High School Bullying and Victimization: A Latent Difference Score Model
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Abstract
The purpose of this study is to investigate longitudinally the interrelationship between bullying behavior and victimization. Using continuous measures of bullying and victimization, a bivariate latent difference score model (McArdle & Hamagami, 2001) was estimated to examine the dynamic interrelations between both processes and to capture constant change in each behavior. Data were collected at an all-male private high school over the course of four years using a battery of self-report instruments including the Bully/Victim survey (Swearer & Cary, 2003). Results indicate that bullying behavior systematically declines during high school. Victimization, on the other hand, shows a high degree of individual variation with declines and increases throughout the high school years. In addition, bullying behavior was shown to be predictive of the degree of future victimization, but victimization is not predictive of future bullying behavior.

Background
- Previous research treating involvement of individuals in bullying and victimization as static categories (e.g., bully, victim, bully-victim) has been criticized recently, and a continuous representation of these behaviors has been suggested instead (Rosenthal, Espelage, & Simon, 1999; Swearer & Doll, 2001).
- Under a continuous perspective of bullying and victimization, it is assumed that most students exhibit and experience some degree of both types of behaviors, and that both may influence each other.
- This interrelationship between bullying and victimization may be studied using a longitudinal approach which focuses on the dynamics in the development of both behaviors.
- The latent difference score (LDS) model (McArdle & Hamagami, 2001) allows longitudinal analysis of dynamic change processes in multiple outcome variables by modeling autoregressive effects separately from a constant change factor. The LDS model also allows the specification of cross-lagged effects in order to investigate the relationships between growth parameters across different outcome variables.

Research Design
Research Questions:
1. How do bullying behavior and victimization develop during high school grades 9 through 12?
2. How are changes in thses behaviors interrelated?

Measures:
- Collected at an all-male private high school from students in 9th to 12th grade (N=288)
- Bully/Victim Survey (2-part response): Students identify themselves as bully and/or victim (yes/no). If “no”, they skip the next section and continuous score is entered as missing, if “yes”, they complete the section.
- Continuous score: Total score of Likert-type (0-4) ratings of the frequency they have perpetrated or experienced each of 11 aspects of bullying and/or victimization behavior (Min = 1, Max = 44).

Model Estimation
1. Univariate models: Separate models of change in bullying and victimization were estimated using a two-part model (Brown, Catalano, Finnegan, Haggerty, & Abbott, 2005; Olsen & Schäfer, 2001) that captures change in the categorical standing of each student (bully/victim or not) and, if self-identified as bully and/or victim, change in the continuous measure of each behavior (results not reported here). The two-part model was chosen to address the presence/absence of non-response in the outcome variables.
2. Bivariate model: A bivariate model incorporating cross-lagged effects capturing the dynamic interrelations in the change processes of both behaviors was estimated (Figures 1 and 2).

Results
- Initial degree of bullying behavior exhibited by students in 9th grade is estimated to be, on average, 11.39 points on the self-report scale. However, there is considerable degree of variance among students as indicated by the variance estimate of 19.1.
- The developmental trajectory of bullying exhibits a constant slope effect with a mean of -4.55. This indicates that on average students’ bullying behavior declines during high school by 4.55 points on the self-report scale per school year. The variance estimate of the constant slope (6.2) and the autoregressive effect (0.44) are not statistically significant and are therefore not interpreted.
- Initial degree of victimization is estimated to be on average, 13.22 points on the self-report scale. There is considerable individual variation in initial victimization as indicated by the intercept variance estimate of 52.3.
- The mean constant change in victimization is estimated at 19.6, which indicates an average increase in victimization experiences by 19.6 points on the self-report scale per school year. However, this constant increase in victimization is strongly reduced by the negative autoregressive effect of -1.48, which reduces the effect of the constant change factor, particularly when previous levels of victimization were high. This suggests that students with low levels of victimization may increase slightly from year to year, but students with high degrees of victimization tend to decline. The estimated balance point with neither increase nor decline in victimization would be at ca 13.8.
- This interplay of the autoregressive and constant change effects allowing longitudinal analysis of dynamic change processes in multiple outcome variables was used for all analyses.

Conclusions
- The latent difference score model adequately captured the dynamics occurring in the development of bullying behavior and victimization.
- The findings of this study show that bullying behavior declines systematically during high school, whereas victimization does not exhibit the same systematic change processes.
- Rather, victimization continues to show increases and declines over the course of the four high school years.
- Interestingly, there appears to be a plateau in degree of victimization beyond which students are not predicted to increase in victimization experiences but start to decline again.
- The lack of a cross-lagged effect of change in victimization on bullying behavior suggests that experiencing victimization is not related to future bullying behaviors, rather bullying others is predictive of future victimization.
- Educators and school personnel should work to prevent bullying behaviors which will in turn prevent future victimization.

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