## Bullies and Victims: How Bullying Incidents Vary in Grades and How They are Reported

Oh-Hyun Kwon, Member, IEEE, Jia-Kai Chou, and Kwan-Liu Ma, Fellow, IEEE

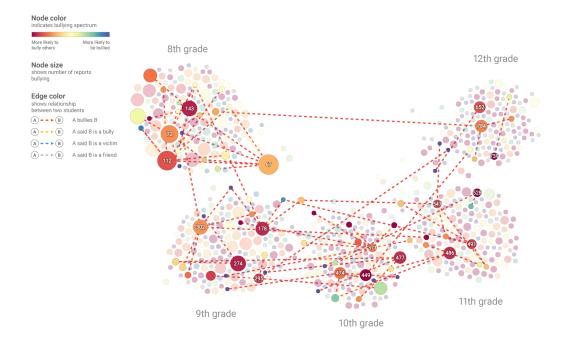


Fig. 1. The visualization shows the bullying behaviors of the students with relatively higher bullying tendency in each grade (by selecting 3–4 nodes in each grade that have bigger size and redder color). A pattern can be seen that between-grade bullies occurred more often in 9th, 10th and 11th grades, while 8th and 12th graders are more likely to commit within-grade bullies.

Abstract— We analyze a friendship and aggression network collected from a group of high school students (8th–12th graders) [1]. We depict social behaviors among the studied subjects by designing a visualization that allows us to answer questions like 'Do bullying tendencies change among students in grades?' and 'How likely is a bullying incident would be reported by the victim, other peers, or the bully?' A node-link diagram succinctly shows the relationships between individuals. Its layout was designed to reveal both friendship and grade information, while directionally animated edges indicate the type of social relationships between students. Node color indicates each student's tendency to be a bully or a victim, and size denotes the number of reported bully-related incidents, as an aggressor or a recipient. (Our slideshow is web-based. However, the submission system does not accept HTML files. Please see our slideshow at http://kwonoh.net/bullying)

## REFERENCES

 R. Faris and D. Felmlee. Social networks and aggression at the wheatley school. Report for CNN, available at http://i2.cdn.turner.com/cnn/ 2011/images/10/10/findings.from.the.wheatley.school.pdf.

Manuscript received xx xxx. 201x; accepted xx xxx. 201x. Date of Publication xx xxx. 201x; date of current version xx xxx. 201x. For information on obtaining reprints of this article, please send e-mail to: reprints@ieee.org. Digital Object Identifier: xx.xxxx/TVCG.201x.xxxxxxx

Oh-Hyun Kwon is with University of California, Davis. E-mail: kw@ucdavis.edu.

Jia-Kai Chou is with University of California, Davis.
E-mail: jkchou@ucdavis.edu.

<sup>•</sup> Kwan-Liu Ma is with University of California, Davis. E-mail: ma@cs.ucdavis.edu.