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Contagion Mechanism on Social Network (Bullying on Teenage Peer Group)

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Abstract: Contagion mechanism makes certain behavior spread and imitated on social network. This mechanism occurs in two way, by cohesion and structural equivalence. This mechanism also can occur in the bullying behavior of teenage student. Study conducted on peer group network in the boarding school, consist of six generation high school student. This study using mixed method approach and snowball sampling technique with social network analysis method. The results shows that contagion occurs not only by cohesion and structural equivalence but also by reversed structural equivalence. And contagion by cohesion are dominant in this bullying network.

Key words: Social contagion, contagion mechanism, bullying, social network, communication, mixed method

INTRODUCTION

Contagion mechanism derived from communication processes in the social network. Contagion explain the rise of network based on individual contact and their comprehension about the other and their relation. Social contagion explain how knowledge, attitude and behavior of organization member depend on information, attitude, and behaviour of other in the network where they are connected (Monge and Contractor, 2003). Contagion used to learn how an idea, attitude or behavior of network's actor spread and imitated by other network's actor.

Several studies suggest that it is possible on the peer group, contagious effect that affect their member to do certain behaviour (Bovasso, 1996; Christakis and Fowler, 2011). Peer group refers to social group who it members have same interest, social class and age (Macionis, 2008). One of behavior often found and/or done together by peer group is bullying (Winurini, 2012). According to Sullivan, bullying is sequence of aggressive acts by one or group of people to another within a specific period (Fitrianto, 2009).

Number of violence and bullying in Indonesia is relatively high now, spesifically among student. Komisi Perlindungan Anak Indonesia (Indonesian Commision for Children Protection) on 2012 released that 86.7% of child reported being violated at school with 29.9% of the perpetrators are teacher, 42.1% are classmates and 28% are other schoolmates. It is clearly seen that >70% perpetrators are student or victim's schoolmates. The purpose of this paper is to explore about contagion mechanism on social network, in this case is contagion mechanism of bullying on teenage peer group.

Contagion and social network: According to Burt, at the heart of social contagion are social network wherein information or ideas are transmitted (Honari and Muis, 2014). Contagion mechanism have been used to explain network members attitude as well as behavior. Erickson proposes comprehensive overview of the various theories that address the "relational basis of attitudes". She describes how various network dyadic measures such as frequency, multiplexity, strength, dan asymmetry can shape the extent to which others influence individuals in their networks. Erickson proposes two models to explain contagion process, cohesion and structural equivalence (Monge and Contractor, 2003).

Contagion by cohesion implies that the attitudes and behaviors of the actors to whom they are directly connected influence network member. Contagion by structural equivalence implies that others who have similar structural patterns of relationships within the network influence people (Monge and Contractor, 2003).

Contagion by cohesion and structural equivalence contrasted with the concept of the density of a social network. In a denser network, a larger proportion of all possible interactions among network members actually occur. The result is a network member whose members have frequent and redundant contact with each other and are therefore likely to mutually influence each other. But, previous research using network analysis has found that structural equivalence is a more important source of contagion than cohesion (Bovasso, 1996).

On social network where contagion mechanism happen, there are certain actor who are most potential to spread the behavior contagiously, called as focal actor in the network exchange theory. These actors are the actors with highest centrality on the network. In this study,

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focal actor's centrality measured by degree centrality and freeman betweenness centrality. Degree centrality shows actor's popularity on social network. Degree are number of links to and from the actor (Eriyanto, 2014). And betweenness centrality shows an actor's position as a betweenness of one actor's relation with another on the network. Betweenness centrality is important because related with information control and manipulation (Eriyanto, 2014).

Bullying and peer group: Bullying according to Sullivan, Clearly and Sullivan, is a sequence of aggresive acts, done by one or a group of people to another within a certain time (Fitrianto, 2009). Bullying has three main feature, aggressive acts by a perpetrator(s) toward a victim with intent to harm, these acts are repeated over time and there is a power imbalance between perpetrators and victims, with victims often being unable to easily defend themselves from perpetrators (Olweus, 1993). Sullivan (Erlan, 2008) said that bullying occurs most intense and most influential, significantly when people were in the age 15-17 years old or at the stage of adolescent.

Research by Espelage report that among the factors that cause bullying in adolescent is the adherence of the role of peer group in their life, particularly in school (Winurini, 2012). In the peer group, the young can escape and discover the world full of freedom without adult control, by sharing their experience and joy which can't be shared with adult (Macionis, 2008). Existence of these peer group in the bullying case show that the perpetrators and their victims are connected in the network.

Based on the trait, bullying can be vague (exclusion and spreading rumor) or overt (verbal or physical abuse) (Hemphill *et al*., 2014). And a student is being bullied when another student or several other students:

- Say mean and hurtful things or make fun of him/her or call him/her mean and hurtful names
- Completely ignore or exclude him/her from their group of friends or leave him/her out things on purpose
- Hit, kick, push, shove around or lock him/her inside a room
- Tell lies or spread false rumor about him/her or send mean notes and try to make other students dislike him/her
- And do other hurtful things like that

And these things happen more than only once, and its difficult for the student being bullied to defend him/herself (Olweus, 1993).

MATERIALS AND METHODS

Social network analysis method: This study of contagion mechanism using social network analysis method. Social network analysis on social contagion studies enable us to identify the sources of information of each network member as the mere exposure of other's attitudes, behaviors, and beliefs will influence one's own attitudes, behaviors, and beliefs (Soares and Lopes, 2014). Recent studies about contagion using network analysis are study of organization intervention to asses contagion process on leadership perception in the organizational peer group (Bovasso, 1996) and study about model of contagion in psychological safety.

The approach used here are mix method of quantitative and qualitative, specifically explanatory sequential mixed method. This approach consist of two phases study where the researcher collect quantitative data on the first phase, analyze it, then use it to qualitative phase (Creswell, 2013). Quantitative used to see the contagion mechanism on the network through sociometric data and sociogram. Sociometric data on network analysis has been used to asses contagion effect because these techniques model the structure of social interaction, which makes a social system 'greater than the sum of its parts" (Bovasso, 1996). While qualitative approach used to understand bullying processes and it spread.

The subject of this study are Ar-Risalah Islamic boarding school student, since bullying is known as a tradition in Islamic boarding schools. And all of Ar-Risalah Islamic boarding school student are adolescent.

The sample selected based on snowball technique sampling while qualitative sampling selected purposively. Purposive sampling technique appropriate for unique cases, mainly informative, usually to choose member of special population that difficult to reach (Neuman, 2011), in this case the sample choosen to undertake the qualitative phase are perpetrators and victims of bullying.

Quantitative data collection conducted by questionnaire, which is consist of name generator or sociometric question about bullying. The questionnaire about bullying are modified from the Olweus's bullying questionnaire (Olweus, 1993). While sociometry is a way to gain and analyze quantitative data about communication pattern among individu on a system by asking every respondent to whom they are connected (Rogers and Kincaid, 1981). After quantitative data collection, qualitative data conducted by indepth interview. Data then treated by UCINET Software. All the relation data inputted into Ucinet Spreadsheet, along with the direction and frequency to know their asymmetric, multiplexity and frequency.

This study of contagion mechanism measure several kinds of measurement at three level analysis that affect contagion on the network. They are actor/individual, dyadic and global level of analysis. At the actor level, measurement performed to see the degree and betweenness. At the dyadic level, tie was measured based on their frequency, multiplexity, strength and asymmetry. And at the global level, density considered as the factor that affect the contagion mechanism, either by cohesion or by structural equivalence. Thereafter the data presented in three form: sociogram, table and narration.

RESULTS AND DISCUSSION

Contagion mechanism in the peer group of high school student in the islamic boarding school: From snowball sampling, obtained 84 actors from six generations of Ar-Risalah high school student. The 10 among them are junior high school student and the rest are senior high school. For the very first, a student from second grade of senior high school was given the questionnaire and was asked about her bullying relation. Actors whom connected to her, either perpetrator or victim actors was selected for the next sampling. While qualitative research by interview conducted on three samples selected purposively. They are actor who belong to dormitory security section, actor who bullied frequently and perpetrator actor who never consider her act as bullying.

Of 84 actors and 229 relations on bullying network, 74 actors are perpetrators and 39 of them are ever experienced as a victim. The rest 10 purely experienced as a victim. Totally 857 bullying act happened in this network (Fig. 1).

At the sociogram, nodes symbolized by color dots. The dots have different colors that indicate their class/generation. And the lines symbolized ties happen between two nodes. The lines have different thickness. The thicker the line, the more often the bullying frequency. Every line have an arrow that indicates the direction of the ties. Nodes which receiving direction of the arrows, are the nodes of the victim.

To find out the focal actor in this network, centrality measurement performed based on two types of data, valued and non-valued data. Non Valued data (NV) is data that only count the relation between nodes while Valued data (V) completed by frequency of bullying relation. And the measurement based on the Degree (DC) and Freeman node Betweenness (FBC). Valued data can only be count on degree centrality measurement (Table 1).

The result of valued and non-valued data give the different focal actor. In the non-valued data, focal actor is the one who widely bullying most victim (18 victims) in the network. In the valued data, focal actor is who frequently bullying other victim (73 times). Both are potential perpetrators, focal actors but they also experienced as victim of bullying. They are perpetrators with contagion effect. The bullying behavior they received are then adopted. That was focal actor based on degree centrality. Suprisingly, the focal actor based on betweenness centrality are the same person. She became the actor that intercede most of network member and most potential in spreading bullying.

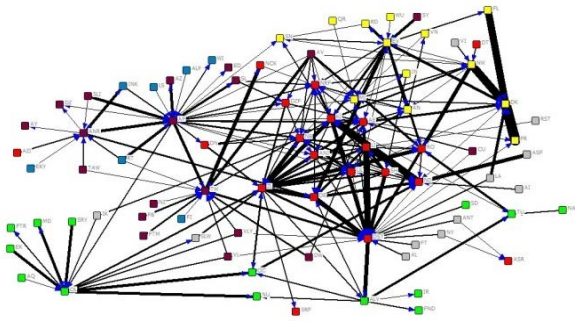

Fig. 1: Bullying network sociogram

Table.1: Centrality of bullying network

Variables	DC	FBCNV
NV	AF	AF
	18	1220.603
V	ZL	-
	73	

Contagion mechanism in this whole bullying network occurred by cohesion and structural equivalence. Bullying by cohesion occur when perpetrators are previously victims and they turn into perpetrators toward classmate, junior, in addition they are not victim of their senior, senior. While bullying by structural equivalence occur when a bullying chain created from senior to their junior. The chain shows that there are structural equivalence ties and the structure are between senior junior.

Totally, there are 139 contagion mechanism by cohesion in this network and 51 contagion mechanism by structural equivalence. And also seen 29 reciprocal bullying where the perpetrator bully their victims, then in different time the victims reciprocate it by bullying the perpetrators. This ties of reciprocal bullying are kind of symmetric ties.

In this network was found two chain of contagion mechanism by reversed structural equivalence. While structural equivalence are senior-junior structure, reversed structural equivalence formed by bullying relation started from junior to senior.

Among the factor that affect contagion mechanism is multiplexity. Multiplexity means there are several kinds of

relation in one ties. In this network, there are 52 ties that have multiple bullying relation. The kind of bullying that mostly occurs is bullying by saying mean thing. Density is one factor that determine whether contagion occur by cohesion or structural equivalence. In this bullying network, the density score is 0.033. This means, only 3.3% ties occur from the all possible ties. And the dominant contagion mechanism here is contagion by cohesion. It is not in accordance with previous studies by Burt which conclude that in a dense network, contagion by cohesion are take place, compared with contagion by structural equivalence (Bovasso, 1996).

Moreover, contagion mechanism also occur cross dormitory. Though this research conducted in the girl dormitory, the problem afflict their same-grade-friend in the boy dormitory will be a problem in the girl dormitory. Even though the rules and their compact schedule at the boarding school make them difficult to communicate. This means that in this network case, frequency does not really matter to the contagion to take place.

CONCLUSION

The results show that contagion mechanism occur in the bullying network and occurs not only by cohesion and structural equivalence but also by reversed structural equivalence. And results show that contagion by cohesion are dominant rather than contagion by reversed and structural equivalence. It is not in accordance with recent studies that in a relatively dense network the tendencies of contagion mechanism occur by cohesion. This is because there are not only one focal actor who is potential in spreading the bullying behavior. Also the frequency of contact between actors, either classmate or different generation are high, so contagion by structural equivalence that consist of bullying relation senior-junior are scarce.

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