

AGE AT ONSET TYPOLOGY IN OPIOID DEPENDENT MEN: AN EXPLORATORY STUDY

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ABSTRACT

This study attempted to apply age at onset typology in ICD-10 diagnosed opioid dependence. The sample comprised 80 men seeking treatment at an addiction clinic. The measures included socio-demographic and clinical profile, Severity of Opioid Dependence Questionnaire, Modified Sensation Seeking Scale, Multiphasic Personality Questionnaire (MPQ) and Family History Assessment Module. A cut-off age of 20/21 years for an early-onset/late-onset typology of opioid dependence was obtained using two methods - the modal age at onset method and one-third sample by age at onset method. The early onset group showed significant differences in terms of it being more often younger, urban, unmarried, wage earning or students, using oral opioids (not heroin or injectables), showing higher lifetime use and dependence of sedatives, earlier onset of use and dependence of sedatives and tobacco, and higher global psychopathology in terms of MPQ. The early onset group also showed statistically insignificant trends for lesser use and dependence of alcohol, higher severity of opioid dependence, more legal and less social complications, higher sensation seeking (except boredom susceptibility), and more frequent substance dependence in first degree relatives. The age at onset typology in opioid dependence appears to be feasible and having some similarities to similar typology in alcoholism.

Key Words: Opioid dependence, typology, age at onset, men

The typological approach has led to alcohol dependence being subcategorized into relatively homogenous subgroups such as Type I/II (Cloninger, 1987), Type A/B (Babor et al., 1992), and Early-/Late-Onset (Buydens-Branchey et al., 1989, Varma et al., 1994).

Despite a number of similarities between alcohol and opioid dependence (Cadoret et al., 1986; Anglin et al., 1989; Buckstein et al., 1989; Miller and Gold, 1991; deWaele and Gianoulakis, 1993; Volpicelli et al., 1998) the typology approach has been used in opioid dependence sparingly enough to evoke the comment, 'subtype literature has been limited to alcoholic-subtypes not

substance-abuse subtypes' (Epstein, 1994). The available subtype research in opioid/drug abuse is all based on personality structure and social functioning (Berzin et al., 1974; Cancrini et al., 1988; Alterman et al., 1998).

Unlike in alcohol abuse, the age at onset of dependence has not been used as a key variable to get comprehensive and clinically useful opioid abuse subtypes. This is surprising because age at onset typology has emerged as one of the important ways of classifying alcoholism. Also, being simple and easy to use, age at onset typology can be applied in day-to-day clinical practice. This lack of research prompted the

AGE AT ONSET TYPOLOGY IN OPIOID DEPENDENT MEN

present study. The aim was to attempt age at onset of dependence typology in opioid dependent cases.

MATERIAL AND METHOD

Subjects: The subjects were selected out of the patients seeking treatment at the Drug Dependence & Treatment Center (DDTC), Department of Psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh, India, during the period January 1995 - June 1996. All the subjects fulfilled the ICD-10 criteria for opioid dependence (World Health Organization, 1992) and gave an informed consent. The required data were collected using a semi-structured interview schedule. This schedule was based on the patient intake record routinely used at the DDTC that was modified for the present study. The socio-demographic data included age, education, occupation, income, marital status, family type, religion and locality. The clinical data included the details of different substances used currently and over the lifetime, age-at-onset of use and dependence for each substance group, physical and psychosocial complications associated with substance use. The information was collected from the case records, the subjects, and one or more family members living with them (this was done to crosscheck the information and to overcome the recall bias of the subjects - a satisfactory research approach) (Wittchen et al., 1989; Gupta and Basu, 1997).

Measures: Age at Onset of Substance Dependence Questionnaire (Gupta and Basu, 1997). Comprising 21 items, based on ICD-10 criteria for substance dependence and rated present or absent, this questionnaire has shown high reliability and validity.

Severity of Opioid Dependence Questionnaire (SODQ) (Sutherland et al., 1986). Comprising 15 items rated 0 (never) to 3 (always), it covers areas like physical and emotional aspects of withdrawal, and withdrawal relief after drug taking. Used in American, Australian and British samples, it has shown sound psychometric

properties (Burgess et al., 1989).

Modified Sensation Seeking Scale (MSSS) (Basu et al., 1993). This is an Indian adaptation of the Sensation Seeking Scale-Form V (Zuckerman et al., 1978). Comprising 40 items force-choiced as yes (score 0) or no (score 1), it gives scores for the total scale (TSS) and four sub-scales: Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Boredom Susceptibility (BS) and Disinhibition (DIS).

Multiphasic Personality Questionnaire (MPQ) (Murthy, 1970). This is an Indian adaptation of Minnesota Multiphasic Personality Inventory (Hathaway and McKinley, 1955). A 100-item forced choice true-false inventory, it taps personality profile for Anxiety, Depression, Mania, Paranoia, Schizophrenia, Hysteria, Psychopathic Deviance, K (lie) and Repressor-Sensitizer scales. Hindi translations of MSSS and MPQ were used as personality inventories.

Family History Assessment Module (Janca et al., 1991). The module generates DSM-III-R (American Psychiatric Association, 1987) diagnoses for schizophrenia, depression, mania, alcohol and drug dependence.

Statistical Analysis: Possible cut-off age for early and late onset opioid dependence typology was to be obtained by two methods. One, the measures of central tendency for age at onset of opioid dependence in the whole sample were used to split the sample into sets of two subgroups each. Two, the whole sample was listed by the sequential age at onset and then split into three almost equally numbered subgroups. Finally, the subgroups obtained by both methods were compared for possible similarities or differences to determine the best possible cut-off age.

RESULTS

Sample Profile: The sample comprising 80 men had an age range of 17-50 years (mean±sd: 30.17±7.00 years) and was educated for 5-17 years (mean±sd: 11.22±2.98 years) While 75% subjects came from urban areas, 55% subjects came from nuclear families, 56% were Hindus and

TABLE 1
PROFILE OF DIFFERENCE IN SODQ, MSSS AND MPQ SCORES USING DIFFERENT CUT-OFF AGES
FOR AGE-AT-ONSET TO SUBDIVIDE THE SAMPLE BY MODE \pm 3 YEARS

Cut-off age (years)	Group 1 (N)	Group 2 (N)	SODQ	MSSS	No. of MPQ Scale with score differences significant at		
					p<0.01	p<0.05	NS
18 / 19	14	66	NS	NS	4	2	3
19 / 20	22	58	NS	NS	3	4	2
20 / 21	29	51	NS	NS	6	2	1
21 / 22	38	42	NS	NS	2	3	4
22 / 23	46	34	NS	NS	0	0	9
23 / 24	50	30	NS	NS	0	0	9
24 / 25	57	23	NS	NS	0	0	9

SODQ- Severity of Opioid Dependence Questionnaire; MSSS- Modified Sensation Seeking Scale; MPQ- Multiphasic Personality Questionnaire.

44% were Sikhs. The marital profile was: 50% never married, 47% married and 3% divorced. The employment profile was: 56% employed, 26% unemployed and 17% students. The income profile was: 40% no income, 35% <Rupees 2000 per month and 25% >Rupees 2001 per month.

Current substance use profile revealed opioid use in the form of injectable buprenorphine or pentazocine in 36% subjects, oral synthetic opioids (codeine containing cough syrups, mostly, and propoxyphene) in 30% subjects, heroin in 19% subjects, opium in 10% subjects and poppy husk in 5% subjects. The lifetime use of other substances was as follows: tobacco in 56% subjects (54% had dependent use), alcohol in 50% subjects (31% had dependent use), sedatives in 41% subjects (34% had dependent use) and cannabis use in 28% subjects (17.5% had dependent use).

The substance use related complications were: occupational (95%), familial (92.5%), social (70%), physical (32.5%), legal (11%) and psychiatric (6%). The psychiatric illness in first-degree relatives present in 23% subjects included alcohol dependence in 16%, opioid dependence in 6% and depression in 1% subjects.

Derivation of Cut-Off Age

The age at onset of opioid dependence in the sample was 13-39 years. The frequency distribution of the subjects as per age at onset (Fig. 1) revealed that 67% subjects had age at

onset ranging from 18 to 25 years. The cut-off age for typology was attempted using measures of central tendency and one-third method.

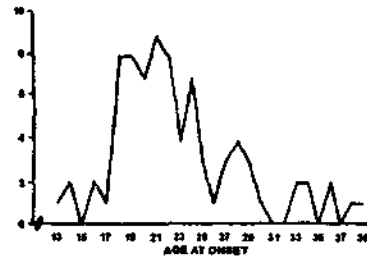


Fig: Frequency distribution of patients as per the age of opioid dependence.

As per the first approach, the mean, median and mode for age at onset of opioid dependence for the whole sample were 23.06, 22.00 and 21.00 years respectively. The frequency distribution curve being skewed (Fig.1), the mode was considered to be more representative measure of central tendency than the mean or the median. Accordingly, the sample was split by the age cut-off on both sides of mode for up to 3 years i.e. 21 \pm 3; thus the age cut-offs were 18/19, 19/20, 20/21, 21/22, 22/23, 23/24 and 24/25. Using these cut-offs, when the early and late onset subgroups were compared for the scores on SODQ, MSSS and MPQ, there were no differences for SODQ and MSSS; the difference for scores on MPQ, present for age cut-offs 18/19, 19/20 and 20/21,

AGE AT ONSET TYPOLOGY IN OPIOID DEPENDENT MEN

TABLE 2
PROFILE OF DIFFERENCES IN SODQ, MSSS AND MPQ SCORES USING DIFFERENT CUT-OFF AGES FOR AGE-AT-ONSET TO SUBDIVIDE THE SAMPLE BY ONE-THIRD SAMPLE METHOD

Age Groups in years (N)	SODQ	MSSS	No. of MPQ Scale Scores with Differences Significant at			
			p<0.001	p<0.01	p<0.05	NS
< 20 (29) / 21-24(28)	NS	NS	1	2	3	3
< 20 (29) / >25 (23)	NS	NS	0	3	4	2
21-24 (28)/ >25 (23)	NS	NS	0	0	0	9

SODQ- Severity of Opioid Dependence Questionnaire; MSSS- Modified Sensation Seeking Scale; MPQ- Multiphasic Personality Questionnaire.

were most pronounced for age cut-off 20/21 (Table 1).

As per the second approach, the whole sample was arranged in an ascending order of the age at onset of opioid dependence (13-39 years) and it was attempted to split the sample (N=80) into three groups of 26-27 subjects each. Out of 7 subjects with age-at-onset 20 years, 5 were getting included in the first 27 subjects while 2 were getting included in the second group. So, those 2 subjects were deliberately included in the first group with age at onset 13-20 years (N=29). Similarly for age-at-onset 24 years, 1 of the 7 subjects was getting included in the last group. So, this subject was deliberately included in the second group with age at onset 21-24 years (N=28). Thus, the third group was left with age at onset of 25-39 years (N=23). When these three groups were compared for scores on SODQ, MSSS and MPQ (Table 2), they were similar across SODQ and MSSS scores. On MPQ, however, while the first group showed significant differences with the other two groups (for 6-7 out of 9 scales), the differences between the second and the third group were all insignificant. Based on this apparent similarity between the second and the third group, and their differences with the first group, the second and the third group were combined together. So, we were left with two groups divided by a cut-off age of 20/21 years.

Thus, two different methods gave the same cut-off age of 20/21 years that best separated out the early onset (age at onset ≤ 20 years, N=29)

and late onset (age at onset ≥ 21 years, N=51) groups in terms of significantly different MPQ profiles. These two groups were then compared across the available socio-demographic and clinical variables.

Comparison of Early and Late Onset groups
Demographic profile: The early onset (N=29) and late onset (N=51) groups differed more for age (mean±sd: 25.14±5.62 Vs 33.04±6.06, t=5.76, df=78, p<0.001) and marital status (married & never married: 5 & 24 Vs 35 & 16, X²=19.52, df=1, p<0.001) and less for occupation (employed, unemployed & students: 13, 7 & 9 Vs 32, 14 & 5, X²=5.88, df=2, p<0.05), proportion of employed (13 Vs 32, X²=6.95, df=1, p<0.01), and locality (rural & urban: 2 & 27 Vs 16 & 35, X²=5.68, df=1, p<0.05). Though the early onset group had less number of years of education (mean±sd: 11.07±2.39 Vs 11.31±3.30, t=0.35, df=78), less Hindus (15 Vs 30, X²=0.38, df=1) and more nuclear family subjects (19 Vs 25, X²=1.59, df=1), all these differences were not significant.

Clinical Profile: The early onset group was mainly using oral synthetic opioids or heroin/injectables while the late onset group was predominantly heroin/injectable user (natural opioids, oral synthetic opioids, and heroin/injectables: 4, 14 & 11 Vs 8, 10 & 33, X²= 7.47, df=2, p<0.05).

The early onset group, though similar to late onset group for lifetime use of alcohol (38 Vs 57%), cannabis (24 Vs 31%) and tobacco (59 Vs 55%), showed significantly higher use of sedatives (66 Vs 27%, X²=11.05, df=1, p<0.001). For

TABLE 3
COMPARISON OF AGE-AT-ONSET OF LIFETIME USE AND DEPENDENCE OF OTHER SUBSTANCES BETWEEN EARLY AND LATE ONSET GROUPS

Substance		Early Onset Group Age ≤ 20 years (N=29)	Late Onset Group Age > 21 years (N=51)	df	χ^2/t	p
Alcohol Use	N (%)	11 (38)	29 (57)	1	2.65	NS
	Mean	16.18	19.31	38	1.70	NS
	SD	5.58	4.12			
Dependence	N (%)	5 (17)	20 (39)	1	4.16	NS
	Mean	17.00	22.55	23	1.17	NS
	SD	8.94	6.68			
Cannabis Use	N (%)	7 (24)	16 (31)	1	0.47	NS
	Mean	16.43	17.37	21	0.47	NS
	SD	1.50	7.38			
Dependence	N (%)	4 (14)	10 (20)	1	0.43	NS
	Mean	17.75	19.06	12	0.57	NS
	SD	6.83	7.57			
Sedatives Use	N (%)	19 (66)	14 (27)	1	11.05	< 0.001
	Mean	20.26	27.64	31	4.26	< 0.001
	SD	6.06	3.56			
Dependence	N (%)	18 (62)	10 (20)	1	14.65	< 0.001
	Mean	21.55	28.10	26	4.30	< 0.001
	SD	3.98	3.54			
Tobacco Use	N (%)	17 (59)	28 (55)	1	0.10	NS
	Mean	15.82	19.43	43	4.14	< 0.001
	SD	2.64	2.98			
Dependence	N (%)	16 (55)	27 (53)	1	0.04	NS
	Mean	18.18	21.39	41	3.82	< 0.001
	SD	2.64	2.69			

dependent use, the early onset group was similar to late onset group for cannabis (14 Vs 20%), tobacco (55 Vs 53%) and sedatives (62 Vs 20%) but showed less frequent dependence on alcohol (17 Vs 39%). For the onset of the lifetime use and dependence of other substances, the two groups had a similar profile for alcohol and cannabis; but the early onset group had an earlier onset ($p < 0.001$) of use as well as dependence of sedatives and tobacco (Table 3).

The early and late onset groups were similar in terms of the substance use related complications: physical (31 Vs 33%), mental (7 Vs 6%), social (62 Vs 75%), familial (90 Vs 94%),

occupational (90 Vs 98%) and legal (17 Vs 8%). Though the first-degree relatives of the early onset group had a higher frequency of substance dependence (34 Vs 17%), the difference was not significant.

When compared for the severity of opioid dependence and sensation seeking scores the two groups were similar even though the early onset group showed higher scores for severity of opioid dependence as well as all sensation seeking scales except for boredom susceptibility. However, on MPQ the early group showed significantly higher scores on depression ($p < 0.001$); mania, schizophrenia, hysteria,

AGE AT ONSET TYPOLOGY IN OPIOID DEPENDENT MEN

psychopathic deviance and repressor/sensitizer (all $p < 0.01$); and anxiety and paranoia scales ($p < 0.05$); only on K (lie) scale did the two groups score similarly (Table 4).

TABLE 4
COMPARISON OF EARLY AND LATE ONSET GROUPS
ACROSS SODQ, MSSS AND MPQ

Variable	Early onset Group ≤20years (N=29)		Late onset Group ≥21years (N=51)		t	p<
	Mean	SD	Mean	SD		
SODQ	30.41	9.85	29.47	8.99	0.44	NS
MSSS						
Thrill and adventure seeking	5.45	2.01	5.27	1.96	0.38	NS
Experience seeking	2.86	1.53	2.49	1.93	0.89	NS
Disinhibition	3.34	2.14	2.75	2.10	1.22	NS
Boredom	3.41	1.76	3.06	1.53	0.94	NS
susceptibility						
Total score	15.07	5.14	13.57	5.21	1.24	NS
MPQ						
Anxiety	11.52	3.27	9.57	3.74	2.34	0.05
Depression	6.72	2.00	5.04	1.99	3.64	0.001
Mania	7.14	2.05	5.76	2.12	2.82	0.01
Paranoia	8.41	3.11	6.75	2.76	2.48	0.05
Schizophrenia	7.34	3.14	5.00	3.24	3.15	0.01
Hysteria	4.41	2.13	2.94	1.78	3.31	0.01
Psychopathic Deviance	17.28	3.81	14.84	3.55	2.87	0.01
K (Lie) Scale	3.59	2.04	4.00	1.71	0.97	NS
Repressor/ Sensitizer	16.41	3.73	14.08	3.86	2.63	0.01

SODQ- Severity of Opioid Dependence Questionnaire; MSSS- Modified Sensation Seeking Scale; MPQ- Multiphasic Personality Questionnaire.

DISCUSSION

The sample comprising only men is reflective of our general as well as clinic populations where alcohol and opioid dependence are an almost exclusive preserve of men. The rest of the sociodemographic and clinical profile of the sample is also similar to the profile of our opioid dependent clinic population (PGIMER, 1993).

This study borrowed the idea of age at onset typology from the alcoholism research and applied

it to opioid dependence empirically. The cut-off age to form early and late onset groups was obtained by two empirical approaches - the measures of central tendency for the distribution of age at onset of opioid dependence; and the splitting of the sample, as per the sequential age at onset for the whole group, into three almost equal numbered subgroups. That these two approaches yielded the same cut-off age adds to the validity of the early and late onset typology based on cut-off age 20/21 years.

Comparison of Early and Late Onset Groups

Demography: The early onset group being younger (mean age: 25 Vs 33 years) and more often unmarried is an obvious reflection of the age-at-onset based typology. The early onset group having more students and urban residents seems to reflect urbanicity - higher schooling rates and the more extensive exposure of the youth to drugs in urban areas.

Opioid Dependence: The late onset group abusing predominantly heroin and injectable opioids and, the early onset group more often abusing oral opioids, reflects a combined effect of demographic variables. That is, the urban youth were exposed to a variety of easily available oral opioids; as students, lacking money, they opted for cheaper alternatives (codeine cough syrups, propoxyphene); and being younger they had not yet progressed to a more severe pattern of using heroin or injections.

Co-abuse: The early onset group was characterized by a significantly greater use and dependence of sedatives but not other substances. The early onset group also showed early use of and dependence on other substances, significantly so for sedatives and tobacco. The use of alcohol progressing to dependence in more than three years in late onset group but in only less than one year in early onset group, is another evidence for special need for substance abuse in general and sedative abuse in particular in early onset group.

Complications: Despite an overall similarity between the two groups, the early onset group showed a trend for more legal and less social

problems. These differences can partly be explained by the age - being older and more often married, late onset group was expected to fulfill more social and occupational obligations, while being younger the early onset group took more risks leading to legal problems.

Family History: Our sample having a history of substance dependence in first-degree relatives (all male) in 22% subjects was consistent with the previous research from the West showing substance dependence in 5-23.5% first-degree relatives (predominantly male) (Croughan, 1985). But our finding of a similar positive family history in early and late onset groups, contrasts with one report showing that the opioid dependence cases had a significantly earlier age of onset when there was a family history of opioid dependence (Chaudhry et al., 1991), and another report which concluded that the parents of narcotic addicts did not have an addictogenic personality (Andrade et al., 1989).

MSSS: Compared to a few studies showing a negative or a weakly positive correlation between sensation seeking and opioid dependence (Marrell and Hartman, 1986; Spotts and Schontz, 1986), the bulk of research shows: drug abusers are high sensation seekers (Platt and Labate, 1976; Kern et al., 1986; Pedersen et al., 1989), the degree of sensation seeking correlates with early age of onset of drug use and, the total sensation seeking in general and the disinhibition subscale in particular best discriminate the drug use and drug non-use (Basu et al., 1995). The sensation seeking in our early onset group not being higher may be because all of our subjects were treatment seekers with a similar high severity of opioid dependence.

MPQ: The previous literature showed that while opioid dependent subjects had no particular MMPI profile (Craig, 1979 a&b) they tended to have higher scores for depression and/or psychopathic deviance (Gilbert and Lombardi, 1967; Berzin et al., 1974; Vokov & Baba Milkic, 1992). While one subtype with high psychopathic deviance scores was delineated, the other was reported to either have high depression, hysteria and

hypochondriasis scores (Vokov and Baba Milkic, 1992) or high schizophrenia and depression scores along with high psychopathic deviance scores (Berzin et al., 1974). Non-MMPI based research has also shown opioid addicts to have more of cluster-B personality disorders (Vokov et al., 1995). The onset of substance use before the age of 15 years has also been reported to be associated with a higher risk of alcoholism, drug abuse, depression and antisocial personality disorder in later life (Robin and Pryzbeck, 1985). Thus, research findings from different geographic and cultural settings are consistent with the present study findings that the early onset group has a generally greater but not a differential psychopathology.

Comparison with alcohol typology

Cut-off age: Alcoholism typology research has led to cut off ages of 20 years (Buydens-Branchey et al., 1989), 25 years (Cloninger, 1987; von Knorring et al., 1987) and 30 years (Foulds and Hassal, 1969). The cut off age of 20/21 years for the age at onset typology of opioid dependence found in the present may appear to be low compared to the cut-off age in alcoholism. Yet, considering that the mean age at onset of drug abuse/dependence is well known to be a few years earlier compared to that for alcohol abuse/dependence (Burke et al., 1990), opioid dependence starting at or after 21 years may well be defined as late onset, clinically as well as statistically.

Co-abuse: Our findings of early onset opioid group showing more frequent use and dependence of sedatives and the earlier onset of use and dependence of sedatives and tobacco, are consistent with the findings of abuse of other substances being more frequent and starting earlier in life in early onset alcoholism (Cloninger, 1987; Buydens-Branchey et al., 1989; Babor et al., 1992; Varma et al., 1994).

Complications: Our findings of only slight excess of legal complications in the early onset opioid group are only partly consistent with the reports of complications in early onset alcoholism being so broad based and severe (Buydens-Branchey et al., 1989; Schuckit and Irwin, 1989; Varma et

AGE AT ONSET TYPOLOGY IN OPIOID DEPENDENT MEN

al., 1994) that they are recommended as the defining variable for alcohol typology (von Knorring et al., 1987).

Family History: Our finding of similar family history of substance abuse in early and late onset opioid subgroups is in contrast to the findings of higher family history of alcoholism in early onset alcoholism (Buydens-Branchey et al., 1989; Varma et al., 1994). This may be due to a relatively low genetic contribution to opioid dependence, compared to alcoholism (Andrade et al., 1989; Rounsaville et al., 1991).

Psychopathology: Alcoholism typology research has more often shown the early onset group to have an excess of psychopathology (anxiety, depression, antisocial personality disorder) in (Buydens-Branchey et al., 1989; Babor et al., 1992) and less often a differential psychopathology (antisocial personality in early onset group and, anxiety and depression in late onset group) (Cloninger, 1987; Varma et al., 1994). The present study finds the opioid dependent subjects to have a general excess of psychopathology rather than any differential psychopathology in early/late onset subgroups.

Limitations and Implications

This study had the limitations of a relatively small sample of treatment seekers with generally severe dependence, the determination of cut off age not being multivariate-statistics based but empirical (later validated by convergence of results of two different approaches - measures of central tendency and one third sample method) and not covering response to treatment, course and outcome. Within these limitations this study showed that opioid dependent subjects could be classified by the age at onset of opioid dependence into two subtypes - early onset (≤ 20 years) and late onset (≥ 21 years). The early onset group more often has urban, unmarried, and student/working subjects and a significantly higher global psychopathology in terms of MPQ. Other non-significant characteristics of the early onset group are: preference for oral opioids over heroin/injectables, higher frequency of use of and dependence on sedatives, earlier age at onset for use and dependence of sedatives and tobacco,

higher prevalence of psychiatric illness including substance dependence in first-degree relatives, and higher sensation seeking. These preliminary results showing age at onset typology in opioid dependence to be feasible and to have some similarities to age at onset typology in alcoholism, need further confirmation using a more rigorous research design.

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AGE AT ONSET TYPOLOGY IN OPIOID DEPENDENT MEN

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