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ABSTRACT

This study is a re-analysis of four waves of data from the National Youth Survey (NYS) begun in 1976 on 1,725 adolescents and comprising a representative national sample. A subset of 423 subjects were selected for this study. Subjects were categorized into three delinquency onset groups: early onset (onset at age 12 years or younger); late onset (onset after age 12 years), and no-onset. The NYS data contained data on delinquency involvement, psychosocial conditions, and demographic characteristics. Analyses were undertaken to determine the impact of age on onset of delinquency on subsequent level, type, and persistence of participation in delinquency. With the exception of damaged property and minor assault, no significant differences between early and late onset groups were found as to type of crime. Early onset subjects, however, were more likely to engage in serious patterned delinquency and to do so chronically. No significant demographic differences were found, except that males were more likely than females to be in the early onset group. The early and late onset subjects scored poorly on all psychosocial scales and scored significantly poorer than did no-onset subjects. These results suggest age of onset may be an important risk determinant in delinquency research. (Author/NB)

A Longitudinal Analysis of Age of Onset Effects on Delinquency [1]

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Running Head: ONSET AGE AND DELINQUENCY

Abstract

This is a re-analysis of four waves of data from the National Youth Survey collected beginning in 1976 on 1725 adolescents and comprising a representative national sample. Subjects were categorized into three onset groups: early onset (onset 12 or before), late onset (onset after age 12), and no-onset. Analyses were undertaken to determine the impact of age of onset of delinquency on subsequent level, type, and persistence of participation. Results indicate that, with the exception of damaged property and minor assault, no significant differences between early and late onset groups were found as to type of crime. However, early onset subjects were more likely to engage in serious patterned delinquency and to do so chronically. No significant demographic differences were found, except that males were more likely to be in the early onset group. The early and late onset subjects scored poorly on all psychosocial scales and scored significantly poorer than no-onset subjects. These results, while not as potent as past studies of age of onset, still suggest age of onset as an important risk determinant in delinquency research.

Introduction

There is considerable evidence that age of onset is likely to be an important predictor and discriminant of serious and chronic delinquency and adult crime patterns. An analysis of the aggregate longitudinal studies on criminal careers noted that age of onset related to individual total frequencies (Blumstein, Cohen, Roth, & Visher, 1986). Interestingly, their graph of the trends suggests that age 13 seems to be a pivotal time for changes in risk level. Other evidence of the importance of onset are reports that early first arrests correlated to later high frequency and seriousness level (Hanson, Hennggeler, Haefle, & Rodick, 1984; Knight & West, 1975; Osborn & West, 1978; Wolfgang, Figlio, & Sellin, 1972). Loeber and Dishion (1983) report that first arrest between ages 12 and 14 improved predictive power and accuracy of subsequent delinquency better than any other single indicator, and was exceeded only by a composite measure of parenting skills in overall predictive utility. Their review indicates this variable was the best single predictor of recidivism.

In a previous cross-sectional study, Tolan and Lorion (1988) found that among a general sample of adolescent males (n=337), age of onset far exceeded individual personality, school, or family characteristics independently or collectively in explaining overall frequency, variety, and seriousness of delinquent involvement. Age of onset also proved to be a powerful

discriminative variable, improving accuracy of predicting delinquent behavior 50 to 75% over chance depending on whether the focus was on frequency, variety, or seriousness of delinquency (Tolan, 1987). The early onset delinquents fared more poorly on psychosocial indicators of individual, school, and family functioning and the onset groups were discriminated with adequate accuracy and substantial improvement over chance classification by the combined psychosocial variables (Tolan, 1987).

In sum, it appears that age of onset of delinquent behavior is probably an important variable in explaining likely course of delinquency and proneness to chronic criminal activity beyond the adolescent years (Loeber, 1985; Lorion, Tolan, & Wahler, 1987; Tolan, 1987, 198a). Accurate understanding of its role and its determinants seems to be promising for advancing our understanding of how deliquency develops, which delinquents are at-risk for serious and chronic deliquency and adult criminality, which need/merit preventive, rehabilitative, or incapacitating intervention, and the psychological and sociological contributors to delinquency's onset and desistance. The present study utilizes the opportune availability of the National Youth Survey's (NYS) representative sample and longitudinal data to test the importance of age of onset as a pivotal variable in risk prediction.

Specifically, the current study calculated age of onset based on the age at the panel in which some delinquent behavior is reported (greater than four offenses on the General Delinquency

Scale or some Index Offense) and compared a subsample of subjects (n=423) distinguished by age of onset. The analyses undertaken included comparisons of the onset groups (usually early and late) for extent of participation, involvement in patterned versus non-patterned offending, serious versus non-serious offending, chronicity of involvement, and number of arrests. In addition, psychosocial indicators of family, peer, and school functioning in the NYS data set were examined for ability to discriminate and predict age of onset group. Essentially, this study replicates the analyses performed by Elliot, Dunford, and Huizinga (1987), except age of onset is the primary independent variable here and serves to cross-validate the results reported by Tolan (1987) with a larger, more representative, longitudinal sample.

Method

Four waves of data from the National Youth Survey were available and used in these analyses. The following descriptions are derived from Elliot, Huizinga, and Ageton's (1985) and Elliot et al.'s (1987) descriptions of the sample and measure.

Subjects

The National Youth Survey (NYS) was drawn in 1976 employing a probability sample of households in the continental United States. Youths ranged in age from 11-17 at the time of the first sampling. Seventy three percent (1725) of the 2360 eligible solicited

families gave informed consent to participate. Elliot et al. (1985; 1987) report the sample was representative of the general population of this age span in this country. They also report that subject loss was relatively small across all waves, with nine percent loss through the fourth wave. Elliot et al. (1987) note that there was some selective loss by ethnicity, class, and place of residence at waves two and three. For the current study, the primary focus is on a subsample of subjects with early, late, or no onset (n=423). This sample was 51.3% female, 81.3% White, 13.9% Black, 4.0% Hispanic, and 0.7% American Indian and Asian-American, 28.4% urban, 46.1% suburban, and 25.5% rural. The mean Hollingshead composite socioeconomic index score was 43.01.

Measures

The NYS data set can be described as containing three main types of data: delinquency involvement, psycho-social conditions, and demographic characteristics. A fourth variable, age of onset, was calculated for this study.

Delinquency involvement. Delinquency involvement was measured by use of self-report (Self-Report of Delinquency [SRD]; Elliot et al., 1985; 1987) and official arrest records (number of arrests). The SRD contains 47 items that were "selected to be representative of the full range of official acts for which juveniles could be arrested" (Elliot et al., 1987, p. 96) was designed to "address the major criticisms of prior self-report

measures" (Elliot et al., 1987, p. 95). Subjects report the number of times they committed each offense in the past year and are secondarily categorized into response categories to provide a method to evaluate infrequent high frequency level respondents. Eight offense-specific scales are derivable from the SRD and are included here: Felony Assault, Minor Assault, Robbery, Felony Theft, Minor Theft, Damaged Property, Hard Drug Use, and Illegal Services. In addition, a 22 item global General Delinquency scale and a nine item Index Offense scale of acts so classified by the Uniform Crime Reports were derived. For the purposes of this study, the Index Offenses scale was used as a measure of seriousness of offending, whereas General Delinquency was used to measure overall delinquency.

In addition to these specific and general participation scales, a categorical indicator of pattern of involvement as defined in Elliot et al.'s (1987) study were used here. The Patterned Offender Classification is derived from the configuration of General Delinquency and Index Offense scale scores, and is a classification of current participation for each panel of data. Four offender categories were defined with this variable. Non-offenders were subjects with a score of three or less on the General Delinquency scale and a score of zero on the Index Offense scale. Exploratory Offerders were subjects with a score of 4 to 11 on the General Delinquency scale and/or a score of not more than one on the Index Offense scale. Non-serious

Patterned Offenders were subjects with a score of 12 or more on the General Deliquency scale and a score of not more than two on the Index Offense scale. Serious Patterned Offenders were subjects with a score of three or more on the Index Offense scale.

The second pattern of involvement indicator adopted from Elliot et al. (1987) was Career Offender Category which addressed the consistency of classification pattern across panels of data. Four categories make up this indicator. Serious Career Offenders were subjects classified as Serious Patterned Offenders for two or more consecutive years. Non-serious Career Offenders were subjects classified as Patterned Offenders (Serious or Non-serious) for two or more years, excluding those who were Serious Patterned Offenders for two or more consecutive years. Non-career Offenders were subjects exhibiting any combination of annual offender types, excluding those involving Patterned Offender types for two or more consecutive years. Those subjects classified as Non-offenders for some but not all of the panels were included in this category. Non-offenders were those subjects classified as Non-offenders for all panels of data used.

Age of Onset. Age of onset was calculated by the age of the subject in which some delinquent behavior (any index offense or four or more non-index offenses) was first reported. Early onset was defined as onset before age 12, so that any subjects 12 or younger indicating onset in the first panel were classified as early onset. Late onset was defined as onset after 12 years old.

However, subjects older than 12 reporting onset in the first panel were excluded since their initial onset age was indeterminable. Therefore, subjects first reporting onset in the second panel comprised the late onset group. No onset was defined as no reported delinquency in any of the four panels.

Demographic measure. Age, gender, ethnicity (White, Black, Hispanic, Asian-American, and American Indian), living situations (urban, suburban, rural), and socioeconomic status (using the Hollingshead Composite Index) were recorded and considered in these analyses.

Psycho-social indicators. The following indicators were obtained by Elliot et al. (1987) and are utilized here:

1. Attitudes Towards Deviance. This is a nine item scale designed to tap how wrong it is to engage in specific deviant/criminal acts.
2. Family Normlessness. This is a four item scale designed to measure belief that it is necessary to violate conventional norms in the family in order to realize valued goals there.
3. School Normlessness. This is a five item scale designed to measure belief that is is necessary to violate conventional norms in the school in order to realize valued goals there.
4. Peer Normlessness. This is a four item scale designed to measure belief that is is necessary to violate

conventional norms of peers in order to realize valued goals there.

5. Perceived Family Sanctions. This is a nine item scale designed to tap the perceived disapproval of parents if the respondent committed a set of deviant/criminal acts.
6. Negative Labeling by Family. This is a twelve item scale designed to tap perceived negative labeling by the parents.
7. Negative Labeling by the School. This is a twelve item scale designed to tap perceived negative labeling by the parents.
8. Exposure to Delinquent Peers. This is a ten item scale designed to measure the proportion of the respondent's friends that had engaged in ten deviant criminal acts.

Results

Of the 1508 subjects for which data was available for all four waves, 182 met the criteria for the early onset group, 141 for the late onset group, 585 for the no onset group, and 600 for a group for which onset category could not be determined. For the analyses in this study, the entire late onset group was included as well as 141 subjects randomly selected from both the early onset and no onset groups. This produced even cells for each onset category (n=141) and a total sample of 423 subjects.

The analyses performed address two primary areas of consideration: the differences between early and late onset offenders in extent and patterns of crime and the relation of psychosocial predictors to onset group.

Differences in Participation Behavior

First, late and early onset groups were compared to test the hypothesis that early onset subjects would report more offending in general, more serious offending (Index crimes), and higher levels for each specific type of offense. One-way ANOVAs for general delinquency and index offenses, and level on each specific offense type at Wave 4 were computed and are summarized in Table 1. As can be seen there, early onset offenders reported significantly higher levels for the offense categories of damaged property and minor assault. For other categories early and late onset groups were not significantly different.

Table 1 about here

Next, the two onset groups were compared for classification into the four patterns of offending defined by Elliot et al. (1987). $X2$ analysis of onset group by pattern category was calculated for Wave 4 data resulting in near significant differences between groups ($X2$ (3) = 6.37, $p < .10$). As can be seen in Table 2, the late onset offenders were about twice as likely to fall into the exploratory category as the early onset

offenders. Other differences were smaller although the early onset group had a greater percentage of subjects in the non-serious patterned and serious patterned categories than the late onset group.

Table 2 about here

A three-by-two $\underline{X}2$ analysis of career category by onset group (non-career, non-serious career, serious career by late onset, early onset) was run and yielded significant results with the early onset subjects more likely than the late onset subjects to be in non-serious and serious categories each, ($\underline{X}2$ (2) = 9.89, $\underline{p}$ < .007). As can be seen in Table 3, only one subject from the late onset group was classified as a serious career offender.

Table 3 about here

Another check of chronicity effects was to compare the late and early onset groups to see if they differed as to the number of data collection panels in which they were categorized as patterned offenders. Point bi-serial correlation between onset group and number of times categorized as patterned was significant ($\underline{r}$ = -.18, $\underline{p}$ < .04). As can be seen in Table 4, the primary difference is that the early onset group was much more likely to be classified as patterned three times, whereas the late onset group

was not.

Table 4 about here

Differences in Arrest Rates

A one-way ANOVA was run to determine if early onset subjects reported more arrests than late onset subjects (in Wave 4). No significant differences were found between groups. Then the two onset groups wre compared to determine if they differed as to categorization into arrested versus not arrested. This did not yield significant results ($X2$ (1) = .53).

Onset Groups as Discriminator of Behavior and Arrests

Discriminant analyses were conducted to determine the extent onset group (early, late, no onset) discriminated behavior pattern category, career classification, and arrest category (0, 1-4, 5 or more). Each analysis was statistically significant (Wilk's lambda = .865, which converts to an F (1, 3, 419) = 21.83, $p < .0001$ for pattern classification; Wilk's lambda = .245, which converts to an F (1, 2, 420) = 648.9, $p < .0001$ for career classification; Wilk's lambda = .979, which converts to an F (1, 2, 420) = 4.14, $p < .01$ for arrest classification. The classification results and accuracy statistics are presented for each of these dependent variables in Tables 5, 6, and 7, respectively.

Tables 5, 6, and 7 about here

Demographic and Psychosocial Predictors of Onset Group

The three onset groups were compared via $X2$ analyses for gender ($X2$ (2) =17.62, $p < .0001$; see Table 8), ethnicity ($X2$ (8) = 4.65, p = NS), parental job type ($X2$ (12) = 20.54, $p < .06$), parental income category ($X2$ (18) = 20.19, p = NS), and residence (urban, suburan, rural), ($X2$ = 5.73, p = NS). ANOVA analysis of Hollingshead Socioeconomic Status Composite score was not significant (F (2, 407) = 1.41).

Table 8 about here

ANOVAs were used to compare the onset groups on the psychosocial indicators gathered by Elliot et al. (1987) and described above. Scores on the psychosocial indicator scales from Wave 2 were used to test the predictive utility of these variables. Table 9 summarizes results. As can be seen there, the three groups differed significantly overall for all the comparisions. Scheffe post-hoc comparisons revealed several group differences that showed a general trend of early and late onset groups being significantly different than the no onset group.

Table 9 about here

Psychosocial Scales as Discriminators of Onset Groups

Next the psychosocial variables were entered simultaneously into a discriminant analysis to determine how accurately they classified subjects into age of onset groups. This yielded a significant function (Wilk's lambda = .970, which converts to an F (1, 2, 420) = 6.48, p < .001) and classified 49.41% of the subjects correctly (see Table 10).

Table 10 about here

The discriminant function was made up of the following variables, listed in order of contribution and their standardized cannonical coefficient: Peer Normlessness (.672), Negative Labeling by Family (.391), Family Normlessness (-.351), Exposure to Delinquent Peers (.317), Negative Labeling School (.285), Attitudes Toward Deviance (.201), School Normlessness (.103), and Perceived Parental Sanctions (.100).

Discussion

The purpose of this set of analyses was to examine the viability of timing of onset of delinquent behavior as a risk predictor of extent of participation and chronicity of

participation in the adolescent years and into adulthood. Overall, the results prove some support for this contention. However, two limitations to the analyses warrant discussion. First, an historical trend seemed to effect cross panel comparisons since the overall level of delinquency decreased for the entire sample across waves. And, also, comparisons between the early and late onset groups were limited by age effects since the late onset group included subjects up to 20 years old. Therefore, any conclusion reached and indications drawn from these results are done within the constraints of the design, with appropriate qualification of them intended.

Behavioral Patterns

Comparisons of participation, drawn from the SRD, indicate that subjects beginning their delinquent behavior in early adolescence exhibit higher levels of deliquency in only two categories (damaged property and minor assault). This suggests age of onset is less useful for distinguishing overall level of behavior than was previously thought.

Comparison of the onset groups for classification of offense patterns using definitions developed by Elliot et al. (1987) suggests that early onset delinquents are more likely to be classified in the most serious category than late onset offenders. So, while not differing in specific types of crimes, the groups differ in patterns of involvement.

Analyses of persistence of involvement indicated that early

offenders were more likely to be classified as career offenders and as serious career offenders. Also, early onset group membership correlated to number of panels classified as patterned. Apparently early onset offenders are more likely to be persistently involved in delinquent behavior and, particularly, in serious offenses. Thus, the primary differences in involvement between onset groups may not be in overall frequency of participation, but rather seriousness and persistence of participation over time. The age of onset groups did not differ as to number of arrests. This suggests that criminal justice response is not different despite the apparent difference in pattern of activity.

Discriminant analyses of age of onset as a predictor of later pattern of participation and chronicity showed that it was best at predicting chronic delinquency and to a lesser extent pattern of offending. However, even though the analyses were statistically significant, the functions classified subjects in extreme categories for offender classification, suggesting limited practical utility. The functions appeared more practical in the classification of chronicity of offending. At this point, the ability of age of onset to function as a pivotal predictor of delinquent behaivor remains an area for further study.

Psychosocial Predictors of Onset

As predicted the onset groups did not differ demographically, except by gender. Males were more likely to be in the early onset

group than females and females were more likely to be in the no onset group. Most probalby this pattern reflects the difference in overall risk for males and females reported repeatedly (Blumstein et al., 1986; Rutter & Giller, 1984).

Although not statistically significant, place of residence showed a trend that approached significance of urban residents slightly more likely to have an early onset than those living in suburban or rural areas. This trend is congruent with findings reported by others numerous times (Blumstein et al., 1986; Rutter & Giller, 1984). Commonly this trend is interpreted in combination with socioeconomic status effects and ethnic minority differences to conclude that poor urban minority adolescents are more at risk for onset of delinquent behavior. However, the lack of strength of association here, in light of the lack of socioeconomic status or ethnicity effects on age of onset, suggest that urban living situations (and possibly ethnicity and socioeconomic status) may influence group rates or exacerbate risk for continued participation once onset occurs, but does not influence when involvement begins (Tolan, 198b).

Group differences were evident when scores of the onset groups on the psychosocial indicator scales were compared. It was hypothesized that early and late onset groups would differ from the no onset group as well as from each other. The results supported the first part of the hypothesis but not the second part. It appears that those involved in delinquent activity

differ from those not involved across the entire range of psychosocial variables. The finding that early and late onset groups did not differ significantly might be explained by the fact that the comparisons were based on Wave 2 psychosocial variables, which was the panel in which the late onset group first reported delinquent activity. At that point both groups were involved in delinquent activity which may account for their similarity on these variables.

To test the predictive capability of a combination of psychosocial variables in classifying subjects into onset groups, discriminant analysis was performed. Although statistically significant, the function was only able to classify 49.41% of the subjects accurately. Apparently, the combined psychosocial scale scores have a limited ability to predict onset of delinquent behavior. This may in part be due to the fact that early and late onset subjects scored very similarly on these measures, and were significantly different than the no onset group. The psychosocial variables appear more related to involvement rather than age at first involvement.

All the psychosocial measures used here are self-reports and meant to measure perceptions rather than characteristics of family, peers, and schools or constructs drawn from theories about family, peer, or school psychological and social functioning. It may be that the present differences are not actually indicating problems in specific psychosocial functions or environments, but

rather where individual coping difficulties occur or are at least attributed. As delinquency can be related to differences in perceptions as well as condition (Tolan, 1988b) it is difficult to go beyond the constructs in these measures of a descriptive level of perceptions. These measures do not permit distinctions (as is needed) among perception, coping styles and problems, and environmental conditions. A needed next step is to obtain measures of family functioning, peer relationships, school environment, academic functioning, and labeling by significant others that measure constructs congruent with theories about the general impact of each of these and are obtained by means other than self-report of the targeted subject.

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Footnotes

[1] Based on a presentation at the Annual Meeting of the American Psychological Association, Atlanta, Georgia, August 12-16, 1988

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Table 1. ANOVA Analyses of Crime Levels by Onset Group. Pattern Group.

Comparison	Means			
	Early	Late	F[a]	p
Illicit Drug Use	5.46	5.38	.09	NS
Damaged Property	2.67	.55	13.01	.0001
Minor Theft	2.15	1.09	1.09	NS
Major Theft	.79	1.00	.06	NS
Robbery	.15	.18	.03	NS
Minor Assault	3.56	1.18	8.46	.004
Felony Assault	1.20	.33	1.33	NS
Illegal Services	1.51	2.65	.26	NS
Index Crimes	1.85	.67	1.76	NS
General Delinquency	16.55	11.33	.58	NS

[a] df = 281

Table 2. X2 of Late and Early Onset Offenders by Pattern Category (Wave 4).

		Offender Category				
Onset Group		Non-offender	Exploratory Offender	Non-serious Patterned	Serious Patterned	Total
Early	n	87	19	20	15	141
	%	61.7	13.5	14.2	10.6	
Late	n	79	35	17	10	141
	%	56.0	24.8	12.1	7.1	
Total	n	166	54	37	25	282

Table 3. X^2 of Late and Early Onset Offenders by Career Categorization.

		Career Category			
Onset Group		Non-career	Non-serious career	Serious career	Total
Early	n	87	19	20	141
	%	74.5	17.5	7.8	
Late	n	120	20	1	141
	%	85.1	14.2	0.7	
Total	n	225	45	12	282

Table 4. X2 of Late and Early Onset Offenders by Number of Times Patterned Offender.

		Number of Panels in Patterned Category			
Onset Group		1	2	3	Total
Early	n	40	21	24	85
	%	47.1	24.7	28.2	
Late	n	41	21	8	70
	%	58.6	30.0	11.4	
Total	n	81	42	32	155

Table 5. Discriminant Analysis Classification of Offense Patterns by Age of Onset (Wave 4).

		Predicted			
Actual		Non-offender	Exploratory Offender	Nonserious Patterned	Serious Patterned
Non-offender	n	220	0	0	85
(n=305)	%	72.1	0	0	27.9
Exlporatory Offender	n	35	0	0	21
(n=56)	%	62.5	0	0	37.5
Non-serious Patterned	n	17	0	0	18
(n=35)	%	48.6	0	0	51.4
Serious Patterned	n	10	0	0	17
(n=27)	%	37.0	0	0	63.0

56.03% classified accurately

Table 6. Discriminant Analysis Classification of Career Category Classification by Age of Onset Group.

		Predicted		
Actual		Non-offender	Non-career	Career
Non-offender	n	141	0	0
(n=141)	%	100	0	0
Non-career	n	0	120	103
(n=223)	%	0	53.8	46.2
Career	n	0	21	38
(n=59)	%	0	35.6	64.4

70.69% classified accurately

Table 7. Discriminant Analysis Classification of Number of Arrests by Age of Onset Group.

Actual		Predicted		
		0 Arrests	1-4 Arrests	5 or More Arrests
0 Arrests	n	220	106	0
(n=326)	%	67.5	32.5	0
1-4 Arrests	n	30	20	0
(n=50)	%	60.0	40.0	0
5 or More Arrests	n	3	2	0
(n=5)	%	60.0	40.0	0

62.49% classified accurately

Table 8. X2 of Gender by Age of Onset Group (Wave 1).

Onset Group		Gender: Male	Gender: Female	Total
Early	n	85	56	141
	%	41.3	25.8	
Late	n	71	70	141
	%	34.5	32.3	
No Onset	n	50	91	141
	%	24.3	41.9	
Total	n	206	217	423

Table 9. ANOVA of Psychosocial Variables by Age of Onset Group (Wave 2 predictors).

Comparison	Means: Early	Late	No Onset	F^a	p	Scheffe[b]
Peer Normlessness	8.86	8.70	7.53	15.47	.0001	E>N, L>N
Family Normlessness	8.22	8.64	7.41	12.91	.0001	E>N, L>N
School Normlessness	10.33	10.50	8.21	13.00	.0001	E>N, L>N
Negative Labeling by Family	25.70	24.79	22.55	12.43	.0001	E>N, L>N
Negative Labeling by School	25.96	24.68	22.24	16.03	.0001	E>N, L>N
Perceived Sanctions by Parents	41.01	40.61	41.93	5.72	.004	L<
Att. Twd. Deviance	31.75	29.59	32.73	25.94	.0001	E>N, N>L
Exposure to Delinquent Peers	14.56	16.82	12.96	12.25	.0001	L>E>N

[a] df = 2, 420 for all comparisons

[b] E = Early Onset, L = Late Onset, N = No Onset

Table 10. Discriminant Analysis of Age of Onset Group By Combined Psycnosocial Indicators (Wave 2).

		Predicted Onset		
Actual Onset		Early	Late	No Onset
Early	n	75	24	42
(n=141)	%	53.2	17.0	29.8
Late	n	32	57	52
(n=141)	%	22.7	40.4	36.9
Early	n	27	37	77
(n=141)	%	19.1	26.2	54.6

49.41% classified accurately