Social Networks and Substance Use in Adolescence

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Abstract. It is commonly believed that substance use and smoking in adolescents are significantly affected by peer influence and pressure. This belief is projected into smoking and drug prevention programs that try to buffer peer pressure as a method of controlling substance use or abuse. However, this paper critically reviews newer research that indicates that peer influence is not as important as we think. Factors like friend selection and projection are also deeply connected to smoking and substance use in adolescents. We have used renowned studies and literature to support our claim.

Keywords: Social Network · Substance Use · Adolescents · Smoking

1 Introduction

Kozicki cites that adolescence is a period of transition between childhood and adulthood [1]. It is a time of development physiologically, psychologically and sexually for an individual. This period plays a vital role in identity formation. Kozicki posits that that young adults use substance abuse as one of the measure to sort through the confusion of self discovery[1].

The main reason adolescent seek out substance use is to achieve excitement whether it is negative or positive. For some people drug use is associated with positive emotional experience while for others as negative emotional experience. People are reinforced by either the positive or negative experience but the main use of a substance is to act as a stimulant regardless of the emotional experience. [1] The factor that influences drug or cigarette habits are based on parenting styles. Parents that are abusers themselves or highly authoritative parents have a higher likelihood of having children that can be users. Other factors that have a wide acceptance in society are they are used to gain acceptance from peers, rebel against higher authority or to cope with problems with personality [1].We will be looking deeper into the factor of gaining acceptance from peers as it is a popular factor and subject of a lot of anti drug campaigns.

We will be looking into this through a Social Network of young adults to determine influence and characteristics that might lead to drug use. Social networks are said to have a small world characteristic such that they have high clustering and a small average shortest path between two nodes scaling logarithmically with network size [10]. Since real world networks are dynamic and evolve

over time, the small world behaviour of the network is directly related to local interactions within the network to provide the picture of substance use habits among a group of adolescents.

2 Background and Scope

Traditionally, smoking behaviour in adolescents is associated with negative influence of their social circle. This is a common assumption among parents and on the basis of same assumption, drug prevention programs are developed. According to Center for Disease Control, "Although it is illegal for people under 21 years of age to drink alcohol, the findings show that people from 12 to 20 years of age consume about one-tenth of all alcohol consumed in the United States"[11]. These statistics exhibit lack of success of prevention programs. Our aim is to use Network analysis and its various tools to understand dynamics of social circles in younger generation. This would help in finding relevant areas of interest to apply prevention techniques to. Moreover, this could also help in re-evaluating or devising better prevention programs for a more effective impact.

3 Examples of Application

In this section we present a review of existing literature relevant to our topic. Papers reviewed include:

3.1 The Contribution of Influence and Selection to Adolescent Peer Group Homogeneity: The Case of Adolescent Cigarette Smoking 1994

The fact that peer group members share similar features, or are homogeneous, is central to all theoretical considerations of peer groups. The uniformity of peer groups.The individual attempts to influence the group in ways that improve his or her value as a member, while the group attempts to improve the individual in ways that make the group more rewarding. Individuals that are similar in particular characteristics actively choose each other as friends, resulting in group homogeneity. uniformity in groups as a result of mutual influence. Influence and selection processes, on the other hand, are not mutually exclusive; both can contribute to peer group homogeneity. They employed formal social network analysis to identify peer groups in the most straightforward way possible. Aggregated data is used in network analysis focuses on interpersonal interactions, such as friendship to find linkages between adolescents who attend the same school groups. Adolescents are asked to identify friendship ties and similar inquiries. Analysis of overlapping contacts between adolescents reveals peer groupings.They cast friendship groups into different types such as cliques, liaisons, and isolated. Cliques are peer groups with a cluster of adolescents who share more friendship ties among themselves than with others. Liaisons are what are called

bridges in a network, they connect cliques but are not part of the cliques.Isolates are connected to no or few friends in a network. The findings showed that smoking depends on social status. Current smoking rates for isolates are significantly higher than for clique members and liaisons. A group of friends were more similar when it came to smoking.Non-smokers are more likely to be dropped from cliques when there are smokers rather than when there are non-smokers in the group. Selection rather than influence provides an explanation of similar smoking habits among friend groups.

3.2   On the importance of peer influence for adolescent drug use: commonly neglected considerations

The belief that young adolescents drug use is influenced by peers is based on correlations such as "Seventh graders who said their friends drank alcohol were much more likely themselves to drink beer had a correlation of 0.48 and hard liquor had a correlation of 0.38, than adolescents who said their friends did not drink. In a sample of ninth graders, the correlation between smoking by friends was 0.56 " [5]. Since, this was replicated multiple times with similar results and has a statistical significance in behavioural science the conclusion drawn from this was that peers influence drug use.

However, there are other factors such as selection and projection that can be just as influential in causing drug use. Selection is when friends are made on the fact that both parties already use drugs hence friendship is based on their similarity.However, it can be possible that an individual sticks to the drug habit after making friends so they can stay in the group. Projection is when individuals attribute their own behaviour to their friends. Studies that research peer influence on drug use ask the subject to report drug use of their friends but not their own habits. "We refer to these two measures of friend behavior as 'perceived and actual reports', respectively. If perceived and actual reports of friend behavior are strongly correlated, and if they are equally correlated with adolescent drug behavior, then the distinction between them would be unimportant. However, in the few studies in which both measures were used, perceived reports were much more strongly related than actual reports to adolescent drug use" [5].Hence, without the consideration of these factors in studies the effect of peer influence may be over estimated.

3.3   Loud, sad, or bad: young people's perceptions of peer groups and smoking

Many studies suggest that smoking behavior at an early age is associated with factors including parental smoking and their attitude towards smoking, lower socioeconomic status, personality factors such as extraversion and neuroticism, and differential tolerance to stress. Apart from this, at a younger age, peer groups play an important part in the development of the individual identity of each peer.

This research is focused on collecting data from middle-school pupils and found that towards the end, larger groups were split into smaller ones with

specific characteristics associated with each group. It was found that only a few individuals took up smoking out of peer pressure. Most pupils were smoking to be 'popular' or to be included in a popular group. These results demand re-structuring of current prevention programs as traditionally it is assumed that smoking behavior is influenced by peer pressure only.

3.4   Using Social Networks to Understand and Prevent Substance Use: A Trans-disciplinary Perspective

This paper argues that substance abuse in adolescents is strongly associated with their position in a social network. Numerous observation-based studies have found that a child is more likely to engage in drug use if his peers are involved in it too. To back up their claims, they suggest that two theories are at play here; social learning theory and differential association theory. Both these theories assert that individuals are influenced by the behaviour of their friends and family.

But another study on 'Sensation seeking and drug use by adolescents and their friends' proposes that children tend to choose peers on the basis of sensation seeking. "Sensation-seeking, is the tendency to pursue new and different sensations, feelings, and experiences". Further analysis proves that these groups transition from non-risk taking to risk-taking behaviour. It was found that both the influence of peers and the selection process are equally likely to play their part in under-age substance abuse. Another research [14] found that high schoolers were more likely to use drugs under peer-pressure from their group. Social network analysis and its various tools play a significant role in prevention interventions.

It helps us target right kind of people to introduce an intervention. For example, in our case an opinion leader could help spread awareness. These chosen leaders should be sociometrically closer to their peers for maximum benefit.

3.5   Do popular students smoke? The association between popularity and smoking among middle school students

Data collected from 1486 students across different middle schools to test their susceptibility for them to smoke according to their popularity. The students were given questionnaires on who were their five closest friends and which five students would be chosen for group projects.Popularity was the number of times a person was named as a friend, divided by class size. Then smoking habits were measured. It seemed that students who were more popular seemed more susceptible to smoking.

3.6   Dynamics of adolescent friendship networks and smoking behavior

This study sheds light on the correlation and influence of smoking habits and adolescent friendships. An actor-based model is used to evaluate smoking behaviors and friendship networks. The data is based on a sample of 1326 Finnish

high school students. The study talks about whether it is the selection process or the influence of friends that affects smoking habits more. In some cases, similar smoking behavior is seen in adolescents due to their selection of similar people (smokers) as friends. While in other cases, influence processes affect smoking habits more and it is observed that friends adjust their smoking habits accordingly. In some cases, both constraints are at play.

The paper also takes into account the reciprocity of friendships. It is observed that reciprocated friendships have a greater likelihood of affecting smoking habits due to a stronger connection. However, there have been mixed results regarding the influence of smoking habits on reciprocal and non-reciprocal friendships [9].

Some researchers have found that people on the periphery of a friend group are a better target for influence due to trying to fit in. The conclusion of this study strengthens the hypothesis that both influence and selection have an impact on smoking behavior amongst adolescent friends.

3.7   Close Friends And Group Influence on Adolescent Cigarette Smoking and Alcohol Use

This is another study that focuses on the impact of friends and groups on the smoking and intoxication patterns within adolescents. This study used a sample of 1026 students from the 6th, 8th and 10th grades of two different school systems. The amount of influence was the greatest from the closest friend that led to the initiation of cigarette and alcohol use in students. However, both the friend circle and closest friend contributed to the smoking and intoxication behavior within the subjects. It was noted that there was no significant difference in the amount of influence from certain genders or grades. The influence was found to be almost similar in all groups.

The paper also highlights how previous studies on the smoking behavior of adolescents were entirely (and incorrectly) based on the influence of friend groups without taking into account the selection of said friend groups. The study also claims that newer research in the field suggests that the effect of peer influence may have been overestimated.

This is why this paper only focuses on the peer influence on adolescents considering two important factors: the friend group and closest friend. The findings, as mentioned previously, showed no significant difference in the influence of different friend groups or close friends. The conclusion of this study also suggests that "selection may account for much of the similarity in substance use between adolescent friends." [13]

3.8   On the importance of peer influence for adolescent drug use: commonly neglected considerations

Within the field of adolescent smoking and drug use patterns, it is quite often believed that peer influence is the driving force of this behaviour in young people. This belief has been cemented by older research and is reflected through media

outlets like advertisements that tell youngsters to stay away from peer pressure. However, this paper aims to conclude that the magnitude of peer influence in adolescents may have been overestimated. This is done by raking through research on friend selection and projection in young adults that may be responsible for similar smoking and drug use behaviours within friend circles.

The paper talks about how many rehabilitation centers and drug prevention programs are founded on the belief that substance use comes from peer influence. This is why their methodology for restricting substance use is to buffer peer pressure that leads to substance use. However the study criticizes this belief by reviewing contrary evidence. The review suggests that peer influence is much less important than we believe it is in adolescent drug use.

3.9   Adolescent Social Networks: Friendship Cliques, Social Isolates, and Drug Use Risk

This study sheds light on a method of studying adolescent friendships that is called social network analysis. Social network analysis is the mapping of friendship networks using information of friends from individuals. This data can be used to identify groups within the network and other relationships. This method makes it quite clear that there are several different types of adolescent friendship patterns instead of just one.

Some of these patterns are cliques, liaisons and isolates. Identifying these patterns in adolescent friendships allows us to study the correlation in their drug use in groups better. The study found that a significant chunk of isolates were smokers. The paper also establishes that similarity between smoking and drug use behaviour in friends is not only due to peer influence, friend selection has a great role in it as well.

4   Application to a Contextualized case study

According to report by The News, "Youngsters in Pakistan are the most affected by drugs and alcohol and the number of these addicts is increasing at the rate of 40,000 per year making Pakistan one of the most drug affected countries in the world while the most disturbing fact is that majority of heroin addicts are under the age of 24" [15]. Among this, children as young as 9-12 have already started consuming tobacco and some as young as 13 and 14 are said to be turning to drugs, Dunya news reported. In Pakistan, prevention programs are either non-existent or are not sufficient.
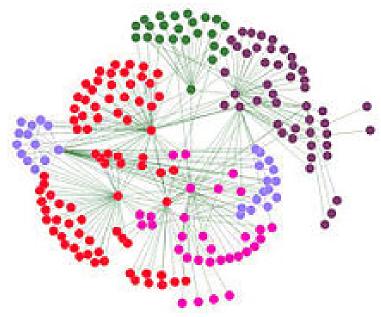
Fig1: sample of a social network structure [16]

As Bauman had categorized cliques, liaisons and isolates in a friendship group. We can identify these categories in the sample as well. The rise of drugs could then be identified by looking at these mapping. As suggested by Kozicki and Reported by TheNews that the cause of use of drugs could to alleviate mood. Furthermore, social network structure could help identify the cliques that are involved in underage substance abuse and can help create a more direct approach for drug abstinent campaigns. The identifications of these groups can only be done by going to Pakistani schools and conducting an in depth survey which is beyond the scope of this paper.

5   Conclusion

Through our analysis and literature review presented above we conclude that Social Network analysis can be very helpful in prevention of drug abuse in young children. If prevention programs are designed using many concepts of network analysis, the situation can be vastly improved. Drug prevention programs should be deployed throughout the country especially from middle-school to college level. Center for Disease Control in US "recommends screening for substance use in children, starting at 9 years of age" [11] .

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