).

In Wave 4, among those adolescents committing delinquent behaviors, 50% of adolescents with the lowest self-esteem scores smoked cigarettes or drank alcohol, 15.3% hit someone or fought, 14.1% ever ran away from home, and 12.9% stole something. For adolescents with the highest self-esteem scores, about three-quarters smoked cigarettes or drank alcohol, 13.4% hit someone or fought, and 10.1% ran away from home. In Wave 7, among the low self-esteem adolescent who ever committed some kind of delinquency in the previous year, 38.8 % of them cheated or deceived, 28.9% did drag racing, and 22.8% destroyed something not their own. For high self-esteem adolescents, they mainly engaged in cheating or deceiving (51.2%), drag racing (32.1%), and destroying something (15.5%). Generally speaking, high self-esteem adolescents and low self-esteem adolescents engaged in similar types of delinquent behaviors. The obvious difference is that low self-esteem adolescents had a stronger tendency to steal or using illegal drugs than those with high adolescents.

(Table 2 is about here)

(Table 3 is about here)

(Table 4 is about here)

Moreover, this study also investigates whether the mechanisms of adolescents with low self-esteem and those with high self-esteem are different, adolescents' grades in the school are considered. Table 5 shows the results. In terms of average grades and rank in the class, it seems that adolescents with self-esteem did not have a better performance than those with low self esteem. On the contrary, in Waves 1 and 4, adolescents with low self-esteem had higher ranks in the class than those with high self-esteem. In Wave 1, among adolescents with the lowest self-esteem scores, 13.97% had ranked top five in the class, 22.19% ranked number 6 to 10, 30.41% ranked number 11 to 20, 18.9% ranked 21 to 30, and 14.52% ranked number after 30 in the class. For adolescents with the highest self-esteem scores, 10.51% had ranked top five in the class, 15.59% ranked number 6 to 10, 30.17% ranked number 11 to 20, 23.39% ranked 21 to 30, and 20.34% ranked number after 30 in the class. The patterns are similar in Wave 4.

(Table 5 is about here)

## **Discussion**

The current study intends to examine the self-defense hypothesis derived from Kaplan's self-derogation theory by adopting the longitudinal data of a Taiwanese adolescent sample. The results show that the effects of self-esteem on delinquency are non-linear. Especially, the relationship between self-esteem and delinquency is U-shape. As predicted by the self-defense hypothesis, adolescents with low self-esteem are more likely to commit delinquent behaviors. As the level of self-esteem increases, the tendency to engage in delinquent behaviors decreases. But, the non-linear findings indicate that, for those adolescents with high self-esteem, their tendency to commit delinquency raises which is contrary to the prediction of

self-defense hypothesis.

The finding further indicates that the types of delinquent behaviors committed by adolescents with high self-esteem are similar to those committed by low self-esteem adolescents. They mainly engaged in destroying something not their own, smoking cigarettes or drinking alcohol, hitting someone or fighting, cheating or deceiving, and drag racing. Nevertheless, it seems that adolescents with low self-esteem had a stronger tendency to steal or using illegal drugs than those with high self-esteem.

In order to investigate whether the mechanisms leading to delinquency for adolescents with low self-esteem and those with high self-esteem are different, this study considers adolescents' academic performance in the school as a possible mechanism. Originally, this study expects that adolescents with low self-esteem may experience poorer academic performance than those with high self-esteem, and therefore, the low self-esteem partly due to poor academic performance may induce adolescents to engage in delinquent behaviors to restore positive self-regard.

However, the results are contrary to what this study expects. Adolescents with low self-esteem seem to have a relatively better academic performance than those with high self-esteem. Does this finding reflect that academic performance is not relevant to the level of self-esteem, and is not a mechanism leading to delinquency either? This is an interesting question that needs further investigation by adopting other related variables into the model to explore.

Regarding why the adolescents with high level of self-esteem commit more delinquent behaviors than what theories would expect, there are three possible explanations. First, the effects of social control on adolescents with high self-esteem may be lower than those with regular or low self-esteem. Second, adolescent with high self-esteem may be more non-conventional and innovative, and it is very likely



that they are more non-restricted to conventional boundaries. Third, adolescents with high self-esteem may commit delinquency as a means to protect themselves. Baumeister, Smart, and Boden (1996) suggest “threatened egotism” hypothesis to explain that high levels of self-esteem may be conducive to crime. They indicate, when individuals with inflated self-esteem are faced with negative external evaluations, they may react violently as a means to maintain self-esteem. Costello and Dunaway’s study (2003) provides some support to the threatened egotism hypothesis in that they found that egotism was positively associated violent and nonviolent delinquency.

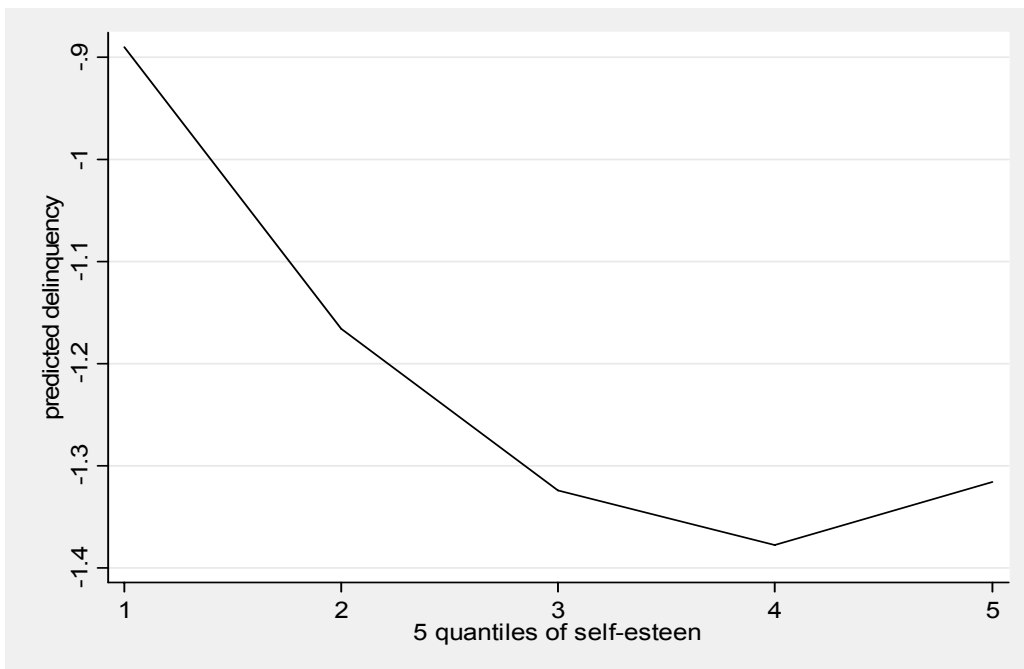
Researchers have argued that high self-esteem serves to insulate the individual from the temptations of crime (e.g., Jensen, 1973). Although the mechanisms leading to delinquency for adolescents with high and low self-esteem are needed further investigation, the finding in this current study indicates that adolescents with high self-esteem also commit delinquency. They engage in similar delinquent behaviors as those adolescents with low self-esteem. Therefore, the results clearly shows that self-esteem is not a protective factor of delinquency as researchers usually think.

**Table 1 Effects of Self-esteem on delinquency over time**

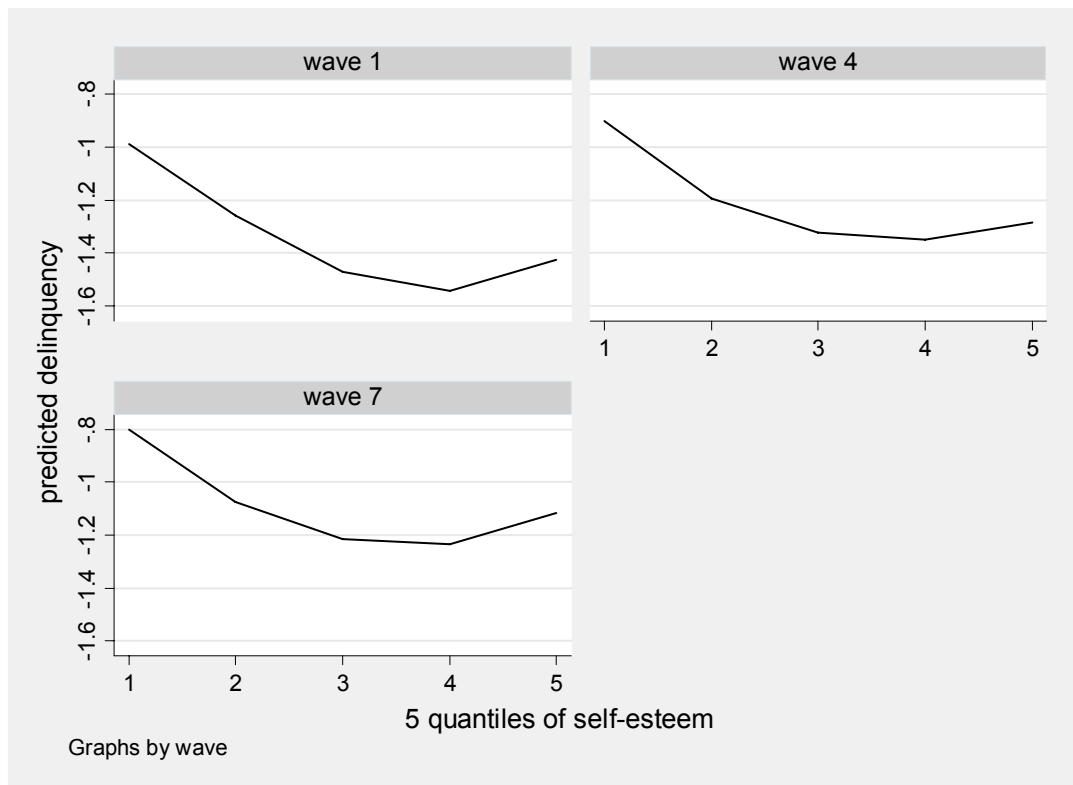
VARIABLES	Delinquency	Delinquency	Delinquency	Delinquency	Delinquency	Delinquency	Delinquency	Delinquency
Delinquency <sub>t-1</sub>	0.228*** (0.044)	0.227*** (0.044)	0.220*** (0.044)	0.219*** (0.044)	0.222*** (0.043)	0.219*** (0.043)	0.221*** (0.044)	0.221*** (0.044)
age	0.164*** (0.020)	0.160*** (0.020)	0.178*** (0.020)	0.178*** (0.020)	0.140*** (0.021)	0.144*** (0.021)	0.178*** (0.020)	0.181*** (0.020)
sex	-0.828*** (0.076)	-0.825*** (0.076)	-0.824*** (0.076)	-0.819*** (0.076)	-0.840*** (0.076)	-0.839*** (0.076)	-0.812*** (0.076)	-0.809*** (0.076)
school location	-0.015! (0.008)	-0.014! (0.008)	-0.015! (0.008)	-0.015! (0.008)	-0.015! (0.008)	-0.014! (0.008)	-0.014! (0.008)	-0.014! (0.008)
SE_5	-0.124*** (0.025)	-0.394*** (0.119)						
(SE_5) <sup>2</sup>		0.047* (0.020)						
SE_A			-0.076*** (0.015)	-0.232* (0.091)				
(SE_A) <sup>2</sup>				0.008! (0.004)				
SE_B					-0.172*** (0.025)	-0.559*** (0.124)		
(SE_B) <sup>2</sup>						0.037** (0.012)		
SE_C							-0.033 (0.021)	-0.434** (0.137)
(SE_C) <sup>2</sup>								0.023** (0.008)
Constant	-2.877*** (0.446)	-2.516*** (0.473)	-2.706*** (0.458)	-1.956** (0.628)	-1.740*** (0.499)	-1.610* (0.709)	-3.199*** (0.468)	-2.856*** (0.530)
Number of Cases	1532	1532	1532	1532	1532	1532	1532	1532
ll	-2230	-2227	-2231	-2229	-2218	-2238	-2242	-2238
X <sup>2</sup>	273.9	281.4	273.7	278.6	297.7	257.1	247.2	257.3
df	5	6	5	6	5	6	5	6

Notes: (1) Standard errors in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, ! p<0.1

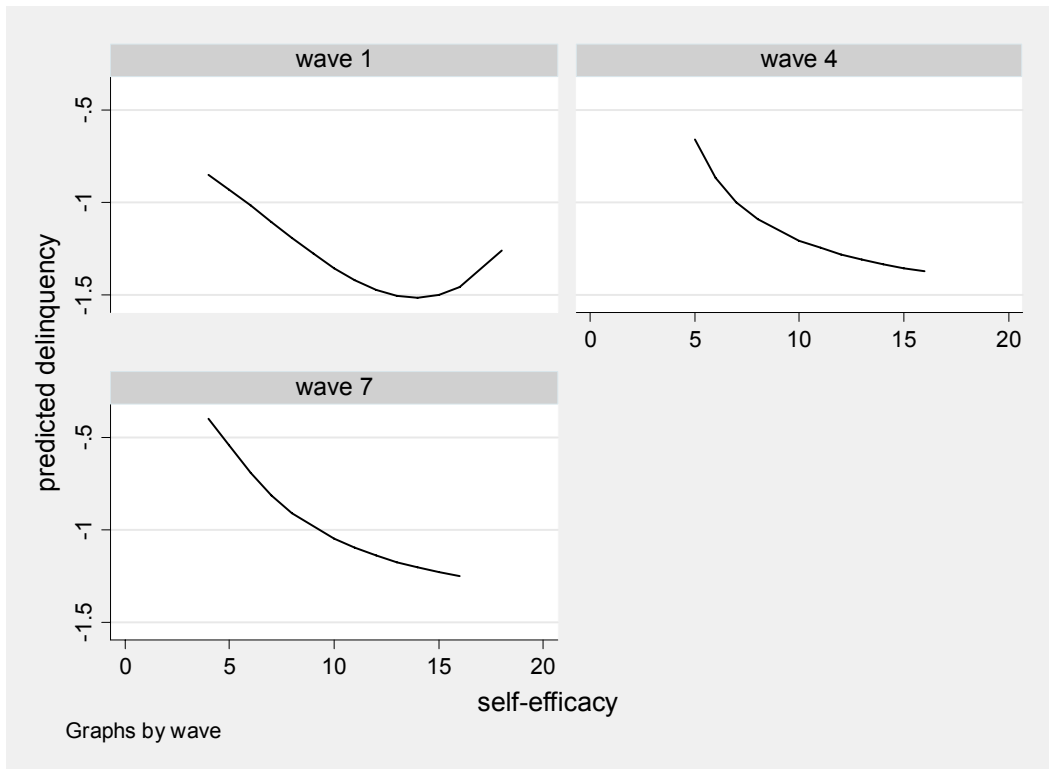
(2) "SE\_5" denotes five quantiles of self-esteem from the lowest to the highest scores; "SE\_A" denotes the first factor of self-esteem scale, self-efficacy, while "SE\_B" and "SE\_C" denotes the other factors, self-worth and self-satisfaction, respectively.



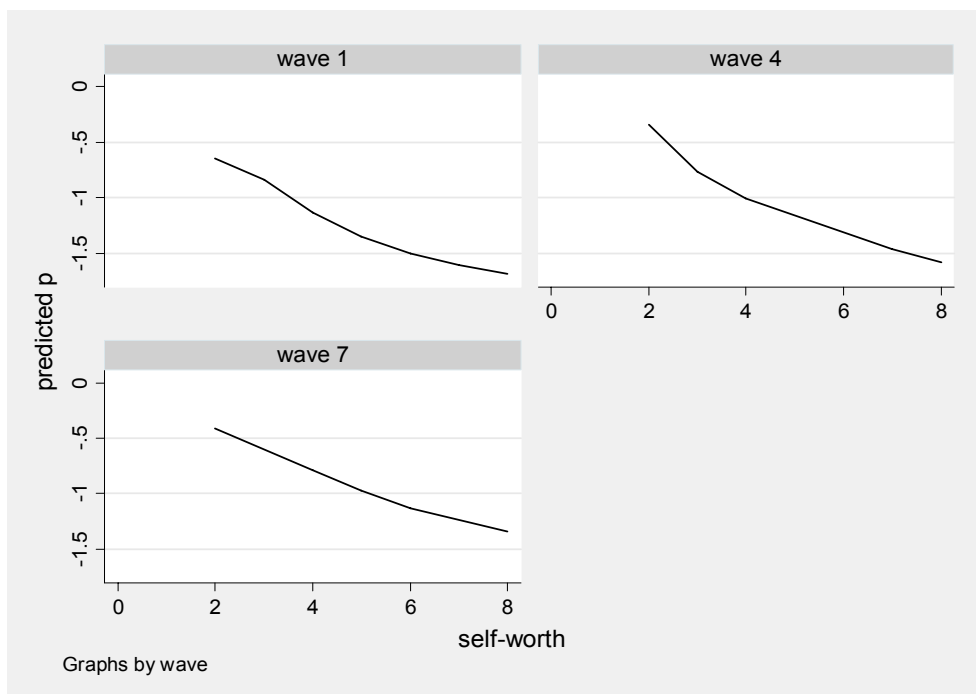
**Figure 1: Effects of self-esteem on delinquency over three waves**



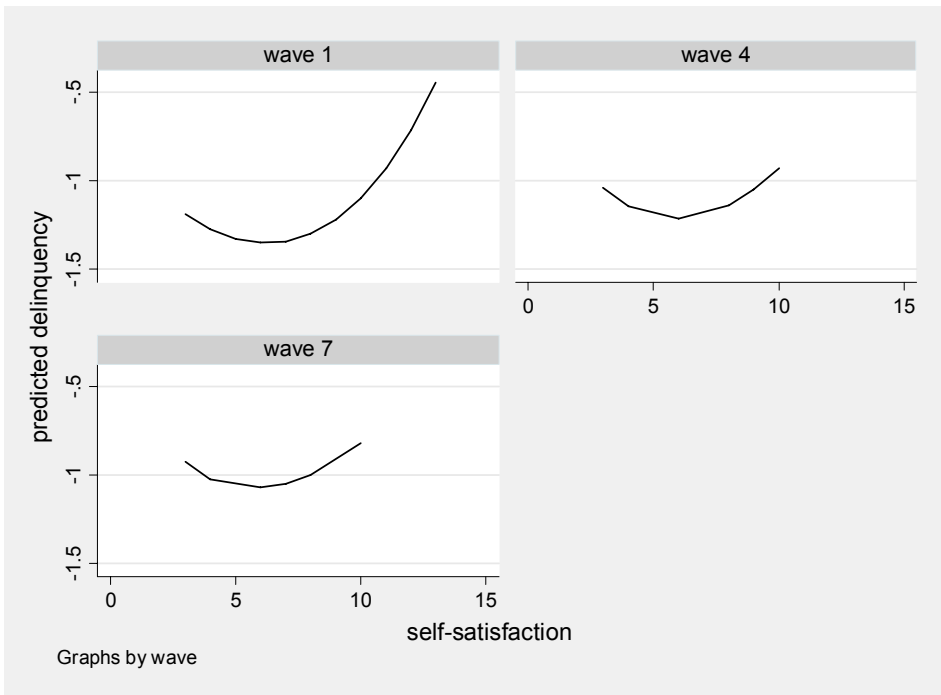
**Figure 2: Effects of self-esteem on delinquency in each wave**



**Figure 3: Effects of self-efficacy on delinquency in each wave**



**Figure 4: Effects of self-worth on delinquency in each wave**



**Figure 5: Effects of self-satisfaction on delinquency in each wave**

**Table 2: Delinquency by adolescent self-esteem in Wave 1**

Delinquency 5 quantiles of self-esteem	running away from home	truanting	destroying something	stealing	having sexual behavior	hitting someone or fighting	extorting	smoking cigarettes or drinking alcohol	chewing betel nuts	using illegal drugs	Total
<b>1</b>	<b>16</b>	<b>69</b>	<b>75</b>	<b>34</b>	<b>7</b>	<b>38</b>	<b>11</b>	<b>51</b>	<b>14</b>	<b>5</b>	320
2	11	79	81	38	5	58	9	54	10	2	347
3	7	32	42	10	1	14	2	24	4	1	137
4	7	57	54	21	2	24	4	39	5	1	214
<b>5</b>	<b>5</b>	<b>43</b>	<b>45</b>	<b>16</b>	<b>7</b>	<b>34</b>	<b>5</b>	<b>32</b>	<b>7</b>	<b>0</b>	194
Total	46	280	297	119	22	168	31	200	40	9	1212

**Table 3: Delinquency by adolescent self-esteem in Wave 4**

Delinquency 5 quantiles of self-esteem	running away from home	stealing	hitting someone or fighting	smoking cigarettes or drinking alcohol	using illegal drugs	Total
<b>1</b>	<b>35</b>	<b>32</b>	<b>38</b>	<b>126</b>	<b>17</b>	248
2	6	5	8	47	3	69
3	7	11	9	52	3	82
4	11	7	16	39	3	76
<b>5</b>	<b>9</b>	<b>0</b>	<b>12</b>	<b>65</b>	<b>3</b>	89
Total	68	55	83	329	29	564

**Table 4: Delinquency by adolescent self-esteem in Wave 7**

Delinquency 5 quantiles of self-esteem	destroying something	stealing	cheating or deceiving	drag racing	using illegal drugs	Total
<b>1</b>	<b>53</b>	<b>15</b>	<b>90</b>	<b>67</b>	<b>7</b>	232
2	37	13	86	68	5	209
3	23	7	53	40	6	129
4	31	5	95	63	3	197
<b>5</b>	<b>13</b>	<b>1</b>	<b>43</b>	<b>27</b>	<b>0</b>	84
Total	157	41	367	265	21	851

**Table 5: Academic performance by adolescent self-esteem**

5 quantiles of self-esteem		Wave 1				
		1	2	3	4	5
Rank						
Top five	<b>51</b> <b>(13.97%)</b>	30 (8.20%)	12 (6.25%)	26 (8.36%)	<b>31</b> <b>(10.51%)</b>	
Number 6~10	<b>81</b> <b>(22.19%)</b>	86 (23.50%)	38 (19.79%)	58 (18.65%)	<b>46</b> <b>(15.59%)</b>	
Number 11~20	<b>111</b> <b>(30.41%)</b>	116 (31.69%)	68 (35.42%)	94 (30.23%)	<b>89</b> <b>(30.17%)</b>	
Number 21~30	<b>69</b> <b>(18.90%)</b>	73 (19.95%)	42 (21.88%)	66 (21.22%)	<b>69</b> <b>(23.39%)</b>	
After number 30	<b>53</b> <b>(14.52%)</b>	61 (16.67%)	32 (16.67%)	67 (21.54%)	<b>60</b> <b>(20.34%)</b>	
Total	365 (100%)	366 (100%)	192 (100%)	311 (100%)	295 (100%)	
<hr/>						
5 quantiles of self-esteem		Wave 4				
		1	2	3	4	5
Rank						
Top five	<b>41</b> <b>(6.45%)</b>	22 (6.98%)	12 (3.66%)	7 (2.46%)	<b>15</b> <b>(4.13%)</b>	
Number 6~15	<b>106</b> <b>(16.67%)</b>	51 (16.19%)	46 (14.02%)	36 (12.68%)	<b>52</b> <b>(14.33%)</b>	
Number 16~25	<b>247</b> <b>(38.84%)</b>	105 (33.33%)	102 (31.10%)	98 (34.51%)	<b>132</b> <b>(36.36%)</b>	
Middle-last	<b>180</b> <b>(28.30%)</b>	97 (30.79%)	108 (32.93%)	91 (32.04%)	<b>115</b> <b>(31.68%)</b>	
Last	<b>62</b> <b>(9.75%)</b>	40 (12.70%)	60 (18.29%)	52 (18.31%)	<b>49</b> <b>(13.50%)</b>	
Total	636 (100%)	315 (100%)	328 (100%)	284 (100%)	363 (100%)	



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