An Investigation Into Parent-adolescent Relations And Substance Use

Dr. Garima Malik

Abstract-This paper uses the Economics of Incentives framework to develop and estimate a model of the effects of parenting styles on substance use by young children aged 10-14. The NLSY-79 Child dataset from the Bureau of Labour Statistics in the U.S. is used and the expected utility theory in the standard economic model is supplemented with psychological variables in order to provide a testable model of behavior. There is a section on switching parenting styles which reveals that parenting styles don't stay constant and change over time. There is also a section on substance use in India and Asia which goes into details of the patterns of substance use and their likely effects for children and young adults. The paper finds that it is critical to break the vicious cycle of poverty and ill-health through economic growth and better development outcomes particularly targeted at vulnerable sections like street children.

"If current trends continue, 250 million children alive today will be killed by tobacco. "-W.H.O.
Key Words- Substance use, Parent addlement relation.

1 Introduction

If current trends continue there will be few children left in the world due to widespread and raging substance use. This is now a global health concern not just in developed countries like the U.S. but also developing countries like India and China. The Millennium Development Goals chartered by the U.N. will scarce be achieved if substance use keeps spreading at its current rate. Children are the most affected population due to being the most vulnerable. While parents, teachers and the wider community are all responsible for controlling and correcting this phenomenon the current research has a special focus on parents. Using an incentive model used popularly in the economic literature to examine household interactions this paper examines the interactions between parents and children and attempts to make predictions about the importance of parenting styles for substance use in households. Thus the study aims to understand what is the role of parent-child interactions in behaviour and substance use by young children focusing on different child outcomes such as cigarettes and alcohol consumption. The study shows that family background factors including parental substance use are significant in influencing substance use by young children.

2 Literature Review

There are four basic areas of literature which motivated this research. This research draws upon them and expands their scope to identify new relationships in the role of parenting style and child outcomes. These four areas of research include: (1) Parenting Styles/Parent-Adolescent Relations; (2) Family Economics (3) Economic Psychology and Behavioural Economics. The discussion below will identify important previous contributions in each of these areas and will indicate where the present research expands and contributes to the existing knowledge.

2.1 Parenting Style/Parent-Adolescent Relations
2.1.1 Psychological Models

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This strain of research developed from the seminal paper by Baumrind (1966). In this work Baumrind predicts that authoritative parents are more likely to be able to protect their children from substance use. Baumrind's early research created the parenting typologies of authoritative, authoritarian, permissive and disengaged parents along the multiple dimensions of demandingness and responsiveness. Demandingness denotes the expectation of parents for mature behavior from their adolescent, setting and consistently enforcing reasonable rules and standards for behavior. Responsiveness refers to warmth and demonstration of physical affection towards the child. Authoritarian parents attempt to shape, control and evaluate the behavior and attitudes of children based on absolute sets of standards, respect for authority and obedience. These parents are more likely to use harsher forms of punishment and are less responsive to the children. Authoritative parents encouraged verbal give and take, explained the reasons behind demands and discipline, and expected the child to be independent and self-directing. Thus authoritative parents are both demanding and responsive. Permissive parents- were more likely to give way to the child's impulses, desires and actions. Few household demands of rules are established and little punishment is used and they had children who were not independent and lacked social responsibility. These parents are less demanding and more responsive and could be indulgent while disengaged parents are neither demanding nor responsive and could be termed as neglectful parents.

2.1.2 Ecological Factors

There have been other various studies in development psychology where parenting styles are classified differently or along different dimensions of support, attachment and learning theories. Bronfrenbrenner's (1979) Model of the Ecology of Human Development captures the parent-child association where the child is at the centre of the system and is surrounded by the Microsystem, which includes parenting factors, and the neighbourhood factors, which constitute the Mesosystem. The ecological paradigm began with Lewin's Behavior = f (Person, Environment)

model where humans are active and shape the environments in which they live. In the context of adolescent psychological development there are individual factors such as the child's own propensity to consume substances and then the microsystem and then the mesosystem and these are the factors influencing the child's behaviour. Thus the adolescent while growing up in the household has a core behaviour and then a peripheral component which is constantly adapting to the environment. Maccoby (1980) explored the aspects of parental control stressing on the sub-classifications such as Consistent Enforcement of Demands and Rules, High Expectations and Training, Restrictive Parenting, Arbitrary Power Assertion or Authoritarian Parenting, Open communication patterns and Parental warmth and affection. Steinberg (1982) is the next study in this line of literature which focuses on these dimensions of Acceptance/Involvement, Strictness/Supervision, Psychology Autonomy Granting, Parental involvement in schooling, Parental encouragement to succeed, School Performance and School Engagement. The parent-child interaction is characterized by two major parenting dimensions: nurturance (warmth and support) and control (supervision and discipline). Inadequate parenting which is characterized by lack of affection and high levels of criticism and hostility, inconsistent discipline and supervision, general lack of involvement, provides the foundation for the development of the aggressive, antisocial behaviour pattern. In addition to parental drinking there are a broad range of family influences associated with alcohol problems and externalizing behaviours (antisocial behaviour and aggression). The family background of alcohol and other drug use are mostly characterized by marital instability, lack of support, poor discipline and family conflict.

2.2 Family Economics
2.2.1 Intergenerational Human Capital Models

Akabayashi (1998) uses the NLSY-Child dataset and links the parent and child in an inter-generational human capital framework endogenizing parental incentives while

examining the cognitive and behavioural indicators for children. This dataset has extensive information on parental substance use as well as family background variables along with the data on the children collected through self-administered questionnaires. There is another study (Brook, 1990) which is of a longitudinal nature and has focused on parenting variables as the major psychosocial influence in the child's development of abuse patterns.

2.2.2 Household Economics

Studies of these individual effects have included the role of parent modeling and alcohol expectancies in determining the behavior of children of alcoholics. Dyadic effects come from the interactions of two family members focusing on the parents' marital relationship and the child's relationship with the siblings. Hao, Hotz and Jin (2003) consists of a game-theoretic model between parents and daughters. This model of parenting is further tested on different family formation structures. In families which typically have more older siblings the reputation is established for the older children using daughter and family-specific fixed effects. The impact of families on juvenile substance use is examined in Mach (2001) who examines the impact of families on juvenile substance use using the NLSY97 dataset and finds that family formation can be an important factor explaining juvenile crime. This approach looks at the influence of parents as well as siblings in explaining consumption of substances by youth using county crime rates. Among the various dyads, the parent-child relationship has got the maximum attention in the study of alcohol-specific family influences. These dyads are divided along the lines of father-daughter, father-son, mother-son and mother-daughter relationships. In the parenting effects on alcohol strong associations exist between child conduct disorder, adolescent delinquency, adult antisocial behaviour and adult alcoholism. Almost 20% of these alcoholics meet the criteria for antisocial personality disorder which is characterized by a disregard for and violation of the rights of others. The associations between antisocial personality disorder and alcoholism indicates that parent-child interaction

that promotes aggressive, antisocial behaviour plays a role in the alcoholism of both children of alcoholics and non-children of alcoholics. The family has been recognized as the primary support system and socializing institution for children; the better the family operates, the more likely that a child will develop. Fundamental to positive family dynamics are the relationships that parents develop with their children. Parental support is significantly related to child and adolescent development and wellbeing and to less deviant behavior.

The relationship among adolescents reckless behaviors, parenting practices, adolescents employment and adolescents opportunities for risk-taking and the idea of context affecting people's decisions is not new to psychology and economics. A full understanding of adolescence requires consideration of the rapidly changing individual in a developmental context. There is an extensive literature that seeks to explain the relationship between key background variables impacting children's cognitive and behavioural development. These variables include such influences as children's and parent's background factors, poverty status, parent's cognitive support and key parenting measures. These risk factors exist and it is essential to understand what supports or protective measures can help children overcome these risk factors. Mothers cognitive ability represented by a mother's low intelligence quotient can have detrimental effects on her children. Research has shown that lower academic levels result in adverse outcomes such as poor parenting. There are links between poverty, economic resources and child outcomes especially and children face persistent poverty face substantial developmental deficits. Low-income families may not be able to afford adequate food, shelter and other material goods - nor to provide a warm and stimulating home environment - that fosters healthy cognitive and social development of children.

2.2.3 Health Economics/Health Capital

In the case of alcohol and smoking linear regression models could have been used in the case of continuous measures for alcohol and

smoking consumption. When the decision is taken as a decision to smoke or not to smoke, or in the case of alcohol consumption to consume or not consume alcohol then the model is of a discrete nature with a probabilistic outcome being regressed on all the explanatory variables. There are studies in Health Economics literature by Hill (1987), Seo (1998), Yin (2000), Lane, Gerstein, Huang & Wright (1997).

2.3 Economic Psychology and Behavioural Economics

The literature in the area of economic psychology and behavioural economics deals with these kinds of self-control and addiction behaviours. This includes the part on rationality of decision making processes and the cognitive influences. Economic and psychological views of the transmission of family background and how families are perceived as endogenous processes and why existing inter-generational human capital models have to be modified in that framework. Psychological views of parent-child relationships may be useful to modify inter-generational human capital models by including the effects of parental behaviour. Intergenerational human capital formation is distinct from "self" investment in human capital. There are only certain kinds of behaviours which are considered appropriate in these situations in the process called "socialization". Personality is a set of characteristics which emerge determining how individuals respond to experiences and how they get along with others, and themselves. A competent child is created who is independent, self-reliant, self-controlled, explorative, and self assertive, high linguistic, analytic and logical abilities. Psychology is concerned with the structure and components of family influence on several dimensions of children's development-cognitive, emotional and psychological. They are exploring the relationship among the adolescents' reckless behaviours (i.e. alcohol use and nonnormative behaviour), parenting practices, adolescents' employment, and adolescents' opportunities for risk-taking. The propensity event theory examines the opportunity variables which can mediate the effects of other explanatory variables on the

adolescent's participation in these reckless behaviours. The model of risk-taking behaviour is adapted from Irwin & Millstein (1986) and the definition of risk-taking inherent in psychosocial development is that risk-taking is a result of an interaction between the biopsychosocial processes of adolescence and the environment. The development psychology literature does indicate that some risk-taking is necessary in the natural developmental process, but extreme forms of risk-taking have severe consequences. The underlying strand of thinking indicates that young children do not have an adequate understanding of the long-term consequences of their actions and therefore may take actions that are potentially destructive in nature. A long tradition of research in development psychology has emphasized the role of mothers in the lives of their children. From psychoanalytic theorists of the early 1900's to attachment theorists in the 1960's the emphasis on the mother-child relationship was almost exclusive.

3 Theoretical Model

This section develops a theoretical framework based on the assumption of optimizing behaviour and equilibrium using the tools of microeconomic theory to model this relationship. I am relying primarily on the principal-agent framework to model this interaction and its true that these principal-agent contracts which emerge in families closely resemble those in the workplace, between the employer and the firm. In my work I am using the informational asymmetry which arises in these relations to both motivate the model and generate the results. The child in this case takes an unobservable action that affects the utility of both the parent and the child. The principal who is the parent sees only the outcome which is imperfectly correlated with the action. The reason for using agency theory in this application is that one person, the child who is the agent is being induced by the parent, the principal to do something that the child does not want to do. It is hard and expensive for the parent to monitor the child and the parent and the child have different attitudes towards risk.

The agent has different interests or preferences

from the principal. The principal who is the parent has responsibilities to ensure that the children produce a socially observable outcome and the output in the model could be higher grades in school or good behaviour or not engaging in drinking and smoking. The child who is the agent exerts a certain level of effort which is working hard at school or doing household chores or exercising self-control and abstaining from high-risk behaviours. In certain scenarios the child has incentives to shirk or to exert low effort, so the parent is offering incentives to ensure the child exerts the effort. The parents are altruistic and the children are assumed to provide utility to the parents. In the case of intra-family interactions there are large asymmetries of information and there are also high costs which arise to get information in the case of young children.

3.1 Basic Assumptions

I have used the following assumptions to both motivate and set up the theoretical model in a framework which would also lend empirically testable predictions. This would enable us to cover all the behavioral patterns and predict the direction of the incentive action choices in the process of building a formal model. The model is a single period static model, with 1 parent and one child. The parent is the principal and the child is the agent. The child's output $Y_j \in \{Y_l, Y_h\}$ i.e. Y_j belongs to a discrete set and is observed by the parent and the child may be performing well in school or being well behaved at home and not throwing temper tantrums. Also the child exerts an effort level where $e \in \{e_l, e_h\}$, where e_h denotes the high effort level of the agent. Effort is unobserved by the parent. Higher effort level could be working hard and spending more time on homework and schoolwork, helping around at home, not partying late night and smoking, drinking. The parent takes actions, both positive and negative during the life-cycle of the child, observed by the child where $a \in [a_h, a_l]$ where a $(y_h) = a_h$ and a $(y_l) = a_l$ where a high action is being more responsive i.e. talking and a low action is being more demanding. Thus for the parent a high action is displaying positive affection

towards the child, talking to the child, helping child with schoolwork, taking child to the museum, playground, parks. A low action is harsher, more punitive measures like spanking the child, grounding, taking away TV and other privileges, putting the child in a time out. These actions are determined exogenously and the parent is of a certain type and therefore is predisposed to take a certain action. There are different probabilities p $(y_h) = $ p if e_h and $p(y_h) = $ q where p > q. There is a cost of the effort indicated by c(e). We normalize $c(e_l) = 0$ and denote $c(e_h) = $ c. The parents cannot directly observe the child's effort. Thus the incentive-action taken by the parent cannot depend on e but depends only on the observable output (behavior). If effort has a direct correlation with output i.e. e_k results in y_k for k= H, L that is p=1 then q=0 then the effort can be deduced from the output once the output (behavior) is realized. The parents are risk neutral while the children are risk averse agents. Parent's utility is $U_p = U_p (y_j)$ for Authoritarian Parent and Disengaged Parent. Let the parent's utility be $V_P = V_P [U_p (y_j), U_c (e,a)]$ for Authoritative and Permissive Parent, who are altruistic and care about the Child's utility. The preference ordering on Child's utility is as follows: $U_c (e_l; a_h) > U_c (e_h; a_h)$ i.e. the child does not like to exert effort. In the case of the parent $U_p(y_h) > U_p(y_l)$ i.e. the higher output gives greater utility to the parent. The assumption on the observability of effort is changed in the later section, to examine the comparative static's. The subscript c denotes child's utility and p stands for parent's utility

3.2 Benchmark Model

This benchmark model investigates the basic choices made during the interactions between the parent and the child. The principal in this framework is the parent and the child is the agent. The principal starts by offering an incentive, a to the agent, the child where a could be financial transfers or physical affection or giving the child some pecuniary incentive or it could be emotional responsibility or taking away the child's allowance or grounding or spanking the child. This induces the agent, the child to exert an effort, e which could be working hard at school or

abstaining from risky behaviours. The signal, y which is observed by the parent could be high grades in school or good behaviour at home. If the effort is not observable then to find the optimal contract the principal would try to solve the constrained optimization problem. The participation constraint requires the agent prefers the contract to any alternative and the parent ensures the child atleast a reservation level of utility. Additionally the incentive compatibility constraint must give the agent an "incentive to choose the desired effort". The takes account of the fact that the agent moves second and picks the desired effort. Thus in general the result holds that given a contract $\{a(y_h), a(y_l)\}$, agent (child) chooses e h if

$p\,u(a_h)+(1-p)\,u(a_l)-c > q\,u(a_h)+(1-q)\,u(a_l)$ IC-Constraint
and
$p\,u(a_h)+(1-p)\,u(a_l)-c > \overline{u}$ Participation Constraint

3.3 A Model of Incentive-Action (with fully observable effort)

We start by isolating the effects in different environments. In the first and most favorable environment where effort is fully observable the parent can contract on effort since effort is directly observable. In the case where the Principal (Parent) is Risk Neutral and the Agent (Child) is Risk Averse the utility function of the child $u(a)$ is an increasing and convex function of a i.e. $u'(a) > 0$ and $u''(a) > 0$. y_l gives utility 0 and y_h gives utility v.

Thus if the effort of the child is perfectly observable and the parent (principal) wants to induce effort then for a given value of v (the parent's utility from high effort), the parent's optimization problem becomes:

$\text{Max}\; p\,(v - a_h) - (1 - p)\,a_l$ (1)
s.t.
$p\,u(a_h)+(1-p)\,u(a_l)-c > \overline{u}$ (2)

Thus the parent aims to maximize 1 subject to equation 2. Only the participation constraint is relevant in this case as then the agent can be forced to exert a positive level of effort.

Since the child is risk averse the incentive compatibility constraint is always satisfied. λ is the Lagrange multiplier associated with the participation constraint.

$\ell = p(v - a_h)-(1-p)a_l+\lambda[p\,u(a_h)+(1-p)u(a_l)-c-\overline{u}\;]$
The first order condition gives
$-p+\lambda\,p\,u'(a_h{}^*)=0$ (3)
$(1-p)+\lambda(1-p)\,u'(a_l{}^*)=0$ (4)
where $a_h{}^*$ and $a_l{}^*$ are the first-best optimal transfers.
Therefore from equation (3) and (4) we obtain for a given value of λ:
$\lambda = 1/\,u'(a_h{}^*)=1/u'(a_l{}^*) > 0$
which implies that $u'(a_h{}^*) = u'(a_l{}^*)$ and since additionally $u(a)$ is convex i.e. $u''(a) < 0$ then for 4 to hold true it must also be true that the incentive offered by the parent is constant across states.
Therefore $a^* = a_h{}^* = a_l{}^*$
Thus, when effort is perfectly observable, the agent obtains full insurance from the risk-neutral principal, and the transfer a^* the child (agent) receives is the same whatever the state of nature. Thus the intuition behind this result is that if the effort is contractible the optimal incentive is independent of action.
Because the participation constraint 2 is binding, we can also obtain the value of this transfer, which is enough to
cover the disutility of effort. So a^* must solve equation 2.

$u(a^*)=\overline{u}+c$

or $a_{pi}{}^*=u^{-1}(\overline{u}+c)$ (5)
where the subscript pi stands for perfect information.
Thus note that the action of the parent is equal to the inverse of the utility which is a constant plus cost of the child. This way the person i.e. the parent is influenced taking the reservation utility as given.
Now we can compare the utility or the gain in utility terms to the parent from the child's action. There are two situations where the utility of the child could be examined differently due to the effort being exerted, v here is the net gain in utility terms to the parent from the child's effort. This could be the parent having a greater sense of satisfaction from the child's grades in school or

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positive impact of the child's behaviour on the parent.

In this case for the principal inducing high effort e_h yields an expected payoff equal to

$$V_1 = pv - a*$$

If the principal decided to let the agent exert low effort e_l he would make the payment wL to the agent that solves the following equation:

Therefore al would have to satisfy the linear additive combination of the following equation for some value of the probabilities, q

$$\text{or} \quad a_l = u^{-1}(\bar{u}) \tag{5}$$

Thus the principal will get $V_0 = qv - a_l$

Inducing effort is thus optimal from the principal's point of view when $V_1 > V_0$ or

$$pv - a* \geq qa - a_l$$

which gives the result that the expected gain on effort is higher than the first-best cost of inducing effort. This can also be seen in the inequality given below.

Expected gain of effort First-best cost of inducing effort

$$(p-q)v \geq u^{-1}(\bar{u}+c) - u^{-1}(\bar{u})$$

3.4 A Model of Incentive-Action (with unobservable effort)

If the effort is non observable but the agent as well as the principal are risk neutral then the contract has to be self-enforcing and the parent has to obey the child's incentive constraint. The utility function can be written as

$$u(a) = a$$

Thus the principal who wants to induce effort must choose the contract that solves the following problem given in equation 6 subject to the two constraints given in 7 and 8:

$$\text{Max } p(v - a_h) - (1-p)a_l \tag{6}$$
$$\text{s.t. } p a_h + (1-p)a_l - c > q a_h + (1-q)a_l \tag{7}$$

$$\text{and } p a_h + (1-p)a_l - c > \bar{u} \tag{8}$$

In the case of risk-neutrality the principal can choose incentive compatible transfers a_h and a_l that make the agent's participation constraint 8 binding. Thus if effort is not contractible and the child is risk neutral the

optimal contract is slightly increasing.

Finally we get $a_h* = \bar{u} + c[(1-p)/(p-q)]$ by rearranging 8 and solving for a*

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Thus the principal who wants to induce effort must choose the contract that solves the following problem given in equation 6 subject to the two constraints given in 7 and 8:

$$\text{Max } p(v - ah) - (1-p)al \tag{6}$$
$$\text{s.t. } p\, ah + (1-p)al - c > q\, ah + (1-q)al \tag{7}$$

$$\text{and } p\, ah + (1-p)al - c > \bar{u} \tag{8}$$

In the case of risk-neutrality the principal can choose incentive compatible transfers ah and al that make the agent's participation constraint 8 binding. Thus if effort is not contractible and the child is risk neutral the optimal contract is slightly increasing.

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4 Switching Parenting Styles

4.1 Motivation for Switching

Are parenting styles hardwired? The switching results are displayed in the tables [see Figures 2 and 3]. The dataset used is the Children of NLSY-79 collected by the Bureau of Labour Statistics in the U.S. The HOME questions in the Mother Supplement questionnaire do not directly ask the mother what action she would take if the child engages in substance abuse. [See Appendix] The question in the Mother Supplement only asks what the mother would do if the child misbehaves or throws a tantrum. The behavioural problem index is based on responses from the mother to 28 questions in the Mother Supplement which deal with specific behaviours that children age four and over may exhibit in the previous three

months. The standard score used in this paper sums across the subscores created according to the following domains: (1) antisocial behaviour, (2) anxiousness/depression, (3) headstrongness, (4) hyperactivity, (5) immature, (6) dependency and (7) peer conflict/social withdrawal. The standard score of BPI is scaled from 70-140 and the paper uses the measure of lifetime substance use i.e. if the child smoked or drank alcohol in his entire life.

The switching results are shown for different children in the same year and for different years for the same child. There is a tendency to be consistent as well as to switch to different parenting styles. In the dataset there were 17 Permissive parents who stayed the same and 37 Disengaged parents who stayed the same. The tendency to switch was highest among the Disengaged parents, and 40 switched to Authoritative, 18 switched to Authoritarian and 19 switched to Permissive. These numbers are out of the total of 116 parents in year 1. In the case of different children in the same year the tendency was more towards stability. There were only 6 switches among the disengaged parents, only 4 switches in the Permissive parents.

To From	Authoritative	Authoritarian	Permissive	Disengaged	Total for year 1
Authoritative	0	0	0	0	0
Authoritarian	0	0	0	2	2
Permissive	6	1	17	6	30
Disengaged	40	18	19	39	116
Total for year 2	46	19	36	47	148

Figure 1: Switching Parenting styles across different years for the same child

To From	Authoritative	Authoritarian	Permissive	Disengaged	Total for child 1
Authoritative	17	1	3	1	22
Authoritarian	0	8	0	2	10
Permissive	1	0	33	3	37
Disengaged	1	2	3	70	76
Total for child 2	21	12	41	76	152

Figure 2: Switching Parenting Styles across different children in the same year

despite having personal distress and problems related to its use. The problem of substance use has to a large extent stabilized in developed countries which have been exposed to substance use for decades, in contrast to many developing countries where the problem is on the rise. Research on the causal factors is pointing towards urbanization, poverty, migration, technological change and educational deficits.

The situation will become worse as multinational alcohol manufacturers are now aggressively targeting the developing countries particularly in South-East Asia. In India, Sri Lanka, Thailand and Malaysia drinking patterns illustrate how the per capita consumption figures of a country do not necessarily give the true picture of consumption patterns of Asian countries. Parallel with the international and more expensive alcoholic beverages there exist the local, cheap, potent brews, both legal and illicit which are not computed into the national statistics.

National Sample Survey of India (1993-1994) show the rural-urban divide for males and females respectively for bidis and cigarettes and tobacco consumption in other forms such as snuff, chewing tobacco and burnt tobacco powder.

The most common drugs in India are smoking (cigarettes, beedis) & chewing tobacco (gutkha, pan masala), alcohol, cannabis (ganja, bhang, charas), opioids (heroin, opium, injection Buprenorphine, capsule Spasmoproxyvon, cough syrups), Sedative-Hypnotics (sleeping pills, Alprazolam, Diazepam) and Inhalants (typewriter correction fluid). Smoking & chewing tobacco and alcohol are licit (legal) drugs in most states in India. All other drugs are illicit (illegal), hence possession, use, etc. are punishable offences. Narcotic pharmacological product use without appropriate physician's prescription is considered illicit. Different age limits exist for use of alcohol / tobacco products in various states of India. The pattern of use of licit drugs differs from that of illicit drugs. Licit drug use is prevalent between the ages of 16 to 60 years in all economic strata, more so in young adults. Illicit drugs are mainly used in lower & lower middle economic groups. Cocaine & Amphetamine use is rare and seen in some young adults from higher economic backgrounds.

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Youngsters between the ages of 16 and 21 years are most prone to initiating alcohol & drug use. Many adolescents experiment with smoking & alcohol in their late teens. This usually occurs at parties. Some also try cannabis and rarely illicit drugs. Some may continue with regular use of a single drug, e.g. cigarette smoking, or use drugs occasionally, e.g. alcohol.

The only nation-wide survey covering a large part of the child population was conducted by a Delhi based NGO called Prayas Institute of Juvenile Justice. Spread across 13 states of India including Delhi, Rajasthan, Madhya Pradesh, West Bengal, Mizoram, Kerala, Andhra Pradesh, Gujarat, Bihar, Uttar Pradesh, Assam, Maharashtra and Goa the study covered 12,447 children from different socio-economic strata and nearly 2342 young adults and 23,494 adults in both rural and urban areas. The results revealed that 32.1% of children, below the age of 18, have tasted alcohol, bhang, ganja, heroin or other form of narcotics. It also brought out disturbing facts like 70.3% of those children have been first exposed to one or the other form of drugs by their friends and relatives and11.7% by their parents (Prayas, 2007).

Regular drug use results in several adverse consequences in the personal, social, occupational spheres of users in the 20s, 30s & 40s. Some quit intermittently and some quit for long durations. Most users usually quit drug use in their late 40s. Some may continue lifelong. The medical harm of drug use depends on type, amount, duration of drugs use, and certain protective factors.

Figure 3: Medical harm of Substances
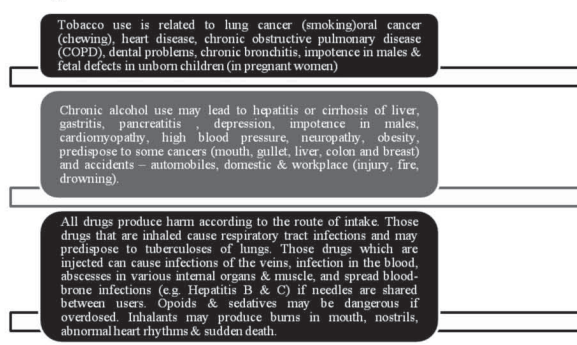
Protective factors include good nutrition, drug use restricted to social occasions (e.g. alcohol) and regular contact with treatment facility. Some of the problems related to drug use occur in the context of family, society, workplace, finances & the law.

Figure 4: Complications related to drug use
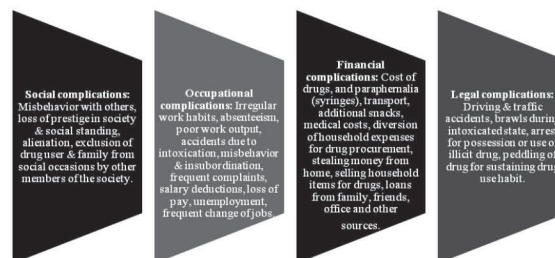
Medications & counseling are the main modalities of treatment of Drug Abuse. Minor levels of drug use are dealt with counseling alone. For higher grades of drug use a combination of medications & counseling is used. The role of family members should be to detect drug use, to encourage to initiate & maintain in treatment and to look out for signs of re-use (relapse). Family members need to understand that drug abuse is currently considered as a Medical disorder. There is a need for Increasing awareness of the common drugs of abuse, their medical, smcial & occupational costs, in youngsters, parents and teachers.

## 6 Conclusion & Way Forward

Thus this analysis is a step towards a better understanding of the interaction effects between parenting styles and substance use. The importance of Parenting style is highlighted and Parenting style is constructed as an index from several questionnaires responses. Therefore this brings out the importance of Parent-Child interactions from the Sociology and Psychology literature and uses the methodology and framework of Economics to model these relationships. Parenting style is an independent variable influencing child outcomes, focusing here on substance use. While exploring this relationship there is a need to control for all other influences which are simultaneously impacting

the child outcomes. Parenting style is also distant from parenting practices which are the actions parents can take. Parenting style is a broader and comprehensive term which consists of various parenting practices and additionally a broader spectrum of parental behaviours which define the parenting style in these households.

In the switching results the pattern of results turned out this way because Disengaged is pulling out from every other category and there is a very high percentage of disengaged parents. Across years its highly consistent.

This study enables us to understand the importance of all explanatory factors in substance use by young children. These results and studies are important in determining how policy makers could influence these juvenile delinquent behaviours. These behaviours are potentially risky both for the individual and also put the society at risk in general due to their impact through various criminal activities. The problem of child substance use pose serious challenges to the achievement of the United Nations Millennium Development goals.

Figure 5: United Nations Millennium Development Goals
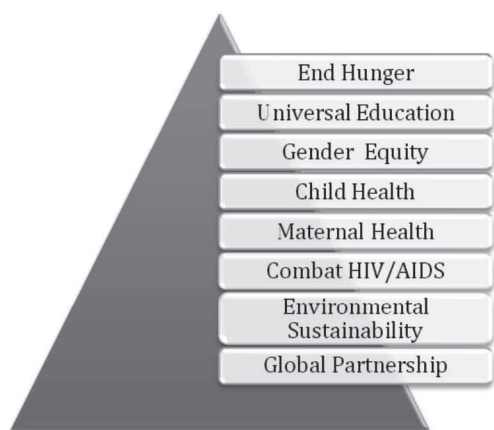
Thus the dynamics of intra-familial interactions is one more area which is being exploited to get a better view of a healthy society which has healthy children as well from the perspective of maintaining peace and order which needs the youth to function in an orderly manner. There is a substantial interest in trying to find all the possible causal mechanisms which can explain these behaviours and in the case of very young children the parental control is much higher then parenting style can be explored as a logical explanation for substance use in households. Its partially an explanation or an interest to model comparative statics where current phenomenon of substance use can be explained. Moreover its also to predict and forecast these behaviours and how such families could be identified as possible homes for juvenile delinquency. This is important especially in the current age group which is young enough to be identified and if possible corrected to prevent the onset of substance use in later adolescent years. There are several studies which examine the high school population and there are surveys such as Monitoring the Future Surveys and High School and Beyond Surveys which concentrate on older adolescents.

Figure 6: Vicious cycle of poverty and ill-health
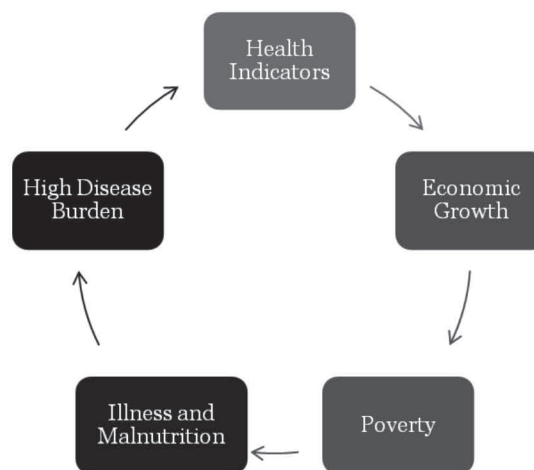
Its also important to break the vicious cycle of poverty and ill-health through economic growth and better development outcomes particularly targeted at vulnerable sections like street children who are at great risk of high substance use and subsequent death.

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Appendix

The Parenting Style classification uses the following 3 questions from the HOME (D) section in the Mother Supplement Questionnaire of the NLSY-79 Mother-Child dataset for 10-14 year old children

Question:

20. "Sometimes children get so angry at their parents that they say things like "I hate you" or swear in a temper tantrum please check which action(s) you would take if this happened"
Grounding
Spanking
Talk with child
Give him or her household chore
Ignore it
Send to room for more than 1 hour
Take away his/her allowance
Take away TV, phone, or other privileges
Other Put child in a short "time out"

21. If your child brought home a report card with grades lower than expected, how likely would you be to...very likely
Somewhat likely
not sure how likely not at all likely contact his or her teacher or principal?
Lecture the child?
keep a closer eye on child's activities?
Punish the child?
talk with the child?
wait and see if child improves on his/her own?
tell child to spend more time on schoolwork?
spend more time helping child with schoolwork?
limit or reduce child's non-school activities (play, sports, clubs, etc.)

22. Sometimes kids mind pretty well and sometimes they don't. Sometimes they do things that make you feel good. How many times in the past week have you had to spank your child?
grounded him/her?
taken away TV or other privileges?

praised child for doing something worthwhile?

taken away his/her allowance?

shown child physical affection (kiss, hug, stroke hair, etc)?

sent child to his/her room?

told another adult (spouse, friend, co-worker, visitor, relative) something positive about child?

The substance use questions use the following questions on smoking and alcohol consumption from the Child Self-Administered Supplement Questionnaire of the NLSY-79 for 10-14 year old children

50. In your lifetime, on how many different occasions have you smoked cigarettes?
100 times or more
50 to 99 times
11 to 49 times
6 to 10 times
3 to 5 times
1 or 2 times
Never smoked cigarettes in my life

55. Have you ever drunk alcohol, other than just a sip or two?
Yes
No