

BRIEF REPORT

Negativity in Problematic and Nonproblematic Families: A Multigroup Social Relations Model Analysis With Structured Means

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The aim of the study was to determine whether there are differences in patterns of negativity between families with and without an adolescent with externalizing problem behavior. We used a structured means Social Relations Model in order to examine negativity in multiple levels of the family system. The sample consisted of 120 problematic and 153 nonproblematic families (two parents, two children), who rated the level of negativity in the relationship with each family member. Although a simple mean differences test would lead us to believe that differences in negativity between groups of families can be ascribed to the interaction between parent and adolescent, the results of the present study indicate that these differences are actually related to the characteristics of a problematic child.

Keywords: social relations model, family relationships, externalizing problems, adolescence

In many studies on family relationships, the focus was primarily on one specific dyad in the family, namely the parent-child relationship. Family systems theorists, how-

ever, have often emphasized the importance of regarding the family as an interacting system of individuals and relationships (Cox & Paley, 1997, 2003). Theoretical models derived from family systems theory suggest that the behavior or characteristics of an individual family member can affect both the whole family as a system and the subsystems that exist within the family. Previous studies indicate that children with problem behavior affect negativity in parent-child relationships more strongly than children without problem behavior (Lytton, 1990), indicating a child-driven process. However, it remains unclear whether these differences in child effects can also be found for sibling relationships, marital relationships, and the family as a whole. So, in the present study we will compare families with well-functioning and with more deviant adolescents concerning patterns of individual, dyadic and group level negativity in family relationships.

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We will apply the Social Relations Model (SRM; Kenny & La Voie, 1984) because the SRM allows for examination of family relations on the individual, dyadic, and family level simultaneously. The SRM is based on a full family design using a round robin design: every family member reports on his/her relationship with all other family members. The SRM posits that there are four sources of variance that affect one family member's relationship with another: an *actor* effect, a *partner* effect, a *relationship* effect, and a

group or family effect (see for example: Kashy & Kenny, 1990). The *actor* effect refers to the general tendency of an individual to show or report certain behavior in the presence of a variety of partners. When self-report measures are used, this component may be referred to as a perceiver or rater effect, and the actor effect can therefore be seen as a characteristic of the rater. The *partner* effect refers to the extent to which an individual tends to be perceived in a certain way by a variety of others, and therefore is a characteristic of the person that is being rated. The *relationship* effect refers to the unique adjustment of one person to the other person within a specific relationship, and the *group or family* effect reflects characteristics of the average member of the group or family.

Until now, the SRM has been primarily applied to data of normal, relatively well functioning families (Eichelsheim, Dekovic, Buist, & Cook, 2009). However, there are some indications that the importance of SRM effects may be different for problematic versus nonproblematic families (Cook, Kenny, & Goldstein, 1991; Gerlisma, Sniijders, Van Duijn, & Emmelkamp, 1997).

Present Study

The aim of the present study is to reveal whether there are differences in patterns of negativity between problematic and nonproblematic families by using the SRM. We expect to find that problematic adolescents perceive more negativity in relationship with all other family members, and also that these problematic adolescents are perceived by other family members as being more negative, reflecting child-driven processes. We also expect that differences in the mean relationship effects will be mainly found in the relationship in which the target adolescent participates. Finally, we also expect to find between-family differences in the mean family effect; that is, we expect that there will be more negativity on the family level in problematic compared to the nonproblematic families.

Method

Procedure and Participants

The initial sample consisted of 497 Dutch adolescents and their families (e.g., both parents and a sibling) who participated in the Research on Adolescent Development and Relationships (RADAR) study. The first step of the RADAR study was a screening and selection of young adolescents at their schools by means of the Teacher Report Form (TRF). Based on this first screening, adolescents were selected to participate: target adolescents with behavioral problems were slightly oversampled in the study. After the initial screening, families of these target adolescents (both parents and a brother or sister) were also asked to participate in the study. These families were visited at home by a trained interviewer, and questionnaires were filled out by all family members simultaneously.

From the larger sample we selected two groups of families to participate in the present study. We distinguished

between two types of families, based on parental (mother's and father's ratings were combined) and adolescent reports on the aggression and delinquency scale of the Child Behavior Check List (CBCL; Achenbach, 1991) and the Youth Self Report (YSR; Achenbach, 1991). The *problematic group* consisted of 120 families of which the target adolescent scored above the externalizing behavior clinical norm scores on either the CBCL ($N = 47$) or the YSR ($N = 73$). From the remaining sample in which target adolescents scored below both norms, families were randomly selected in order to meet the sample size of the problematic group. Therefore, the *nonproblematic group* consisted of 153 families of which the target adolescent scored below the sub-clinical norm scores on both the CBCL and the YSR. Average age of the target adolescents was 13.1 years (range 11.7–14.3 years) in the problematic group, and 13.0 years (range 10.9–14.3 years) in the nonproblematic group. Gender and age distribution were not significantly different across groups. Average age of mothers was 44.1 years (range 35.3–58.8) and 47.2 years (range 35.9–57.4), in the problematic and nonproblematic group, respectively. Average age of fathers was 46.4 years (range 37.3–63.8) and 47.2 years (range 33.3–64.6), in the problematic and nonproblematic group, respectively. Average age of the sibling was 14.6 years (range 7.6–23.2) and 15.3 years (range 6.7–24.7), in the problematic and nonproblematic group, respectively. In both groups, the sibling scores were all below the CBCL and YSR norm scores and siblings were mostly biological siblings (75% in the problematic group, 84% in the nonproblematic group).

Measures

Negativity in family relations was measured using the *negative interaction* subscale of the Network of Relationship Inventory (NRI; Furman & Buhrmester, 1985). This scale consisted of 6 items that reflect hostile behavior as well as (the frequency of) conflicts (for example: "How often do you and your mother/father/sister quarrel and fight?") to be answered on a 5-point scale ranging from *hardly at all* to *extremely much*. Each family member rated negativity in the relationship with each other participating family member. The alpha was satisfactory for all respondents in both groups (mean $\alpha = .91$, range .82–.94).

Analytic Strategy

In order to deal with missing values, we used Expected Maximization imputation method in SPSS, in cases where less than 10 percent of the scale items were missing. After that, we first performed an analysis of variance (ANOVA) in order to reveal across-group differences in negativity of the observed scores per relationships. In order to examine negativity in family relationships on the individual, the dyadic and the family level simultaneously, the next step was a SRM analysis. The traditional SRM analyses have variance estimates as outcomes. Although traditional SRM analyses provide us with valuable information, the obtained results (e.g., variance estimates) do not provide information

whether some family members elicit or report more or less negativity than others in the sample. Therefore, in the present study we extended the traditional SRM analyses by adding a structured means analysis by using EQS software, which allows us to compute the averages of the SRM effects (Cook & Kenny, 2004). This strategy also enables us to compare the average size of the SRM effects, both within a given sample and between samples. As is the case with standard structured means analyses, the observed mean scores for each relationships were used to predict latent means, namely in this case, the means of the SRM effects. The next step is to compare these latent means across the two types of families in a multigroup model comparison procedure, with an unconstrained model serving as the base model. For each SRM effect, the base model was compared to a constrained model in which that SRM effect was set to be equal across the groups. We used a chi-square difference test for these comparisons, evaluating whether setting a parameter as equal across the groups significantly worsened the fit of the model.

Results

Descriptives

In Table 1, the observed mean scores per relationship are presented. An ANOVA on these observed scores revealed that significant differences between problematic and non-problematic families in the observed mean levels of negativity existed mainly in those relationships in which the target adolescent was either the rater or the person being rated, whereas no significant differences between the two family types appeared in other relationships.

In Table 2, variance estimates for the SRM effects for problematic and nonproblematic families respectively are given. With regard to the variance estimates, model fit was satisfactory ($\chi^2(254) = 446.50$, Root Mean Square Error of Approximation = .06, Non-Normed Fit Index = .94, Com-

Table 1
Means, Standard Deviations, and ANOVA of Observed Scores of Family Relationships

Relationship	Problematic families	Nonproblematic families	$F(1, df)$	η^2
T-M	1.81 (.63)	1.52 (.46)	19.72***	.068
T-F	1.77 (.65)	1.34 (.41)	43.35***	.138
T-S	2.57 (.79)	2.09 (.65)	30.71***	.102
M-T	1.72 (.54)	1.28 (.35)	66.60***	.197
F-T	1.75 (.58)	1.34 (.34)	52.37***	.162
S-T	2.53 (.80)	2.29 (.74)	6.70**	.024
S-M	1.62 (.59)	1.67 (.65)	0.50	.002
S-F	1.64 (.66)	1.57 (.63)	0.92	.003
M-S	1.62 (.58)	1.49 (.53)	3.55	.013
M-F	1.61 (.59)	1.44 (.49)	6.42**	.023
F-S	1.64 (.54)	1.59 (.54)	0.53	.002
F-M	1.58 (.57)	1.48 (.53)	2.17	.008

Note. T-M = target report of relationship with mother, T-F = target report of relationship with father, T-S = target report of relationship with sibling, etc.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2
SRM Raw Variance Estimates, SRM Component Means, Comparisons of SRM Means

SRM effects	Problematic families		Nonproblematic families		$\Delta\chi^2(1)$
	Variance estimate	SRM mean	Variance estimate	SRM mean	
Actor effects					
T	.155***	.362	.087***	.096	27.39***
M	.053*	-.245	.042***	-.239	0.04
F	ns	-.257	.068***	-.191	2.30
S	.114***	.140	.133***	.334	13.43***
Partner effects					
T	.075**	.324	.048***	.071	30.85***
M	ns	-.230	.041***	-.117	6.49**
F	.082***	-.245	.061***	-.195	1.40
S	.110***	.152	.055***	.241	3.72
Relationship effects					
T-M	.167***	-.084	.053**	-.045	0.96
T-F	.185***	-.121	ns	.140	0.40
T-S	.363***	.205	.256***	.186	0.07
M-T	.156***	-.151	ns	-.155	-0.02
F-T	.222***	-.110	ns	-.121	0.07
S-T	.431***	.261	.358***	.276	0.02
S-M	.137***	-.126	.191***	-.155	0.52
S-F	.162***	-.135	.156***	-.121	0.18
M-S	.171***	-.104	.145***	-.107	0.01
M-F	.197***	.255	.108***	.261	0.01
F-S	.083**	-.100	.150***	-.07	0.27
F-M	.267***	.210	.133***	.200	0.02
Family effect	.00	1.835	.00	1.591	36.47***

* $p < .05$. ** $p < .01$. *** $p < .001$.

parative Fit Index = .98). The results of these analyses indicate that for both groups of families, between-family differences in negativity can be explained by differences on the individual and the dyadic level (as indicated by significant actor and partner variances, and relationship variances), but not on the family level.

SRM Analyses With Structured Means: Multigroup Comparison

In Table 2, the results of the structured means SRM components are also given. The last column shows the result of the chi square difference test in which the specific mean of the SRM effect was set equal across the two groups of families in comparison to the fully unconstrained model. The reason that these SRM effect means can also have a negative sign is that the structured means approach requires some constraints on the SRM effects. These constraints imply that actor and partner effects, and also relationship effects reported by the same person as well as about the same person, should sum to zero (see for a more detailed description of the ANOVA model: Cook & Kenny, 2004, p. 364). Results indicate that in problematic families, the target adolescent is the person who reports most negativity in relationship with all other family members compared to the other family members (actor target adolescent = .362), and that the target adolescent in problematic families is also

seen most negatively by all other members (partner target adolescent = .324). Both parents were the least negative about other family members in general (actor mother = $-.245$ and actor father = $-.257$), and were also perceived the least negative in comparison to the other family members (partner mother = $-.230$ and partner father = $-.245$). In the nonproblematic families, the sibling is—relatively—the most negative person (actor sibling = .334) compared to the other family members. In these families, the sibling is also perceived by other family members as the most negative (partner sibling = .241).

With regard to the relationship effects, in both types of families we found the largest mean relationship effects in the within-generational relationships (i.e., sibling and marital relationship), which indicates that negativity is expressed more within the same generation, or, between family members of equal status.

With regard to the results of the model comparison of the SRM component means across groups of families revealed that the target adolescent's actor effect mean was larger in problematic than in nonproblematic families ($M = .362$ vs. $M = .096$, $p < .001$). This indicates that, as expected, the target adolescent in problematic families (i.e. the adolescent that shows serious externalizing problem behavior) reports significantly more negativity in relationships with the other family members, regardless of the characteristics of the partner, the relationship characteristics, and the family component of negativity. The target adolescent's partner effect mean was also significantly larger in problematic families than in nonproblematic families ($M = .321$ vs. $M = .071$, $p = .001$). This indicates that in problematic families more than in nonproblematic families, the target adolescent is perceived as being more negative by family members.

Furthermore, siblings reported significantly less negativity in all their relationship with other family members in problematic families compared to nonproblematic families ($M = .140$ vs. $M = .334$, $p < .001$). We also found that the mother in problematic families systematically was perceived as generally being less negative by other family members ($M = -.230$ vs. $M = -.117$, $p = .01$) after controlling for the other effects.

The relationship effects means were not significantly different across the two groups of families. Apparently, these two groups of families do not differ in the unique mean levels of negativity that are reported in the specific relationships with other family members, once the effects of the other components have been controlled.

The significant difference in the family component mean indicates that overall there is more family negativity in problematic families than in nonproblematic families ($M = 1.835$ vs. $M = 1.591$, $p = .001$), controlled for perceptions of the individual family members, and of the specific family relationships.

Discussion

The aim of the present study was to compare patterns of negativity in families with and without an adolescent that shows serious externalizing behavior. The use of the SRM

enabled us to examine whether differences between these families could be ascribed to characteristics of individual family members, characteristics of some specific relationships in the family, or to the family-level of negativity. These characteristics may reflect any characteristic of a person or a relationship: being personality, genes, or this could just reflect a certain consistency in reporting on other family members. The present study does not aim to define these characteristics rather than identifying the source for differences in reports of individual family members. The addition of structured means to the traditional SRM provided important information into how family relationship patterns of negativity were different in problematic and nonproblematic families.

As expected, we found significantly higher levels of negativity in problematic families than in nonproblematic families, especially in those relationships in which the target adolescent was either the rater or the person being rated. These results are in line with earlier studies that suggest that adolescent externalizing behavior is related to conflictive or hostile family relationships (Andreas & Watson, 2009; Burt, McGue, Krueger, & Iacono, 2005). However, these studies did not consider the fact that relationship scores are compounds of actor, partner, relationship and family effects. By applying the SRM, we were able to show to what extent the observed relationship scores could be explained by characteristics of the target adolescent, the characteristics of the other family members, the characteristics of these specific relationships or due to the family level of negativity. Our analyses revealed that most of the SRM components reached significance in both types of families. The overall patterns of SRM findings were similar to those found in normal samples (Eichelsheim et al., 2009).

The next step was to compare the structured means of the SRM effects across the two groups of families. In problematic families, target adolescents generally perceive more negativity in relationships with other family members (mean actor effects). Furthermore, in problematic families other family members also generally experienced the relationship with target adolescents as more negative (mean partner effects). These results were in line with our expectations. In traditional studies on the parent-adolescent dyad, comparable results were found. For example, Burt et al. (2005) found that characteristics of delinquent or oppositional adolescents elicited conflicted reactions from their parents, which in turn, exacerbated oppositional or delinquent behavior. In addition, Yahav (2007) found that symptomatic children (that show either externalizing or internalizing behavior) tended to see their parents' attitudes as generally negative towards themselves and their siblings. Externalizing children in this study also perceived their parents as being more rejecting than nonexternalizing children. Previous studies, however, were mostly focused on one specific dyad in the family. The present study has shown that negativity in other family relations can also be affected when a problematic child is present in the family.

Also in line with our hypotheses, we found that, overall, there was more negativity on the family level in problematic compared to the nonproblematic families. These findings con-

firm our assumption that the externalizing problem behavior of an adolescent child has an impact on the level of negativity in the family. Comparable results were found in a study of Deković and Buist (2005), in which the highest levels of adolescent problem behavior were found in families that were characterized by the least positive affect in all family relationships (parent-child, marital, sibling relationship). Although these authors used ratings of all family members, they did not distinguish between different levels of the family system simultaneously. In the present study we were able to conclude that after controlling for characteristics of individuals or characteristics of specific family dyads, the overall family climate in problematic families was more negative than in nonproblematic families.

There were also findings in the present study that we did not anticipate. First, siblings in these problematic families perceive less negativity in the relationships with other family members, compared to siblings in nonproblematic families. This finding might have to be viewed in the light of the restrictions of the structured means model: all actor effects had to sum up to zero and can therefore be considered relative to one another. This would mean that brothers and sisters in problematic families experience only relatively less negativity in their family relationships due to the fact that their externalizing brothers and sisters are more negative. However, since these restrictions were placed on models for both the problematic and nonproblematic group of families, this finding is not likely to be an artifact. It could be that these brothers and sisters try to compensate for their externalizing brother/sister's behavior; similar results were found in a study of Yahav (2007). We also found that mothers in problematic families were generally perceived as being less negative by all other family members than mothers in nonproblematic family members. This could also be caused by some kind of compensatory process: the fact that the target adolescent shows problematic behavior might be a reason for the mother to withdraw from interactions with her adolescent child, which is also described by (extensions of) Patterson's coercion theory (see for example: Granic & Patterson, 2006).

In the present study, no between-group differences in the means of the relationship effects were found. On the basis of the ANOVA, we could have concluded that differences between the two groups of families could be subscribed to differences on relationship level. However, the results of the structured means SRM indicate that it is not so much the dyadic interaction between parent and adolescent that explains differences in levels of negativity, but that differences are mainly found on the individual and family level.

Conclusions and Implications

Despite limitations to the present study (no clinical sample was used, only one aspect of relationship quality was assessed), the findings of the present study contribute to a better understanding on how the behavior of one deviant individual affects the family as a system. Without judging on cause and effect, we can conclude that the presence of an adolescent child with serious externalizing problems is related to the way other family members view this adolescent

but also to the perception of negativity in all other family relationships. This information can be of significant importance for family practitioners. The present study shows the added value of applying a structured means SRM analysis: although a simple mean differences test would lead us to believe that differences between problematic families and nonproblematic families are mainly found in specific family relationships, these differences are actually based on the behavior and characteristics of a problematic child.

References

- Achenbach, T. M. (1991). *Manual for the Youth Self-Report and 1991 profile*. Burlington: University of Vermont, Department of Psychiatry.
- Andreas, J. B., & Watson, M. W. (2009). Moderating effects of family environment on the association between children's aggressive beliefs and their aggression trajectories from childhood to adolescence. *Development and Psychopathology, 21*, 189–205.
- Burt, S. A., McGue, M., Krueger, R. F., & Iacono, W. G. (2005). How are parent-child conflict and childhood externalizing symptoms related over time? Results from a genetically informative cross-lagged study. *Development and Psychopathology, 17*, 145–165.
- Cook, W. L., & Kenny, D. A. (2004). Application of the Social Relations Model to family assessment. *Journal of Family Psychology, 18*, 361–371.
- Cook, W. L., Kenny, D. A., & Goldstein, M. J. (1991). Parental affective style risk and the family system: A Social Relations Model analysis. *Journal of Abnormal Psychology, 100*, 492–501.
- Cox, M. J., & Paley, B. (1997). Families as systems. *Annual Review of Psychology, 48*, 243–267.
- Cox, M. J., & Paley, B. (2003). Understanding families as systems. *Current Directions in Psychological Science, 12*, 193–196.
- Deković, M., & Buist, K. L. (2005). Multiple perspectives in the family. Family relationship patterns. *Journal of Family Issues, 26*, 467–490.
- Eichelsheim, V. I., Deković, M., Buist, K., & Cook, W. L. (2009). The Social Relations Model in family studies: A systematic review. *Journal of Marriage and Family, 71*, 1052–1069.
- Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology, 21*, 1016–1024.
- Gerlisma, C., Snijders, T. A. B., Van Duijn, M. A. J., & Emmelkamp, P. M. G. (1997). Parenting and psychopathology: Differences in family members' perceptions of parental rearing styles. *Personality and Individual Differences, 23*, 271–282.
- Granic, I., & Patterson, G. R. (2006). Toward a comprehensive model of antisocial development: A dynamic systems approach. *Psychological Review, 113*, 101–131.
- Kashy, D. A., & Kenny, D. A. (1990). Analysis of family research designs: A model of interdependence. *Communication Research, 17*, 462–482.
- Kenny, D. A., & La Voie, L. (1984). The Social Relations Model. In L. Berrowitz (Ed.), *Advances in experimental social psychology* (Vol. 18, pp. 142–182). San Diego: Academic Press.
- Lytton, H. (1990). Child and parent effects in boys' conduct disorder: A reinterpretation. *Developmental Psychology, 26*, 683.
- Yahav, R. (2007). The relationship between children's and adolescents' perceptions of parenting style and internal and external symptoms. *Child Care Health Development, 33*, 460–471.

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