Background

In response to the growing prevalence of cyberbullying – the deliberate use of online digital media to communicate false, embarrassing, or hostile information about another person – among teens, researchers from a range of disciplines – including psychology and computer science – have been working to develop a better understanding of how cyberbullying occurs, who is at increased risk, and what we can do to prevent it. The efforts of psychologists have involved primarily exploratory models that shed light on key predictors and outcomes of cyberbullying, whereas the efforts of computer scientists have been directed towards identification models that can detect cyberbullying using internet or social media content. There has been surprisingly little interdisciplinary research that bridges the findings and developments from these disparate fields.

Identification

The BullyBlocker app uses the Cyberbullying Identification Module to calculate the Bullying Rank for a teen. This module uses information from the Data Collection Module – including Facebook data and parent-user data – to identify any risk factors or warning signs that may be present in the teen’s profile. Each risk factor and warning sign – from insulting wall posts and comments to the teen’s gender and mental health history – has been demonstrated through social science research to predict cyberbullying risk. To that end, specific risk factors and warning signs have been assigned a “weight,” or number that indicates how much influence it should have in the calculation of the Bullying Rank, using the effect sizes indicated in social science research as a guide.

Risk Factors

Risk factors currently incorporated into the calculation of the Bullying Rank include age, gender, past history of bullying, internalizing problems, externalizing problems, race, sexual orientation, and internet use. Most risk factors were empirically supported by meta-analyses in cyberbullying research – some are included as exploratory risk factors to determine if they are correlated with changes in cyberbullying risk.

To incorporate each risk factor, one of three chosen meta-analyses first identified the specific factor as having a significant relationship with a teen’s cyberbullying experience. Risk factors were then evaluated for their applicability to the app – things such as ease of extractability from Facebook, or the likelihood of a parent’s accurate report, were considered – before incorporating each risk factor into the identification module. Lastly, the meta-analytic effect size for each risk factor was used to assign an approximate weight for the risk factor within the final Bullying Rank calculation. See the associated table for a detailed description of the meta-analyses used and where each risk factor was found.

Evaluation

To evaluate the BullyBlocker’s ability to effectively detect instances of cyberbullying, a simulated social network was created based on actual data from Twitter (i.e., tweets including both ambiguous and cyberbullying messages), cyberbullying messages from well-known cyberbullying cases in the media, and randomly-generated social media data. The resulting dataset was then: (1) processed through the BullyBlocker app, and (2) coded independently by two members of the research team (i.e., human coders), to estimate a Bullying Rank. The app-generated and human estimates of Bullying Rank were then compared.

A high degree of convergence was found between the risk estimates generated by the BullyBlocker app and the human coders.

Discussion

The BullyBlocker app is an innovative development in interdisciplinary research. This mobile app is novel due to its:

1) Use of information from parents and teens to predict cyberbullying risk
2) Integration of empirical findings from psychology to improve identification of cyberbullying risk
3) Generation of a customized list of resources for parents based on unique aspects of the cyberbullying their teen may be experiencing

BullyBlocker is a critical step forward in identifying ways to combat cyberbullying with the potential to enact positive change at the level of individuals, families, communities, and society, at large.