

Bullying among Males: A Longitudinal Investigation of Externalizing and Internalizing Problems

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Introduction

- External locus of control is linked to externalizing and internalizing problems, including aggression (Halloran, Doumas, John, & Margolin, 1999), high levels of hopelessness (Haye, 2005; Ward & Thomas, 1985), and depression (Pinto & Francis, 1993); however, these relations have not been widely explored in the bullying literature, and the findings have been inconsistent.
- Two researchers found victims and bully-victims reported a more external locus of control than not involved students (Androu, 2000; Haye, 2005) and bullies (Androu, 2000); however, Slee (1993) reported more external locus of control in bullies than victims and not involved students.
- Only one study has found victims had higher levels of hopelessness than other groups (Biggam & Power, 1999).
- There are inconsistent findings regarding the developmental changes of locus of control (Connolly, 1980; Weisz & Stipek, 1982), aggression, and depression.
- Some longitudinal studies have reported increases in depressed affect from early to middle adolescence (Ge, Lorenz, Conger, Elder, & Simons, 1997; Petersen et al., 1991), though other studies did not find the increase (Galambos, Leadbeater, & Barker, 2004).
- Some researchers have found aggressive behavior to be stable (Keltikangas-Jarvinen, 2005; Olweus, 1979), while others have found it decreases (van Bokhoven et al., 2006), or is not stable during adolescence (Loeber & Hay, 1997).
- An all-male high school provides a unique context to study bullying, and related externalizing and internalizing behaviors.

Research Questions:

- What are the developmental trajectories of locus of control, helplessness, depression and aggressive behavior?
- Is bully/victim status (bully, victim, bully-victim, and not involved groups) linked to those trajectories?
- What are the relations between initial status and subsequent changes among these four variables?

Method

Participants

- 286 male students with useable data in 9th through 12th grade in a Midwestern all-male high school. 6 students were not included due to excessive missing data.
- Data were collected in the spring of 2003, 2004, 2005, and 2006.

Measures

- Aggression Questionnaire (AQ;** Buss & Warren, 2000).
- Nowicki-Strickland Locus of Control scale (LOC;** Nowicki, & Strickland, 1973).
- The Hopelessness Scale for Children (HSC;** Kazdin, French, Unis, Esveldt-Dawson, & Sherick, 1983).
- Children's Depression Inventory (CDI;** Kovacs, 1992).
- Bully Survey-Student Version (BYS;** Swearer, 2001). Students were categorized as bully, victim, bully-victim, or not involved based on their self report responses to *Bully Survey*.

Analytic Procedures

- Four separate univariate growth models were developed (using SAS PROC MIXED) to test the similarities and differences in the developmental trajectory of four externalizing and internalizing problems among different behavior groups (bully, victim, bully-victim, or not involved) (Figure 1).
- Due to nonlinearity in developmental trajectories, four separate Level and Shape models (using Mplus) were developed to parsimoniously address the initial status (the "level" factor) and the subsequent change (the "shape" factor) of the behaviors (see Little, Bovaird, & Slegers, 2006).
- The Level and Shape model models nonlinear growth by allowing the estimated basis coefficients to reflect the nonlinearity rather than including additional polynomial terms.
- Time was centered at the first observation so that the initial status factor is interpreted as the level in 9th grade and the shape factor represents the subsequent change throughout high school.
- An associative latent growth curve model (Duncan, Duncan, Strycker, Li, & Alpert, 1999; Little, Bovaird & Slegers, 2006) was developed to model the initial status and behavior change in the context of four problem behaviors.
- The Level and Shape structure was used to model change with basis coefficients for the first and last time points fixed at 0 and 1, respectively. Residual variances were allowed to correlate between variables at the same time points (Figure 3).

Figure 1. Univariate latent growth curve depicted as a multivariate structural equation model. Loadings for the intercept/level factor (L) are fixed to 1.0 and slope/shape factor (S) loadings are fixed to the values of the time variable *T*. In the Level and Shape model, the first and last slope factor loadings are fixed to 0 and 1, respectively, and the middle two loadings are freely estimated.

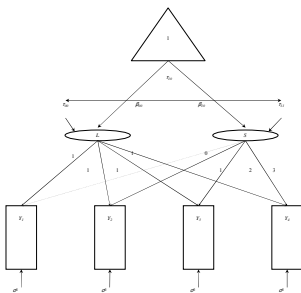


Table 1. Parameter Estimates and Standard Errors for Fixed Effects by Bullying Group and Outcome.

Parameter/Effect	Aggression		Hopelessness		Locus of control		Depression	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
Intercept - NI	2.391**	0.08	1.808**	0.02	0.658**	0.02	0.762**	0.05
ΔInt - B vs. NI	-0.905	0.18	0.058	0.03	-0.041	0.05	0.085	0.11
ΔInt - V vs. NI	0.257	0.14	0.012	0.01	-0.055	0.03	0.172*	0.09
ΔInt - B/V vs. NI	0.303*	0.12	0.015	0.01	-0.010	0.03	0.203**	0.07
Slope - NI	-0.038	0.03	0.003	0.01	0.008	0.01	-0.144**	0.02
ΔSlope - B vs. NI	0.039	0.06	-0.022	0.02	0.005	0.02	-0.022	0.04
ΔSlope - V vs. NI	-0.078	0.05	-0.005	0.02	0.003	0.01	-0.031	0.03
ΔSlope - B/V vs. NI	-0.016	0.04	-0.011	0.01	-0.004	0.01	-0.043	0.03

Note. * $p < .05$. ** $p < .01$. B = bullying group. V = victim group. B/V = bully/victim group. NI = not involved group.

Results

Developmental trajectories:

- Estimated means and fit lines across the four time points are presented in Figure 2.

Group trajectory differences:

- There were group differences in the initial status of aggression and depression. The bully-victim group had significantly higher initial score on aggression compared with the uninvolved group ($p < .05$). The bully-victim group ($p < .01$) and the victim group ($p < .05$) had significantly higher depression score compared with the uninvolved group (Table 1).
- There was a significant decrease in aggression ($p < .05$), and depression ($p < .001$) from 9th to 12th grade, but groups were not statistically different on this trend (Table 1).

Figure 2. Estimated means and fit lines across the four time points based on Level and Shape models.

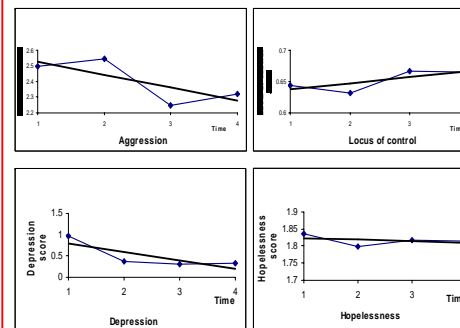


Table 2. Correlations (off-diagonal elements) and variance estimates (diagonal elements) for initial status and change constructs.

	Initial Status/Level				Change/Shape			
	AQ	HSC	LOC	CDI	AQ	HSC	LOC	CDI
AQ	.16 ²				0			
HSC	-.42 ²	.01 ²			0	.01		
LOC	-.49 ²	.57 ²	.01 ²		0	.84	.01 ²	
CDI	0	0	0	0 ¹	0	-.09	-.27	.05 ²

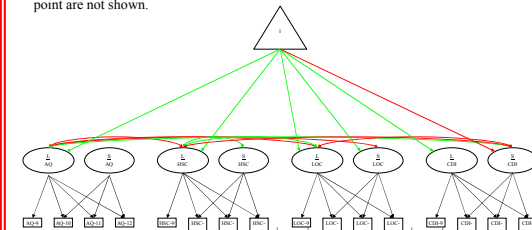
Note. ¹ The slope variance of AQ and intercept variance of CDI were set at 0. Consequently all correlations involving these constructs were also constrained to be zero. ² Indicates statistical significance at the $p < .05$ level.

Results continued

Associations between internalizing and externalizing problems:

- The final model depicted in Figure 3 represented the data well, $\chi^2(85) = 126.00$, $p = .003$, $CFI = .96$, $RMSEA = .04$, $p = .819$.
- Aggression in 9th grade correlated positively with change in depression, and correlated negatively with change in locus of control, and locus of control and hopelessness in 9th grade (Table 2).
- Hopelessness in 9th grade correlated positively with locus of control in 9th grade and change in hopelessness; and correlated negatively with change in depression (Table 2).
- Locus of control in 9th grade correlated negatively with change in depression (Table 2).

Figure 3. The final associative level and shape model. Red paths represent negative correlations/coefficients and green paths represent positive correlations/coefficients. All non-included paths, both unidirectional and bidirectional, were not statistically significant at the $p < .05$ level or were fixed to 0. Residual errors and residual correlations between errors at the same time point are not shown.



Discussion

- Results were consistent with other studies that bully-victims and victims reported the highest levels of depression compared with other groups (Biggam & Power, 1999; Swearer et al., 2001).
- The finding of the significant decrease in aggression supported the notion that aggression is less stable during adolescence (Loeber & Hay, 1997).
- The significant decrease in depression was different from previous studies (Ge, et al., 1997; Petersen et al., 1991). This may be due to the fact that the participants in the current were all male and were older than samples in previous studies.
- The lack of a linear trend in locus of control does not support a developmental trend towards an internal locus of control.
- The 9th grade levels and through high school change in aggression, depression, hopelessness and locus of control were correlated with each other. This evidence may suggest that a male student's level of internalizing and externalizing problems at entry into high school may serve as an indicator of his change in behavior during high school.
- The results regarding aggression seem counterintuitive; however, the aggression total score measures several components of aggression, such as anger, hostility, which are fundamentally different than direct forms of aggression. Further analyses should look at the subtypes of aggression measured by the *Aggression Questionnaire* subscales in order to better capture anger, hostility, and different types of aggression.
- Small subgroup sample sizes when investigating bullying categories might cause limited variance within some groups, which might lead to the lack of group differences in the developmental trajectories.
- Future research should look at both males and females.