

Continuity and patterns of externalizing and internalizing behavior problems in girls: A variable- and person-oriented study from preschool to youth age

Friedrich Lösel¹ & Mark Stemmler²

Abstract

This article addresses the continuity and patterns of externalizing and internalizing behavior problems in girls from kindergarten to secondary school age and also relations to offending in adolescence. It is a sequel to a similar investigation of boys at the same age (Stemmler & Lösel, 2012). The sample consisted of 294 girls from the Erlangen-Nuremberg Development and Prevention Study. Behavior problems were measured by the Social Behavior Questionnaire at approximate child ages of 4.5 years (kindergarten educators as informants), 10.5 years (school teachers' information) and 13.5 years (mothers' information). The third assessment also contained a self report on juvenile delinquency. Both person-oriented and variable-oriented methods of data analysis were applied (i.e. correlations and Prediction-Configural Frequency Analysis).

The correlations between externalizing and internalizing problems at preschool age and in youth were mainly small, but in the same range as in the boys' study. In contrast to the boys' study no significant type of 'externalizing only' problem behavior was observed. The externalizing problems at youth age were more related to internalizing problems than in the boys' sample. There were no significant differences in juvenile delinquency between the various patterns of externalizing and internalizing problems in adolescence except for status offenses (e.g. truancy, substance misuse). Overall the results suggest similarities as well as differences between both genders, whereby internalizing problems in girls seem to play a stronger role for antisocial behavior than in boys. Potential content and methodological explanations for these findings are discussed.

Key words: Behavior problems in girls, externalizing behavior, internalizing behavior, juvenile delinquency, longitudinal research, Prediction-Configural Frequency Analysis

¹ *Correspondence concerning this article should be addressed to:* Friedrich Lösel, PhD, Institute of Criminology, University of Cambridge, Sidgwick Avenue, Cambridge, United Kingdom; email: fal23@cam.ac.uk

² University of Erlangen-Nuremberg

Introduction

Most studies on aggression, delinquency, violence and other externalizing behavior problems in young people address males. In comparison, the forms, prevalence, development and origins of antisocial behavior in girls are much less investigated (Baxendale, Cross & Johnson, 2012; Moffitt, Caspi, Rutter & Silva, 2001). Although there is not always consistency between different studies and countries, previous findings suggest the following (e.g. Baxendale et al., 2012; Lösel & Bliesener, 2003; Moffitt et al., 2001; Piquero, Carriaga, Diamond, Kazemian & Farrington, 2012): The prevalence of delinquency in girls is lower than in boys, particularly with regard to violent offenses. Differences in the frequency and seriousness of antisocial behavior between boys and girls are less distinct in indirect or verbal aggression and petty theft. Although the relationship between gender and violence is moderated and mediated by other factors, the main risk factors and origins are similar to those in boys. In both sexes there is significant stability of the problem behavior (particularly for early starting antisocial youngsters), however, most studies also found much behavioral flexibility as indicated by processes of desistance, late starting and fluctuation of antisocial activity over time. Because of the relative scarcity of studies on female antisocial behavior and tendencies of an increase of such problems, this topic should attract more attention in research (Alsaker & Bütikofer, 2005; Baxendale et al., 2012).

Within this context, the present article addresses the question of continuity and different patterns of externalizing and internalizing problems in girls from preschool to secondary school age. The paper is a sequel to our previous publications on variable- and person-oriented analyses of antisocial behavior in boys (Stemmler & Lösel, 2010; 2012; Stemmler, Lösel, Beelmann, Jaurisch & Zenkert, 2005; Stemmler, Lösel, Beelmann & Jaurisch, 2008). In these studies we applied Configural Frequency Analysis (CFA; Lienert & Krauth, 1975; von Eye, 2002; von Eye, Mair & Mun, 2010) to investigate different patterns of externalizing problems in the Erlangen-Nuremberg Development and Prevention Study (ENDPS) from preschool over primary school to secondary school age. Among other findings, the shorter follow-up studies revealed a clear type of relatively stable problem behavior. These children showed high externalizing and no internalizing problems at preschool age and were also most delinquent in the follow up. This finding was in accordance with the description of proactively aggressive and 'cool-tempered' antisocial youngsters in the literature (e.g. Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Frick, Cornell, Barry, Bodin, & Dane, 2003). In our shorter follow ups we also observed a relatively stable type with both externalizing and internalizing problems that indicated a more reactive pattern of aggression (e.g. Dodge et al., 1997; Fontaine, 2007; Vitaro, Barker, Boivin, Brendgen & Tremblay, 2006). However, in our most recent and longest follow up we did not observe the latter type (Stemmler & Lösel, 2012).

Because internalizing problems seem to be more relevant for antisocial behavior in females than in males (e.g. Lösel & Bliesener, 2003; Moffitt et al., 2001), it is of interest whether the above findings can be generalized across both genders. Therefore, we carried

out the same analysis as in Stemmler and Lösel (2012) for the subsample of girls in the ENDPS. The present paper reports our findings.

Method

Sample

The Erlangen-Nuremberg Development and Prevention Study is a combined longitudinal and experimental project that investigates the development and origins of social behavior problems and evaluates child- and parent-oriented intervention programs (Lösel, Beelmann, Stemmler & Jaursch, 2006; Lösel, Stemmler, Jaursch & Beelmann, 2009). The original sample of the core study consisted of 675 kindergarten children (336 boys, 339 girls) from 609 families. The sample was largely representative of young families living in Erlangen and Nuremberg (North Bavaria). According to an index of the socioeconomic status (SES; Geißler, 1994) which included income, education, profession, and housing conditions, 13.3% of the families were lower class, 32.3% were lower middle class, 30.6 % middle class, 15.4% upper middle class, and 3.0 % upper class. Approximately 86% of the parents were married at *Time 1*. The ENDPS contains seven waves of data collection that were carried out annually in the first years and at larger intervals more recently. The retention rates varied over time; in the most recent wave (nearly 10 years after the first one) circa 90% of the original sample participated. The analyses in this paper focused on all girls with available data at three measurement points: At *Time 1* the average age of the girls was $M = 4.67$ years ($SD = 9.11$ months). At *Time 2* the mean age was $M = 10.50$ years ($SD = 10.89$ months). Finally, at *Time 3* the girls were nearly 14 years old ($M = 13.59$; $SD = 11.23$ months). Accordingly, the average time lag between the first and last measurement was nearly nine years. In total, we had data of $N = 294$ girls from the three waves included in this article. In some statistical analyses the sample size was a little smaller due to missing data for specific variables.

Measures

Social behavior problems. The children's social behavior in kindergarten and at school was assessed by our German adaptations of the Social Behavior Questionnaire (SBQ; Tremblay et al. 1987; Tremblay et al., 1992). The SBQ is available in several versions. Here, kindergarten educators', school teachers', and mothers' ratings were used (Lösel, Beelmann & Stemmler, 2002). The mother's ratings were used when the children were in secondary school. The content and format of the educator's and teacher's SBQ versions are identical and consist of 46 items. In the mother's version, the teacher's version item 'stealing things' is divided into 'stealing things at home' and 'stealing things outside home'. Each item is rated on a 3-point scale ranging from '0' = *never/not true* to '2' = *almost always/true most of the time*. Two scales of the SBQ were used: *Externalizing Problems* (physical aggression, damage of objects, delinquency, indirect aggression, and hyperactivity) and *Internalizing Problems* (anxiety, emotional disorder and social with-

drawal). The *Externalizing Scale* contains 20 items such as 'She kicks, bites and hits other children', 'She steals at home/in the kindergarten', 'She is impulsive and acts without thinking'. The reliabilities for the different informants were $\alpha = .89$ (kindergarten educators), $\alpha = .91$ (school teachers), and $\alpha = .74$ (mothers). The *Internalizing Scale* addresses emotional problems and anxiety and consists of 8 items such as 'She is too fearful or anxious' or 'She is not as happy as other children'. The scale reliabilities were $\alpha = .75$ (kindergarten educators); $\alpha = .78$ (school teachers), and $\alpha = .63$ (mothers).

Offending in adolescence. The adolescent's delinquent behavior was assessed by a German delinquency self-report scale (DBS; Lösel, 1975). The DBS was filled in by the youngsters themselves and contains a total score and various subscales. The *Total Delinquent Behavior Scale* is a summary of all 28 items. Its reliability in various studies varied between $\alpha = .77$ and $.89$. In the present study we also used the subscales *Property Offenses* (12 items; e.g. 'Have you stolen goods from a department store or shop?' or 'Have you stolen a bicycle or used it without permission?'), *Aggressive/Violent Offenses* (7 items; e.g. 'Have you hurt another person in a fight?' or 'Have you intentionally destroyed windows, street lights or similar things?'), and *Status Offenses* (5 items; e.g. "Have you skipped school for several days?" or 'Have you used drugs?'). Each item is answered according to whether the act under question has ever been committed, and if yes, how often in the last year. In various studies the reliabilities for the subscales were $\alpha = .60 - .78$ (*Property Offenses*), $\alpha = .56 - .74$ (*Aggressive/Violent Offenses*) and $\alpha = .69 - .74$ (*Status Offenses*).

Results

Table 1 shows the correlations between the kindergarten educators' SBQ ratings (*Time 1*), the elementary school teacher's SBQ ratings (*Time 2*), the mothers' SBQ ratings and the girls' self-reports in the DBS at *Time 3* (secondary school). The longitudinal correlations for externalizing problems were significant, even from *Time 1* to *Time 3* ($r = .22$), suggesting some stability in the rank order of problem behavior. The longitudinal correlations for internalizing problems were significant for two adjacent time points, however, not between *Time 1* and *Time 3*. The cross-sectional correlations between externalizing problems and internalizing problems were all positive and significant, but of small effect size (maximum $r = .20$ at *Time 3*). This suggests some co-occurrence between these two forms of the girls' problem behavior. Self-reported delinquency at youth age correlated only positively with externalizing behavior in elementary school and with internalizing behavior in secondary school. Contrary to expectations, the mother-rated externalizing problems at secondary school were not significantly related to self-reported delinquency.

In order to investigate the long-term continuity of problem behavior patterns, three individual characteristics were selected for Prediction-Configural Frequency Analysis (P-CFA): Externalizing behavior in kindergarten, and externalizing and internalizing behavior in secondary school. All variables were dichotomized as close to the 75th percentile as possible of the girls' sample. Table 2 shows the observed and expected frequencies for

the P-CFA as well as the z -values based on the standardized residuals, which are basically the normal approximation of the χ^2 component.

Table 1:

Longitudinal and cross-sectional correlations for girls' externalizing and internalizing behavior from kindergarten (T_1) via elementary school (T_2) to secondary school (T_3) and correlation with delinquent behavior (T_3)

		Kindergarten (T1)		Elementary School (T2)		Secondary School (T3)	
		Ext	Int	Ext	Int	Ext	Int
T_1	Ext						
	Int	.11*					
T_2	Ext	.22***	.02				
	Int	.15*	.19**	.15*			
T_3	Ext	.22***	.02	.20**	.22***		
	Int	.05	.08	.01	.32***	.20***	
	DBS	.06	-.08	.25***	.03	.04	.12*

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Sample sizes varied from $n = 258$ through $n = 294$ due to missing data. T_1 = kindergarten teachers' ratings, T_2 = elementary school teachers' ratings, and T_3 = mothers' ratings; DBS = delinquent behavior scale (self-report).

Table 2:

Prediction CFA for externalizing problems in kindergarten (Ext T_1) and externalizing and internalizing problems in secondary school (Ext/Int T_3)

Ext T_1	Cell Index			P-CFA		
	Int T_3	Ext T_3	$f(o)_{ijk}$	$f(e)_{ijk}$	z_{ijk}	
-	-	-	148	146.10	0.16	
-	-	+	26	26.78	-0.16	
-	+	-	49	46.26	0.40	
-	+	+	14	17.86	-0.91	
+	-	-	32	33.90	-0.37	
+	-	+	7	6.22	0.31	
+	+	-	8	10.74	-0.81	
+	+	+	8	4.14	1.89	

Note: $N = 292$ T = Type, A = Antitype. z_{ijk} = z -approximation of the chi-square statistic. '+' = above the 75th percentile. '-' = below the 75th percentile. The listed z -value is based on the standardized residuals in the SPSS printout.

The base model for the P-CFA provided a satisfactory fit ($LR = 4.881$, $df = 3$, $p = .18$) suggesting no interaction between the *Time 1* predictor (i.e., externalizing) and any of the

Time 3 criterion variables (i.e., externalizing and internalizing). No types or antitypes evolved.

Table 3 contains the relationship of behavioral patterns with delinquency at *Time 3*. As the sizes of the subsamples with different patterns of problem behavior were rather small, we restricted our analysis to the configurations of *Time 3*. We entered the *Delinquent Behavior Scale (DBS)* of self-reported delinquency and the three *DBS* subscales as dependent variables in oneway-ANOVAs. The four patterns of externalizing and internalizing behavior were 'i + e +' ($n = 22$), 'i - e +' ($n = 33$), 'i - e -' ($n = 179$), and 'i + e -' ($n = 56$). Only the scale on *Status Offenses* revealed significant mean differences between the four behavior patterns. The highest scores were found in the two patterns with high internalizing problems ('i + e -' and 'i + e +') and the score for the latter pattern was only slightly below that of the first. No significant mean differences emerged in any other *DBS* scale, although the patterns with high internalizing problems also showed the highest absolute values.

Table 3:

One-way ANOVAs comparing the four patterns of externalizing and internalizing behavior regarding to adolescent delinquent behavior in secondary school (cross-sectional analyses)

	Behavior Patterns				<i>F</i> (<i>df</i>)
	i + e + (<i>n</i> = 22)	i - e + (<i>n</i> = 33)	i - e - (<i>n</i> = 179)	i + e - (<i>n</i> = 56)	
Delinquency Scales	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
Total Score	1.77 ^a (2.58)	1.30 ^a (1.55)	1.28 ^a (1.70)	1.89 ^a (2.63)	1.19 (3,286)
Aggressive/Violent Offenses	0.18 ^a (0.50)	0.18 ^a (0.46)	0.12 ^a (0.39)	0.18 ^a (0.54)	0.45 (3,286)
Property Offenses	1.14 ^a (1.46)	0.94 ^a (1.03)	0.99 ^a (1.07)	1.22 ^a (1.47)	0.67 (3,286)
Status Offenses	0.36 ^{a,b} (0.79)	0.12 ^a (0.33)	0.20 ^a (0.45)	0.43 ^b (0.90)	3.27* (3,286)

Note: * $p < .05$. $N = 290$. '+' = above the 75th percentile. '-' = below the 75th percentile. Means with different indices were significantly different (post hoc comparisons). For the post hoc comparison the least significant difference (LSD) was applied. Delinquency scores were based on the adolescents' self-report, externalizing and internalizing behavior ratings on mothers' report.

Discussion

The aim of this paper was to investigate the continuity of externalizing and internalizing behavior and patterns of these problems from childhood to adolescence. We used both

variable-oriented and person-oriented approaches of data-analysis. The study must be interpreted in connection with the paper by Stemmler and Lösel (2012) which applied the same methods on the boys' subsample of the Erlangen-Nuremberg Development and Prevention Study. In the variable-oriented approach, boys' *externalizing problems* rated by kindergarten educators, elementary school teachers and mothers correlated significantly over time (ranging between $r = 0.24$ and $r = 0.34$). *Externalizing problems* at all three measurement points correlated also significantly with self-reported delinquency in youth (between $r = 0.20$ and $r = 0.28$). In addition, *internalizing problems* showed significantly positive cross-sectional relations with *externalizing problems* (between $r = 0.12$ and $r = 0.28$) and longitudinal auto-correlations (between $r = 0.13$ and $r = 0.20$). The longitudinal correlations between internalizing problems and later delinquency were small and negative ($r = -.10$ and $-.19$).

As Table 1 reveals, various results on the girls were similar to the findings in the boys' sample, but others were different. The significant longitudinal auto-correlations for *externalizing behavior problems* (twice: $r = 0.22$) and the cross-sectional correlations between *internalizing* and *externalizing problems* (ranging between $r = 0.11$ and $r = 0.20$) were rather consistent between both studies. However, in this study the *internalizing problems* did not significantly correlate between preschool and adolescent age. The relation between girls' *externalizing problems* and delinquency also showed a less consistent picture: Teachers' ratings of *externalizing problems* at about age 10 correlated significantly with self-reported delinquency in the DBS, but mothers' externalizing ratings four years later did not. In contrast, mothers' ratings of *internalizing problems* showed a small but significant correlation with self-reported delinquency in youth ($r = 0.12$). This relation was even stronger ($r = 0.21$; $p < .05$) for the DBS subscale on *status offenses* that is not presented in Table 1. Whereas the internalizing problems ratings at the two earlier measurement points predicted lower delinquency in boys, there was no significant relation to the DBS in the girls' sample.

The latter findings are in line with other research suggesting that internalizing problems such as depressive mood or anxiety are more related to female than to male delinquency (e.g. Kofler, McCart, Zajac, Ruggiuro, Benjamin, & Kilpatrick, 2011; Lösel & Bliesener, 2003). This may be due to stressors such as early puberty, negative body image, conflicts in the family, problems with peers, a more ruminating coping style and other factors that were not present in childhood (Petersen, Compas, Brooks-Gunn, Stemmler, Ey & Grant, 1993). Such an interpretation is also supported by findings on the greater relevance of family problems for girls' than for boys' antisocial behavior (Lösel & Bliesener, 2003; Moffitt et al, 2001). Perhaps, the externalizing problem behavior may have a stress-reducing function (Byrne, Byrne, & Reinhart, 1995).

Similar to the variable-oriented correlational analyses, we observed differences between both genders in the individual-oriented analyses. In our previous study nine percent of the boys revealed stable externalizing problems from childhood through adolescence. The 'externalizing only' pattern, indicating high values on externalizing at Times 1 and 3 but at lower values on internalizing behavior at Time 3 (i.e., 'e+ i - e+') turned out to be a significant configuration (a *type*) in the Prediction-Configural Frequency Analysis (P-CFA; von Eye, 2002). For girls, such a significant stable 'externalizing only' pattern did

not emerge. At first glance, this differs from other studies that used trajectory analyses and found similar developmental pathways for adolescent girls and boys (e.g. Martino, Ellickson, Klein, McCaffrey, & Edelen, 2008; Piquero et al., 2012). However, research also showed that high stable antisocial girls were much less frequent than high stable antisocial boys (Harachi, Fleming, White, Ensminger, Abbott, Catalano, & Haggerty, 2006; Martino et al., 2008; Moffitt, 1993; Piquero, Brame, & Moffitt, 2005). For example, in the Dunedin Longitudinal Study (Moffitt, Caspi, Rutter & Silva, 2001) the ratio of females versus males in the *life-course persistent pathway* was 1:10. In contrast, the *adolescence-limited pathway* showed less gender differences in prevalence (ratio of females to males = 1:1.5), suggesting that most of the females' antisocial behavior starts in adolescence, a time when internalizing problems begin to grow (see also Silverthorn & Frick, 1999). As our study began at preschool age, does not yet cover the whole adolescence, and applied P-CFA, some differences to the above-mentioned trajectory results are not implausible. Although the stable 'externalizing only' pattern did not reach statistical significance beyond the base-rates, there was some problem stability in our person-oriented analysis. Fifteen girls (5.1% of the sample) had high externalizing scores at both preschool and secondary school age and seven (2.4%) showed the 'externalizing only' pattern.

One must also take into account that our analysis addressed not only aggression or physical aggression but the broader syndrome of externalizing problems. The combination of high externalizing behavior and low or 'normal' internalizing behavior represents the *direct or proactive type of aggression*. This form of aggressiveness is more common among boys, whereas girls tend more to other forms like *indirect, reactive or verbal aggression* (e.g. Fontaine, 2007; Lösel & Bliesener, 2003; Vitaro & Brendgen, 2012). The latter behaviors are not only more dependent on the actual social context (e.g. provoking classmates), but follow a different trajectory. In comparison to boys, girls seem to desist more often from physical aggression but rise in indirect aggression (Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007).

In the study of Stemmler and Lösel (2012) the 'externalizing only' pattern was also significantly associated with self-reported offending in adolescence. Boys who exhibited this pattern had significantly higher scores in the *Total DBS* scale on self-reported delinquency and in the subscales on *Property Offenses* and *Aggressive/Violent Offenses*. In the girls' sample, however, these three comparisons were not significant. We only observed a significant means difference in the subscale on *Status Offenses* (e.g. truancy, substance misuse, staying out overnight without permission). Here, the pattern 'i + e -' had the highest mean scores, closely followed by the pattern 'i + e +'. This suggests again that internalizing symptoms in adolescence are not only more frequent among girls (Hölling, Erhart, Ravens-Sieberer, & Schlack), but also more relevant for other behavior problems than in boys. As mentioned above, anxiety, depressive mood or social withdrawal may be related to stressors such as family problems which are, for example, more important for the substance misuse of girls (Lösel & Bliesener, 1998).

The weaker relation between externalizing/internalizing patterns and juvenile delinquency in girls than in boys may also partially be due to lower *DBS* scores of girls. Because the means in our 'normal' sample are relatively small, there could have been a

floor effect that reduced effect sizes. Comparing the results of Stemmler and Lösel (2012) with the present study, the boys had significantly higher values than the girls in the *Total DBS Score* ($t = 4.65, p < .001$) and in the scales on *Aggressive/Violent Offenses* ($t = 6.10, p < .001$), and *Property Offenses* ($t = 2.58; p < .05$), but no significant mean difference emerged in the scale on *Status Offenses* ($t = 1.15, ns$). Such differences are in line with a large body of literature on the prevalence of aggression, violence and crime in young males and females (e.g. Baxendale et al., 2012; Lösel & Bliesener, 2003; Moffitt et al., 2001). Smith and Ecob (2007), for example, found that the proportion of adolescents involved in delinquency was higher for males than for females. Girls more often showed theft from home, writing graffiti, and truancy, whereas males were more frequently involved in carrying weapons, housebreaking, robbery, and car theft. The latter serious offenses were particularly rare in our girls' sample.

Last but not least, it needs to be mentioned that a part of the overall small effects and partial inconsistencies between girls and boys could have been due to the different informants at the various time-points. The latter usually leads to relatively low inter-correlations between child problem behavior ratings (Achenbach, 2006; Lösel, Stemmler, Beelmann, & Jaursch, 2005). As Lösel (2002) has shown, already the cross-sectional correlations between different informants are smaller than the longitudinal correlations of behavior ratings by the same informants (Lösel, 2002). Against this background it is plausible that our observed correlation between externalizing problems at preschool age and secondary school age are not larger than $r = .22$. That the equivalent coefficient for internalizing symptoms was even non-significant is in accordance with the overall lower stability of this type of problem or these types of problems (Lösel & Bliesener, 2003; Robins & Price, 1991). Similarly, bullying victimization at school is less strongly related to later internalizing problems than bullying perpetration to externalizing outcomes (Ttofi, Farrington & Lösel, 2012; Ttofi, Farrington, Lösel & Loeber, 2011). Although the search for high predictive validity is a key aim in psychological assessment, one should not forget that the individual patterns of risk and protective factors lead to both continuity and substantial change in the development of (antisocial) behavior (Lösel & Farrington, 2012; Rutter, 2012).

Acknowledgement

This research was supported by grants from the German Federal Ministry of Family Affairs, Seniors, Women and Youth.

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