

**Social Networks**  
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**Lecture - 41**  
**Strong and Weak Relationships (Continued) and Homophily**  
**Introduction to Homophily - Should you watch your company?**

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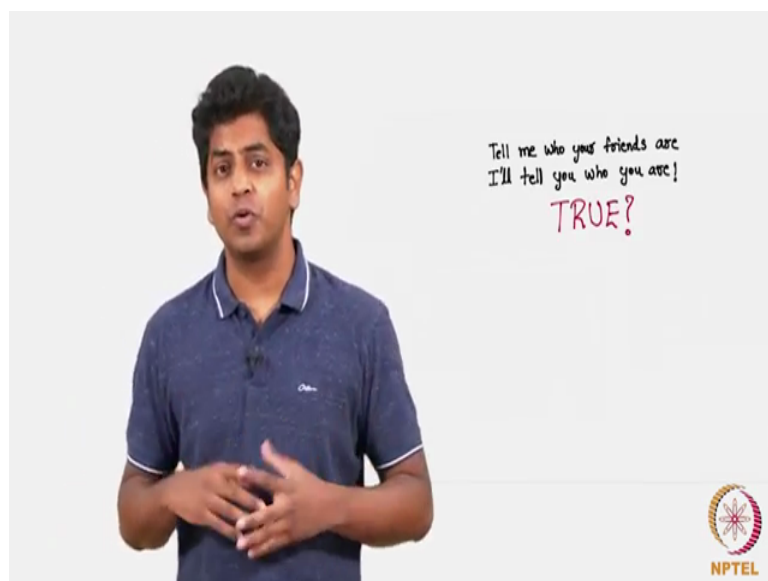
Remember the age old parental advice. Our parents keep telling us keep good company do not get into bad company.

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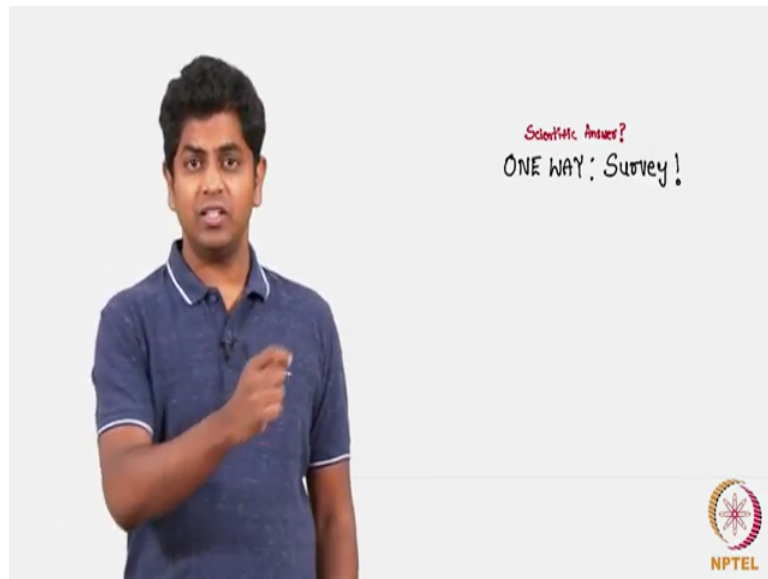
Does this statement even mean anything? How does it matter who your friends are? Do not you think it is you and only you who make makes your character, how on earth will it matter if I have a spoiled brat on my as my friend. It does not matter if my morals or in place, I think I will do well in my life. Is this true? Do you think your friends really make or break your life? Do you think the age old parental advice that I told you is really true. There is a very well known proverb it says tell me who your friends are I will tell you who you are - how much of truth does this proverb carry.

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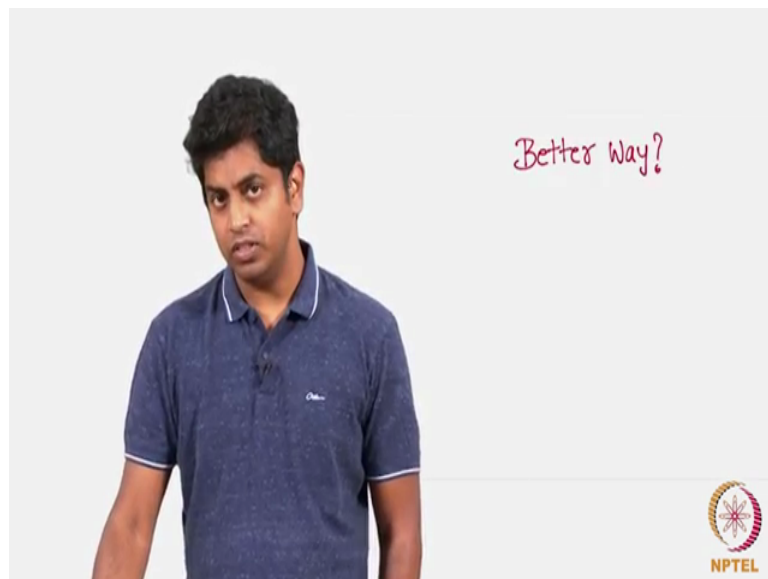
Now, how can one even answer such a question as to how this is true?

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One way of doing it is to go and look at many people and ask who their friends are, look at their traits. For example, I will go and ask this person who are your friends, what are they doing, what is their social status or what is your social status and try to see whether friendships and the character of the person is sort of related, I can go on doing this right.

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Is there a better way to do this? Yeah there is there is there is a much much better way to do this as a very fascinating study that I am going to tell you people.

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There is a paper that was published in 2007 by Christakis and Fowler which said obesity is contagious what do I mean by this.

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If I am friends with people who are obese I enter the danger of becoming obese. How do you think this is true? Probably it some fictitious statement that that one can make just like that, can we back it up with some evidence.

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Scientists also observed that it is not just obesity that is contagious, there are several other things that are contagious too on our friendship network and it is the inferences beyond something being contagious. This eye opening piece of research which says happiness is contagious, takes this to a brand new level what is it mean? It goes without

saying that if you are amidst high energy happy people, you also tend to be happy. You see this is especially true of dogs if you have a pet you will realize that when you are happy and energetic it is very contagious the dog also becomes very happy and energetic and vice versa sometimes.

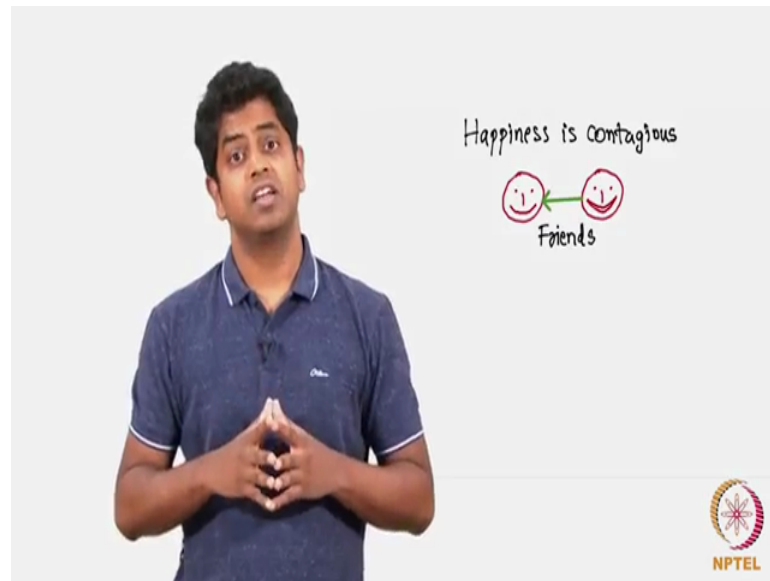
If you meet an old friend who is sort of very who has a smiling face and who is always positive optimistic you miss being with him or her right I mean it is in all I am trying to say that this happiness and energy levels are very contagious. Now what if we repeat this experiment of the obesity being a contagion, with obesity replaced by happiness, do you think happiness also is contagious? In the previous question we saw how obesity was contagious, but now if we ask the same question if I am happy is it because of someone who is happy around me, well again a longitudinal study said people who tend to be happy by again by longitudinal study I mean study across several years. This was some 10 to 12 years study of some 5000 people and they observed that happiness is also very contagious and it spreads in social networks.

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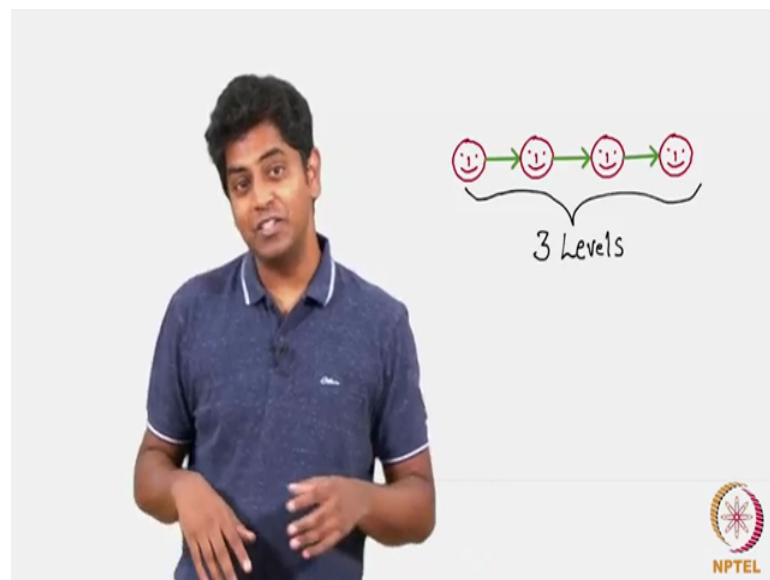
Not just that lot more fascinating than just this.

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They observed, but this happiness is contagious up to three levels which means if you are happy your friends are happy and their friends are happy and their friends are happy I mean that is why the startling, that it is not just at one level, it is are up to three levels.

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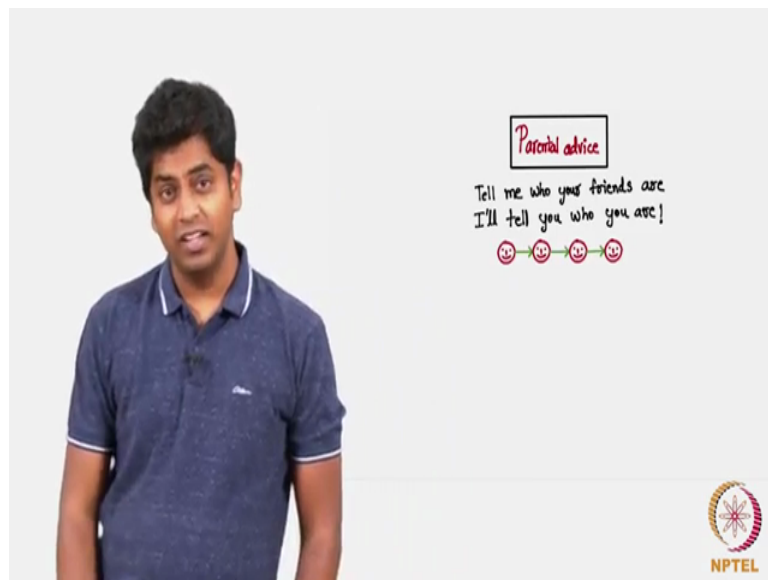
Assume I have 100 friends, 100 friends have 100 other friends and they have 100 more friends. So, up to the last level people are happy if I alone is happy. So, which means happiness is it percolates from the top to bottom one person is happy all his friends are happy on so on and so forth.

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Very tough to believe, but yeah research says this is very true. At least to a very good extent that many of your friends are happy when you are happy.

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Getting back to the parental code that I said, keep good company this also means something more than that, not just keep good company work on understanding what is the company that your company keeps because their happiness implies his happiness which is your friend implies your happiness. We should watch up to several levels. So, the proverbial code of tell me who is your friend I will tell you who you are seem to be



partially true in the sense that there is a lot more to it that it is not just your friends it is your friends friends who can influence you and their friends who can influence you. Maybe a modern code after this kind of a research should be tell me who your friends are who you are friends friends or who you are friends friends friends are and I will tell you who you are right.

So, this eye opening research establish a brand new line of understanding in social networks that we are not just connected, we permeate our thoughts, we spread our thoughts like a contagion. Just the way yawning is contagious, happiness is contagious. Just the way flues spreads obesity spreads unbelievable but true. We will actually see in the forth coming lectures how we can program this and then make our observations.

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I will give you a fictitious data set on which you will be writing a piece of code and you will be inferring all these facts. The fact that obesity is contagious, happiness is contagious, I will give a big network and I will give you the longitudinal network data across the timeline and you will infer that yes obesity has become contagious from here to here. Happiness does spread to people across several levels.