

Combining Variable- and Person-Oriented Approaches to Investigate Behavior Problems during Childhood and Adolescence

Melanie J. Zimmer-Gembeck, Jennifer Roberts, & Benjamin Aguilar
Institute of Child Development
University of Minnesota

Background

- ✱ Studies of childhood adjustment problems have tended to focus on either externalizing behaviors or internalizing symptoms, even though they are highly comorbid (Caron & Rutter, 1991; Zoccolillo, 1992).
- ✱ Few studies have focused on *intraindividual* patterns of both externalizing behavior and internalizing symptoms throughout childhood and adolescence.
- ✱ Longitudinal studies report high stability of externalizing behavior during childhood (Dishion et al., 1995). However, internalizing symptoms are less stable during childhood (Cicchetti & Toth, 1995).
- ✱ In addition, childhood externalizing and internalizing problems have been found to substantially increase risk for future adaptation problems such as criminal activity and suicidality.
- ✱ Magnusson (1995) has argued that a holistic, interactionistic view of individual development can illuminate important information about functioning. Analytic methods operating under this person-oriented perspective can identify and describe individuals' developmental profiles of functioning, enabling the study of outcomes and challenges associated with particular profiles.
- ✱ This approach is concordant with a view of psychopathology as a constellation of adaptations that are better understood via the identification of patterns at the individual level (Sroufe, 1997).
- ✱ The person-oriented method allows for the study of behavioral patterns that are specific to an individual or groups of individuals, as well as the examination of the complexity and interaction of multiple factors.

Purpose

- 1) To examine longitudinally intraindividual patterns of externalizing behavior and internalizing symptoms from grade 1 to age 16, and to determine whether particular patterns of problems are associated with criminal activity and suicide attempts in late adolescence (age 19)
- 2) To use a person-oriented approach to examine whether particular profiles of both externalizing behaviors and internalizing symptoms in grade 1 forecast criminal activity and suicide attempts in late adolescence (age 19)

Method

Participants

- ✦ Participants were drawn from an ongoing 25-year longitudinal study of developmental adaptation in an urban poverty sample of young mothers and their first-born children (Egeland & Brunnequell, 1979).
- ✦ The sample (N=170) is 52% male, 69% white, 10% black, 18% mixed race, and 3% other.

Measures

Achenbach Child Behavior Checklist – Teacher, Parent, and Self-Report Versions

- ✦ Externalizing and Internalizing T-Scores, combined as follows for analyses:
 - ◆ Grade 1: average of teacher and parent versions
 - ◆ Grades 2, 3, 6: teacher version
 - ◆ Age 16: average of teacher, parent, and self-report versions

Adolescent Health Survey – Self-Report at age 19

- ✦ Criminal Activity within the last two years:
 - ◆ shoplifting
 - ◆ serious criminal activity (robbery, breaking and entering, assault and battery, domestic violence)
- ✦ Lifetime presence or absence of Suicide Attempts

Results

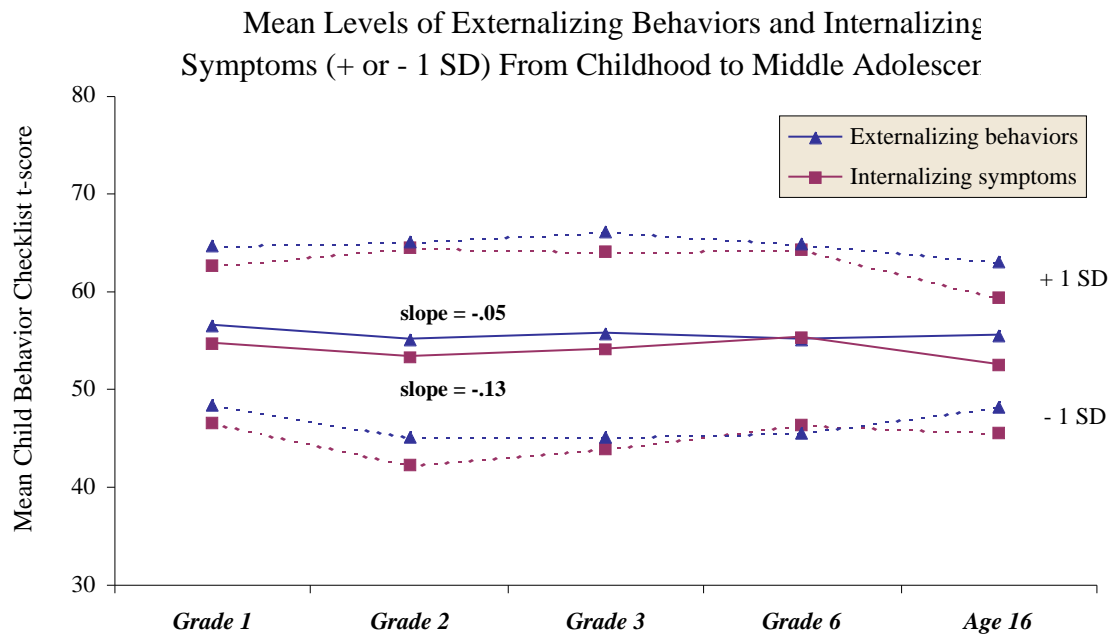
Stability and Change in Externalizing Behavior and Internalizing Symptoms

Step 1: Within-construct correlations

Externalizing behaviors across time were more correlated ($r = .29$ to $.60$) than internalizing symptoms across time ($r = .15$ to $.39$).

Step 2: Hierarchical linear modeling

The mean sample growth curves of externalizing behavior and internalizing symptoms were relatively stable across time, showing very little change from grade 1 to age 16. Since T scores were used, this illustrates that standing in the national percentile did not significantly change from grade 1 to age 16 in this sample.



Correlations between Externalizing Behaviors and Internalizing Symptoms

Associations between externalizing and internalizing across time ranged from $r = .33$ to $.57$, and were greatest in grade 1 and at age 16.

Outcome Variable Descriptives

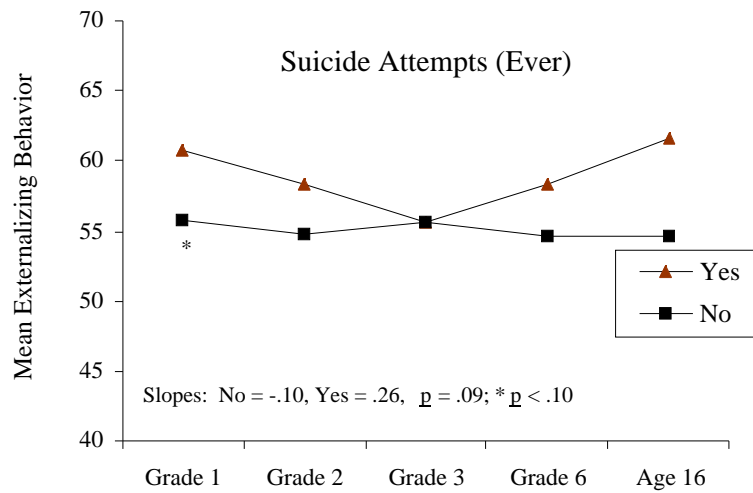
Self-Reports of Suicide Attempts (Ever) and Criminal Behaviors (Age 17-19)

	All Participants (<u>N</u> =170)	Males (<u>n</u> =89)	Females (<u>n</u> =81)
Suicide Attempts, Ever	14%	6%	24%
Serious Criminal Behavior in the Past 2 Years	42%	55%	27%
Shoplifting in the Past 2 Years	17%	17%	17%

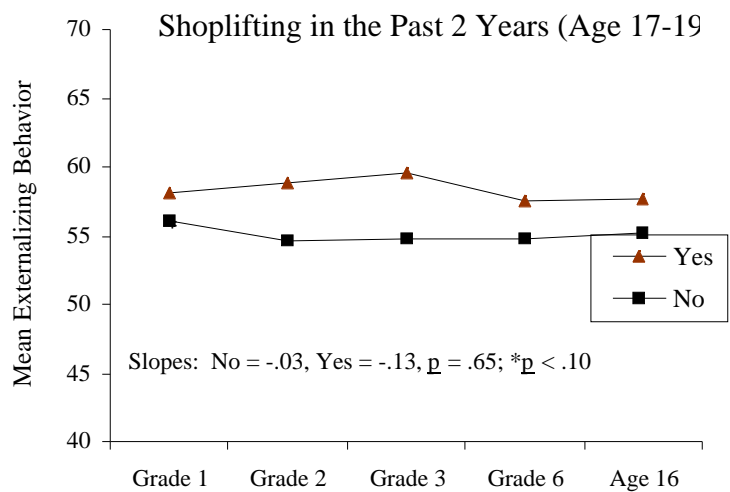
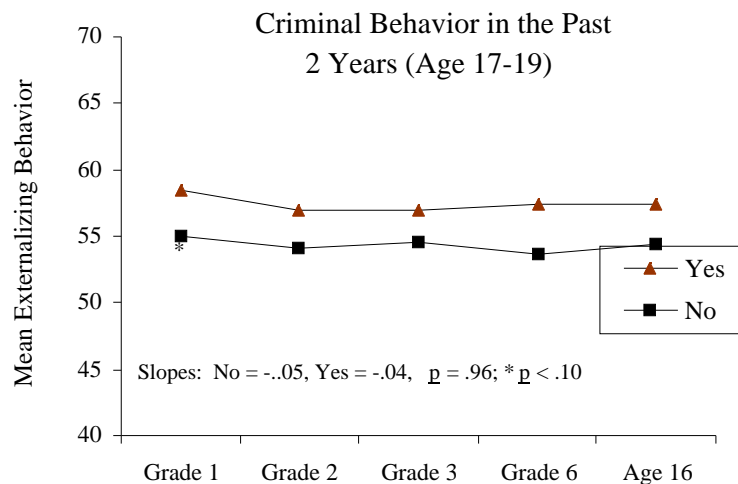
Variable-Oriented Analyses

Do Patterns of Externalizing Behaviors Forecast Criminal Behavior & Suicide Attempts?

Individuals who had a history of suicide attempts had higher levels of externalizing behavior in grade 1 that remained higher throughout most of childhood and adolescence.

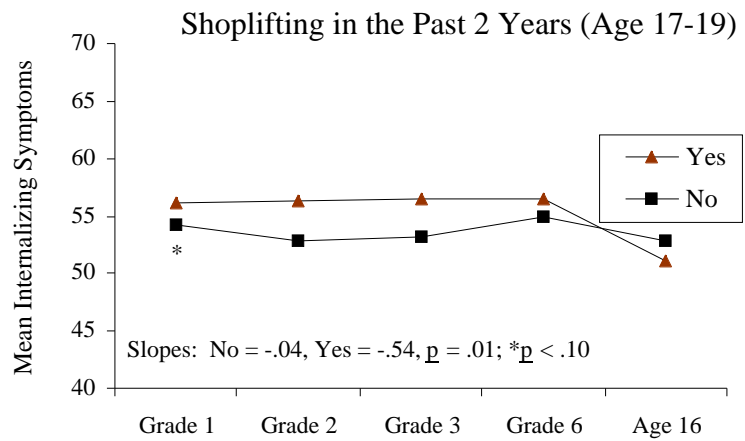


Individuals who reported serious criminal behavior, as well as shoplifting, in late adolescence also had higher levels of externalizing behavior in grade 1 that remained high and steady into adolescence.

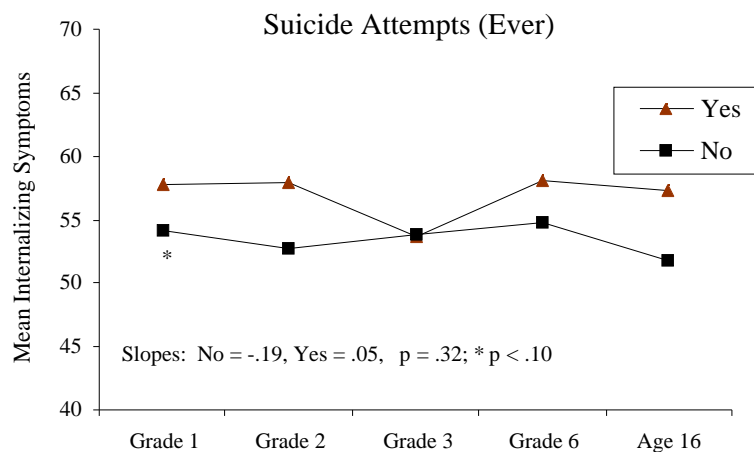


Do Patterns of Internalizing Symptoms Forecast Criminal Behavior and Suicide Attempts?

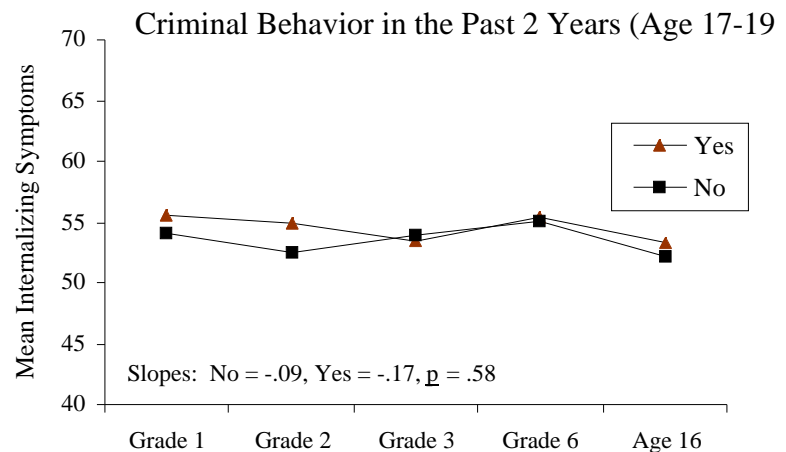
Individuals who reported shoplifting in late adolescence also had higher levels of internalizing symptoms in grade 1, but internalizing symptoms significantly declined among shoplifters by age 16 while they remained steady among those who did not shoplift.



Individuals with a history of suicide attempts had higher levels of internalizing symptoms in grade 1 that remained higher throughout most of childhood and adolescence.



When individuals who had or had not engaged in serious criminal behavior in late adolescence were compared, no differences in levels of internalizing symptoms in grade 1 or change in internalizing symptoms over time emerged.



Person-Oriented Analyses

Can Profiles of Grade 1 Externalizing Behaviors and Internalizing Symptoms be identified?

K-means clustering of Grade 1 Achenbach subscales was used to classify participants into one of four groups:

- ✱ Low – relatively low scores on all subscales
- ✱ Moderate – relatively moderate scores on all subscales
- ✱ Withdrawn – high on all scales, especially withdrawal and attention problems
- ✱ Aggressive – high on all scales, especially aggressive behavior

Cluster Means on Achenbach Subscales in Grade 1

	<i>Cluster 1</i>	<i>Cluster 2</i>	<i>Cluster 3</i>	<i>Cluster 4</i>
Achenbach Subscales	Low (<u>n</u> =95)	Moderate (<u>n</u> =52)	Withdrawn (<u>n</u> =9)	Aggressive (<u>n</u> =14)
Withdrawn	52.0	56.8	73.9	> 58.4
Anxious/Depressed	52.1	56.6	68.0	66.5
Social Problems	51.5	61.0	70.6	72.6
Attention Problems	51.8	58.7	71.6	> 64.6
Delinquent Behavior	52.0	57.9	65.3	69.8
Aggressive Behavior	52.4	58.9	62.8	< 78.6
Gender (% Male)	52%	46%	78%	64%

Do Person-Level Profiles Identify Participants at Relatively High Risk for Suicide Attempts and Criminal Behavior in Later Life?

A significantly higher proportion of participants in the aggressive cluster had a history of suicide attempts and had been involved in serious criminal behavior in late adolescence. The withdrawn cluster was the least likely to engage in these behaviors. There were no differences in the proportions of participants in each group who shoplifted or had status offenses in late adolescence.

Cluster Comparisons of Rates of Behaviors Reported at Age 19

Behaviors	Low (<u>n</u> =95)	Moderate (<u>n</u> =52)	Withdrawn (<u>n</u> =9)	Aggressive (<u>n</u> =14)	Kruskal- Wallis	Cramer's V
Suicide Attempts, Ever	10%	19%	0%	36%	9.6*	.24
Serious Criminal Behavior in the Past 2 Years	36%	46%	22%	79%	11.0*	.26
Shoplifting in the Past 2 Years	13%	19%	22%	36%	5.1	.17

* $p < .05$.

Conclusions

- ✦ Consistent with previous studies, we found that externalizing and internalizing problems were highly correlated at all assessment points.
- ✦ We also replicated previous findings showing that children with consistently high levels of externalizing behaviors across childhood and adolescence were at highest risk for criminal activity in late adolescence. These results also replicate the robust finding that serious and persistent conduct problems forecast progression into more serious criminal and violent behavior across adolescence and into young adulthood.
- ✦ Although externalizing and internalizing problems were highly correlated across all assessments, internalizing patterns alone did not predict reports of criminality at age 19.
- ✦ Shoplifting in late adolescence was associated with higher internalizing symptoms that decline by age 16. This finding may suggest that, although internalizing and externalizing problems are highly correlated in childhood, children who engage in delinquent behavior into late adolescence are likely to transition into a predominantly externalizing symptom picture at age 16.
- ✦ The prediction of suicide was nonspecific; having a pattern of serious externalizing or internalizing problems across childhood and adolescence predicted suicide attempts by age 19.
- ✦ When intra-individual profiles of problems were examined, some of our seemingly contradicting findings were clarified. That is, a cluster of children who were high on all problem scales, but especially high on aggression was more likely to show suicide attempts *and* serious criminal behavior. However, a cluster of children who were moderately high on aggressive and delinquent behavior but especially high on withdrawal were least likely to have attempted suicide or to have reported serious criminal behavior at age 19.
- ✦ These findings emphasize that variable- and person-oriented approaches, when taken together, illuminate and clarify complex associations and provide a more complete understanding of patterns of psychopathology across time.