

Do Mothers and Fathers Moderate the Influence of Each Other's Self-efficacy Beliefs and Parenting Behaviors on Children's Externalizing Behavior?

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Abstract The aim of the current study was to test first the validity of the social learning model, in which children's externalizing behavior (EB) is considered to be related to problematic parenting, and second, whether and to what extent mothers and fathers moderate the influence of each other's parenting on children's EB. Two models were tested with a set of longitudinal prospective data collected from 419 mothers and 419 fathers. The first model tested the relations between parental self-efficacy beliefs at 4 years of age, parenting behaviors at age 5 and child's EB at age 6. The second model tested the moderating effect of parenting behavior displayed by one parent on the way in which the other parent's concurrent beliefs and subsequent behaviors impact on their child's EB. The results mainly supported the first model, in particular the bidirectional relations between parents' controlling behavior and children's EB. The second model did not fit the data well. The existence of a moderating role of the other parent's behavior was only demonstrated for the relation between mothers' or fathers' controlling behaviors and children's EB. Very similar results were found for mothers and fathers. The results are discussed for their research and clinical implications.

Keywords Self-efficacy beliefs · Parenting behaviors · Externalizing behavior · Social learning model · Family system approach

Introduction

Numerous studies have been devoted to the relation between parenting and children's externalizing behavior (EB) (Barnett et al. 2010; Prinzie et al. 2003). One of the most cited models used to explain this relation is the social learning model in which EB is regarded as related to problematic parenting (Dishion et al. 1995; Patterson 1982, 2002; Patterson et al. 1989; Snyder et al. 2003). However, this model is limited to the parent-child dyad, and most of the studies have been conducted with mothers. Another model is the family system approach in which EB is regarded as reflecting a dysfunctional mother-father parenting subsystem (Bornstein and Sawyer 2005). In this model, EB is encompassed in a triadic system where the interacting role of the two parents is considered.

In the social learning model, EB is thought to be related to problematic parenting (Dishion et al. 1995; Patterson 1982, 2002; Patterson et al. 1989; Snyder et al. 2003). The study of parenting has mainly focused on parents' child-rearing behaviors which have often been conceptualized in terms of two key dimensions: support and control (Aunola and Nurmi 2005; Baumrind 1971; Roskam and Schelstraete 2007). Support encompasses the affective nature of the parent-child relationship and refers to a variety of related behaviors including warmth, acceptance, involvement, autonomy, monitoring, and the establishment of guidelines. Control encompasses parents' efforts to control their children's behavior, using approaches such as ignoring, rewarding, harsh punishment, inconsistent

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discipline and authoritarian parenting (Aunola and Nurmi 2005). In the social learning approach, EB has been thought to be more likely to emerge when the parent uses controlling behaviors that reinforce the child's problematic behavior. In turn, children are considered to be active in the relationship with their parents and not passive recipients. An escalatory effect has been described whereby a child's EB is thought to increase his or her parents' controlling behaviors. The social learning model therefore assumes negative cycles of interaction, in which the child's coercive behavior is met by the parents' coercive behavior, resulting in an escalation of negativity. Such an escalation of negativity and the parents' failure to provide positive reinforcement for prosocial or compliant behaviors results in the maintenance of EB over time (Patterson 1982, 2002; Patterson et al. 1989, 1992). This model of bidirectional relations between parents' controlling behaviors and children's EB has received empirical support from previous research (Bailey et al. 2009; Gershoff et al. 2012; Hoeve et al. 2009; Lansford et al. 2011).

Alongside behavioral aspects of parenting, the influence of negative parental beliefs on children's EB has also been raised. In particular, there has been great interest in parental self-efficacy beliefs, because these were shown to be negatively related to children's difficult behavior (Meunier et al. 2011). Parental self-efficacy beliefs are defined as the beliefs caregivers hold about their ability to parent successfully (Bandura 1977; Coleman and Karraker 1998). Both indirect and direct relationships have been documented in previous research between self-efficacy beliefs and child behavior. With regard to its indirect effect, parental beliefs are mainly thought to encourage the use of specific parenting behaviors. Strong associations have hence been found between low self-efficacy beliefs and high negative control (Jones and Prinz 2005; Leerkes and Crockenberg 2002; Meunier et al. 2011). Parenting behaviors have therefore been regarded as mediating the influence of self-efficacy beliefs on children's behavioral adaptation. This would mean that weak beliefs would favor EB through the increasing use of controlling behaviors (Brody et al. 1999; Shumow and Lomax 2002; Zimmer-Gembeck and Thomas 2010). In addition to such indirect influence, parental self-efficacy has been directly linked with better adjustment in children of all ages (Ardelt and Eccles 2001; Coleman 2003; Jones and Prinz 2005). Empirical evidence has been provided for the concurrent and longitudinal associations between high self-efficacy beliefs and children's behavioral adjustment, or conversely between low self-efficacy beliefs and EB (Janssens 1994; Jones and Prinz 2005; Junttila et al. 2007; Mouton and Tuma 1988; Oelofsen and Richardson 2006). For example, a recent randomized controlled micro-trial has shown that reinforcing mothers' self-efficacy beliefs in a lab session

had an immediate positive effect on the child's behavior (Mouton and Roskam 2015). Mothers were given false positive feedback on their parenting behavior, referring to the way they actually took care of their child at home and the observed developmental level of their child. Compared with children and mothers in a control group to whom no feedback was given, more positive behavior was observed in a mother-child interaction task for both these children and their mothers. Enhancing the mothers' self-efficacy had a positive effect on the children's positive behavior during the interaction with their mothers.

In sum, evidence has been provided for the bidirectional relations between controlling parenting and children's EB as well as for the impact of low parental self-efficacy beliefs on children's EB both directly and indirectly through parenting behaviors. However, in the vast majority of these studies, data have been collected among mothers. There is therefore a lack of evidence for the validity of the social learning model with fathers. Moreover, the social learning model focuses on the parent-child dyad. Accordingly, empirical research has been mainly conducted with one parent and one child in each participating family, and the influence of the other parent on the parent-child relationships has rarely been considered. By contrast, other theoretical models suggest that taking the other parent into account in the model should improve the accuracy with which children's risk of developing EB can be estimated.

The family system approach is one model suggesting the interacting role of the two parents in the emergence and persistence of child EB. In this view, child EB is regarded as reflecting a dysfunctional family system (Bornstein and Sawyer 2005). The family system is an organized whole, and its subsystems, including individuals and their relationships, are interdependent. In particular, the spillover hypothesis posits that what occurs in one subsystem may impact another (Enger 1988). For example, conflict between the parents has been found to be associated with negative parenting behavior on the one hand (Kielpikowski and Pryor 2008; Malik and Rohner 2012) and with EB-related problems on the other hand (Cummings and Davies 2010; Harden et al. 2007; Jouriles et al. 1988; Katz and Gottman 1993; Lindahl and Malik 1999; Webster-Stratton and Hammond 1999). For the current purpose, what occurs in the mother-father parenting subsystem may be transferred to the parent-child subsystem and finally result in EB in children. Rather than taking a dyadic approach as the social learning model does, i.e. focusing on the relations between parenting variables and child outcomes, the family system perspective consists of a triadic approach (Stroud et al. 2011). It suggests that the pattern of beliefs and behaviors in the mother-father parenting subsystem should help explain children's EB (Stroud et al., 2011).

An appropriate way to study the effect of the two parents' contribution on children's behavioral issues is to consider interactions between mothers' and fathers' parenting. An emerging line of research has been devoted to studying whether and how mothers and fathers interactively contribute to their children's behavioral outcomes (Barnett et al. 2010). For example, maternal support has been seen to have a greater influence on boys' EB when fathers display a high level of support (Verhoeven et al. 2010), and fathers' support has been found to be more important for children's school adjustment at lower levels of mothers' support (Martin et al. 2010). A similar protective role of fathers' acceptance has also been displayed with regard to the mediating effect of children's depressive symptoms in the relation between perceived maternal rejection and school bullying (Papadaki and Giovazolias 2015). In another study, adolescents' level of delinquency was shown to be lowest in families where at least one parent displayed authoritative childrearing behavior, and highest in families where both parents were neglectful (Hoeve et al. 2011). However, a recent study failed to demonstrate that mothers' and fathers' contributions interact with one another in predicting adolescent adjustment (Lansford et al. 2014).

The aim of the current study was to contribute to this emerging line of research by testing whether and to what extent mothers and fathers moderate the influence of each other's parenting beliefs and behaviors on children's EB. First, the validity of the social learning approach was examined with mothers and fathers in a model encompassing both behavioral and cognitive relevant aspects of parenting, i.e. self-efficacy beliefs and controlling behaviors, and children's EB. Second, the interactive contribution of mothers' and fathers' parenting was added to the first model as moderators of the relation between parenting variables and children's EB.

Method

Participants

This study was part of the Hard-t(w)o-Manage (H2M) research program conducted at the university of Louvain in Belgium, which received the approval of the Ethics Committee of the Psychological Sciences Research Institute. Data were collected among 419 two-parent families, i.e. 419 biological mothers and 419 biological fathers from the French-speaking part of Belgium. Some of the families were recruited from pediatric units at the university clinic in Brussel (30 %). Others were recruited when the children were in the first to third kindergarten years in several elementary schools in the French-speaking part of Belgium (70 %). The parents were informed about the study through

leaflets, posters and a website created for it. They were told that their family would be participating in a longitudinal research program. They were assured that the data would remain confidential. For the families recruited from pediatric units, we excluded children with overall developmental delay or intellectual disability. This applied to children born prematurely (before 37 weeks), or with autism, dysphasia or substantial language delay according to an examination by a speech therapist, or with an IQ below 80 tested using the WPPSI-III (Wechsler 2004). All the children attended normal school.

The children (56 % boys) were aged 4.13 ($SD = .91$), 5.04 ($SD = .98$) and 6.00 ($SD = 1.06$) at Time 1 (T1), T2 and T3 respectively. Of the families, 19.2 % had one child, 47.3 % had two and 33.5 % had three or more. Due to the strategy of recruitment of families participating in a 3-year longitudinal research program without any financial compensation, we mostly recruited middle-class families. The educational level of the parents was calculated as the number of years of education they had completed, counting from first grade onward. Some had completed 12 years, corresponding to the end of secondary school and to compulsory education in Belgium (27.7 % of the mothers and 21.4 % of the fathers); others had completed 3 more years (corresponding to undergraduate studies) (51.4 % of the mothers and 46.1 % of the fathers); others had gained a 4-year degree or more (20.9 % of the mothers and 32.5 % of the fathers). Of the parents, 87.5 % of the couples lived together.

Comparisons between the families according to the place where they had been recruited revealed no differences in the socio-demographic variables with regard to mothers' educational level, $F(1337) = .74$, $p = .391$, fathers' educational level, $F(1337) = .54$, $p = .460$, number of siblings, $F(1337) = .46$, $p = .498$. However, children recruited in pediatric units were slightly younger (3.85 years old on average) than those recruited in elementary schools (4.25 years old on average), $F(1337) = 17.09$, $p < .001$.

Procedure

At T1, T2 and T3, the mothers and the fathers each received questionnaires, which they were asked to fill out separately and to send back to the research institute. At T1, the questionnaires assessed children's EB, parents' self-efficacy beliefs and parenting behaviors, at T2, the questionnaire again assessed parenting behaviors and at T3, the last questionnaire assessed their child's EB.

Measures

Parental self-efficacy beliefs were assessed at T1 by the mothers and the fathers separately using the *Echelle*

globale du sentiment de compétence parentale (EGSCP) (Meunier and Roskam 2009a). Based on Bandura's Social Learning Theory (1977) and on subsequent parenting research (Coleman and Karraker 1998), this is a 25-item scale related to five domain-specific factors: Discipline, Nurturance, Playing, Instrumental Care, and Teaching. Items are in the form of affirmatives, for example: "I am able to sense when my child is starting to become distressed" for the Nurturance scale, "I am a fun playmate for my toddler" for the Playing scale, or "Despite my efforts, I find it is hard to influence the way my child behaves" for the Discipline scale. The measure has previously been validated on 705 French-speaking parents and displays good psychometric properties, with the five-factor solution explaining 55.29 % of the variance and α ranging from .60 to .84 (Meunier and Roskam 2009a). In order to limit the number of predictors in the current analyses, a main self-efficacy score was computed for each parent by averaging the five domain-specific self-efficacy factors. Moderate to high correlations were observed between the five domain-specific measures in the validation article and this study ($r = .40$ to $.71$), suggesting that they may be combined in a second-order domain-general measure. This procedure, used in the current study, is in line with Bandura's formulation (1977), which suggested that the most valid approach for determining domain-level self-efficacy beliefs regarding a multidimensional construct—such as parenting—is achieved by combining the efficacy information conveyed by several behaviorally specific assessments. The internal consistencies of the main self-efficacy score in the present data sets were good: α was .74 for mothers and .76 for fathers. The hypothesis of a second-order model of factorial structure for the EGSCP was tested in the current data ($N = 838$) set with a confirmatory factorial analysis. Fit indices were good, with $\chi^2(5) = 23.84$, $p = .001$, CFI of .97 and RMSEA of .06.

Controlling parenting behaviors were assessed at T1 and T2 by mothers and fathers separately with the controlling scales of the preschool form of the *Evaluation des Pratiques Educatives Parentales* (EPEP-PPSF) (Meunier and Roskam 2009b). The EPEP-PPSF is a 40-item instrument yielding nine first-order factors: positive parenting, monitoring, rules, discipline, inconsistent discipline, harsh punishment, ignoring, material rewarding, and autonomy. This instrument has previously been validated on 565 French-speaking mothers and fathers of children developing normally and shows good psychometric properties. For the nine-factor solution extracted in the validation study, α ranged from .59 to .90 (mean $\alpha = .78$) for mothers and from .66 to .90 (mean $\alpha = .78$) for fathers; the total percentage of variance explained was 60.96 % for the mothers and 62.52 % for the fathers (Meunier and Roskam 2009b). Confirmatory factor analyses from the validation study

showed that two second-order factors covering the supportive and negative controlling dimensions of parenting (Aunola and Nurmi 2005) emerged from the initial factor solution. The fit measures in the validation study demonstrated an acceptable fit to the data, with CFI = 0.94, RMR = 0.03, and RMSEA = 0.05 (Hu and Bentler 1999; Meunier and Roskam 2009b). In order to limit the number of analyses and to focus on the most relevant parenting dimension with regard to the social learning model, only the controlling second-order factor has been used for the current study. The negative controlling factor included Discipline ("When my child becomes too agitated or bothersome, I punish him/her"), Harsh Punishment ("When my child gets on my nerves or is really exasperating, I occasionally resort to physical punishment (spanking, slapping)"), and Ignoring ("When my child does something that is not allowed, I only talk to him/her again when he/she behaves better"). The internal consistencies in the present data sets were good with .78 for mothers and .75 for fathers.

Children's EB was assessed at T1 and T3 separately by the two parents, who had to complete the four subscales relating to EB (angry, aggressive, egotistical and oppositional behavior) of the *Profil Socio-Affectif* (PSA) (Dumas et al. 1997; LaFrenière et al. 1992). Items scoring high on the EB scale include, for example, "takes pleasure in harming others". For the three-factor solution extracted in the initial validation study (Social competence, Internalizing and EB), α ranged from .79 to .91; the total percentage of variance explained was 67.1 %. The French adaptation of the scale was validated by Dumas et al. (1997) on a sample of 800 preschoolers (387 girls, 413 boys) aged from 30 to 78 months, and demonstrated similar good properties (Dumas et al. 1997). The internal consistency of the EB scale in our sample was good: $\alpha = .82$ for mothers and $\alpha = .79$ for fathers. In the current study, a single index of the children's EB was used in the analyses, based on the average of the mothers' and the fathers' responses which were seen to be highly correlated ($r = .71$). Such a scoring of the outcome variable partially controlled for shared method variance. EB was here considered as a continuum, ranging from regular to pathological levels of EB. The scores on the EB scale ranged from 19.5 to 79 ($M = 56.34$, $SD = 13.32$) among children recruited from pediatric units and from 38 to 93 ($M = 70.31$, $SD = 10.65$) among children recruited in elementary schools. Taken together, the recruitment strategy maximized the distribution on the continuum from regular to pathological child behavior. The scoring of the PSA is such that a higher score on the scale corresponds to a higher level of behavioral adjustment, in other words to a lower level of EB. For the readability of the results, we recoded the PSA score so that higher scores indicate higher EB.

Analysis Strategy

As a preliminary analysis, correlations between the variables considered in the current study were calculated. The main statistical analyses were carried out using SEM software AMOS 18.0 (Arbuckle 1995, 2007). As is almost inevitable in longitudinal designs when the sample is followed up annually across three waves, there was a significant drop-out rate. Of the 419 families who were willing to participate in the research, 339 (80.7 %) had a complete data set, i.e. both the mother and the father participated to each of the three waves of assessment. For the other 19.3 %, at least one variable was missing for the mother or the father in one of the three waves. The statistical analyses conducted with the SPSS 20.0 Missing Value Analysis package to investigate the randomness of the missing data using Student's *t* statistic for continuous variables or cross-tabulations of categorical variables showed that the pattern of missing data was not associated with background measures, such as the parent's educational level, marital status, number of siblings, children's age and gender, or with measures of EB or parenting variables at age 4. Excluding cases with missing data from the analyses can reduce the statistical power and bias the estimates of parameters (Allison 2003). In order to maintain as much power as possible, the full-information maximum likelihood (FIML), which uses all the available data to estimate the parameters of a model (by calculating the log-likelihood of the data for each observational unit separately) was used to estimate missing data (Allison 2003).

The structural equation models were estimated with the manifest variables separately for mothers ($N = 419$) and fathers ($N = 419$). The first model, as hypothesized by the social learning model, tested the relation between parental self-efficacy beliefs at age 4, parenting behaviors at age 5, and child EB at age 6. The stability of parenting behaviors between age 4 and age 5 and of child EB between age 4 and age 6 were controlled for. The cross-sectional correlations between self-efficacy beliefs, parenting behaviors and child EB at age 4 were also controlled for. The second model involved the interacting contribution of mothers and fathers as an explanation for the relations between each parent's beliefs or behavior and the child's EB as posited by the family system approach. In particular, the model estimated the moderating effect of parenting behavior displayed by one parent at age 4 on the way in which the other parent's concurrent self-efficacy beliefs and parenting behaviors at age 5 impact on their child's EB at age 6. Interaction variables were therefore computed. The first interaction term was obtained by multiplying two centered variables, i.e. the other parent's parenting behavior at age 4 and the first parent's concurrent self-efficacy beliefs. This first interaction term was introduced in the model to

moderate the relation between the first parent's self-efficacy beliefs at age 4 and parenting behavior at age 5 as well as between the first parent's self-efficacy beliefs at age 4 and child EB at age 6. The second interaction term was obtained by multiplying two centered variables, i.e., the other parent's parenting behavior at age 4 and the first parent's parenting behavior at age 5. This second interaction term was introduced in the model to moderate the relation between the first parent's parenting behavior at age 5 and child EB at age 6. As is required in a test of moderation, the direct paths from the moderator (the other parent's controlling behavior at age 4) to both parenting behavior at age 5 and child EB at age 6 were also estimated.

Several goodness-of-fit indices were used in conjunction with the χ^2 statistic to determine the acceptability of the models: the comparative fit index (CFI) (Marsh et al. 1988) and the root mean-square error of approximation (RMSEA) (Byrne 1998, 2001). For CFI, values close to 0.90 or greater are acceptable while values higher than .95 indicate a good fit to the data. RMSEA should preferably be less than or equal to 0.06, but values under .08 are acceptable (Hu and Bentler 1999).

Results

The correlations between the variables considered in the current study are displayed in Table 1. The pattern shows that parents' controlling behaviors were highly stable from T1 to T2, with $r = .86$ for mothers and $r = .76$ and for fathers. This was also the case for children's EB with, $r = .84$. Mothers' and fathers' self-efficacy beliefs and behaviors were also moderately intercorrelated, with coefficients of .48 for self-efficacy beliefs and .31 and .33 for control. Finally, children's EB was moderately related to all of the parenting variables, with coefficients ranging from $-.35$ to $-.53$ for self-efficacy beliefs and from .18 to .36 for control.

For mothers, the model that tested the longitudinal prospective relations between parenting variables and child EB fit the data perfectly with $\chi^2(1) = .79$, $p \geq .10$, CFI of 1.00 and RMSEA of .00. For fathers, fit indices were also good with $\chi^2(1) = .13$, $p \geq .10$, CFI of 1.00 and RMSEA of .00. Figures 1 and 2 depict mothers' and fathers' model with standardized structural path values. The results were very similar for mothers and fathers. They show that child EB at age 4 tended to increase the parents' controlling behavior at age 5. In turn, controlling parenting behavior at age 5 significantly predicted or tended to predict in case of mothers child EB at age 6. However, contrary to what was expected, no significant relation was displayed between the parents' self-efficacy beliefs at age 4 and both the parents'

Table 1 Correlations between mothers' and fathers' self-efficacy beliefs and behaviors, and children's EB

	2	3	4	5	6	7	8
Age 4 (T1)							
1. Mothers' self-efficacy beliefs	.48***	-.25***	-.14**	-.53***	-.26***	-.20***	-.49***
2. Fathers' self-efficacy beliefs	-	-.21***	-.20***	-.42***	-.24***	-.22***	-.35***
3. Mothers' control		-	.31***	.29***	.86***	.30***	.29***
4. Fathers' control			-	.18**	.29***	.76***	.22***
5. Children's EB				-	.36***	.23***	.84***
Age 5 (T2)							
6. Mothers' control					-	.33***	.34***
7. Fathers' control						-	.30***
Age 6 (T3)							
8. Children's EB							-

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

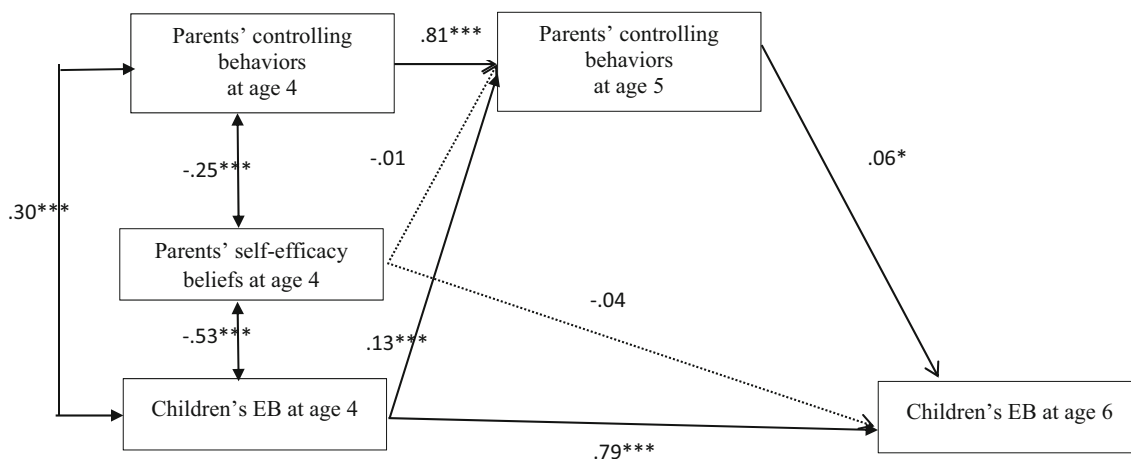


Fig. 1 Longitudinal relations between mothers' parenting variables and children's EB with standardized structural paths. *Note* The standardized paths are shown, meaning for example that when the parent's controlling behaviors at age 4 increase by 1 standard

controlling behavior at age 5 and child EB at age 6. Whereas concurrent relations between parental self-efficacy beliefs, control and child EB were significant, higher self-efficacy beliefs were predictive neither of low controlling behaviors 1 year later nor of low EB in children 2 years later.

The model that tested the interacting contribution of mothers' parenting variables did not fit the data well, with $\chi^2(10) = 40.84, p < .001$, CFI of .96 and RMSEA of .11. The same was true for fathers with fit indices of with $\chi^2(10) = 75.19, p < .001$, CFI of .92 and RMSEA of .15. Figures 3 and 4 depict the models with standardized structural path values. They revealed that controlling behaviors of one parent interacted with those of the other to predict children's EB later on. The interaction is represented in Fig. 3. It means that when the level of one parent's controlling behaviors was low, the child's EB was low even

deviation, the parent's controlling behaviors at age 5 increases by .81 SD. Dashed lines are for non-significant paths. * $p < .05$ *** $p < 0.001$

when the other parent was highly controlling. When one parent's controlling behaviors were high, the child's EB was higher when the other parent behaved in a controlling manner and lower if the other parent's controlling behaviors were low. This interaction suggests both a cumulative deleterious effect of the two parents' high controlling behavior on child EB and a protective effect of one parent displaying a low level of control with the other parent displaying a higher level (Figs. 5, 6).

Discussion

The first objective of the current study was to test the validity of the social learning model, postulating bidirectional relations between both behavioral and cognitive parenting variables and child EB, with mothers and fathers.

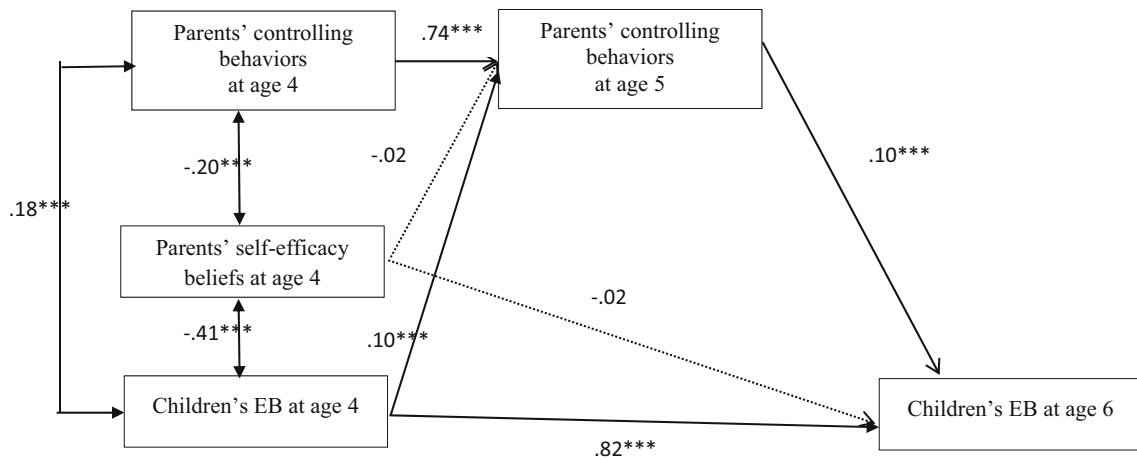


Fig. 2 Longitudinal relations between fathers' parenting variables and children's EB with standardized structural paths. *Note* The standardized paths are shown, meaning for example that when the parent's controlling behaviors at age 4 increase by 1 standard

deviation, the parent's controlling behaviors at age 5 increases by .74 standard deviation. *Dashed lines* are for non-significant paths. $^{***} p < 0.001$

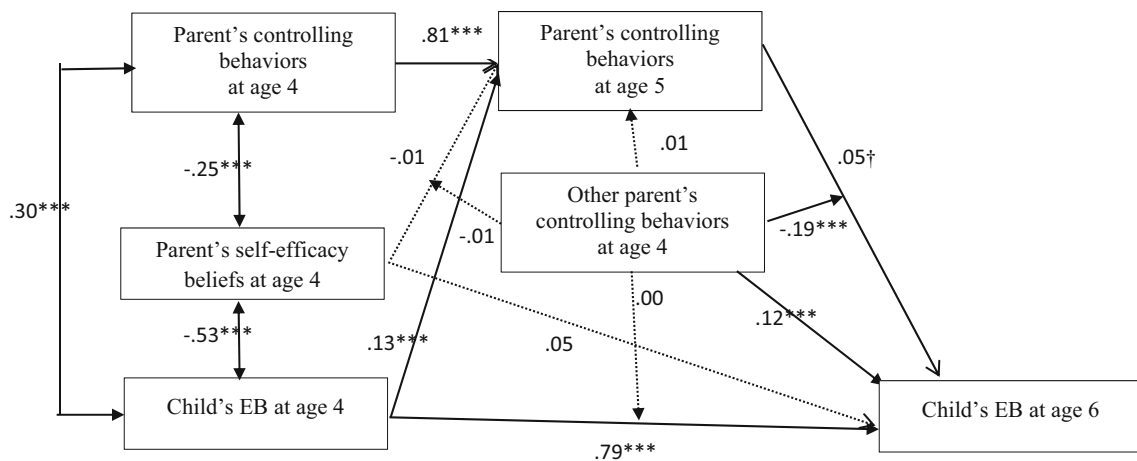


Fig. 3 Interacting contribution of mothers' parenting variables with fathers' controlling behaviors on children's EB with standardized structural paths. *Note* The standardized paths are shown, meaning for example that when the parent's controlling behaviors at age 4 increase

by 1 standard deviation, the parent's controlling behaviors at age 5 increase by .81 standard deviation. *Dashed lines* are for non-significant paths. $^{\dagger} p < .10$ * $p < 0.05$ $^{***} p < 0.001$

The second objective was to test whether and to what extent mothers and fathers moderate the influence of each other's parenting on child EB. Our results mainly support the social learning model, whereas the model encompassing the interacting contribution of the two parents has not been proved.

In the first model under consideration, evidence has been provided for bidirectional relations between controlling parenting and child EB. Child EB at age 4 was related to the parents' controlling behavior at age 5, which in turn was related or tend to be related to child EB at age 6 in a model controlling for the stability of both child's and parents' behavior. As hypothesized, parental self-efficacy beliefs at age 4 were cross-sectionally related to the

parents' controlling behavior and child EB. These results giving support to the social learning model were strengthened by the fact that the same relations between parenting variables and child behavior have been displayed both for mothers and fathers. However, contrary to what was expected, no longitudinal prospective relations between parental self-efficacy beliefs at age 4 and controlling behaviors at age 5, or between parental self-efficacy beliefs at age 4 and child EB at age 6, were found. Contrary to what has been reported in previous studies (Jones and Prinz 2005; Meunier et al. 2011; Shumow and Lomax 2002), parental self-efficacy beliefs did not contribute to explaining parenting behaviors and child EB later on. To the best of our knowledge, the models that have

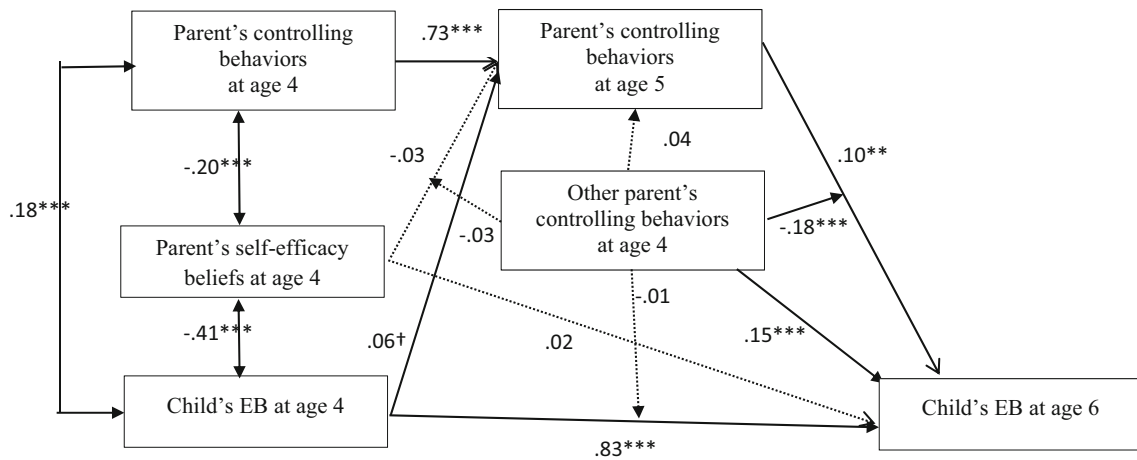


Fig. 4 Interacting contribution of fathers' parenting variables with mothers' controlling behaviors on children's EB with standardized structural paths. Note The standardized paths are shown, meaning for example that when the parent's controlling behaviors at age 4 increase

by 1 standard deviation, the parent's controlling behaviors at age 5 increase by .74 standard deviation. Dashed lines are for non-significant paths. $\dagger p < .10$ $*p < 0.05$ $**p < 0.01$ $***p < 0.001$

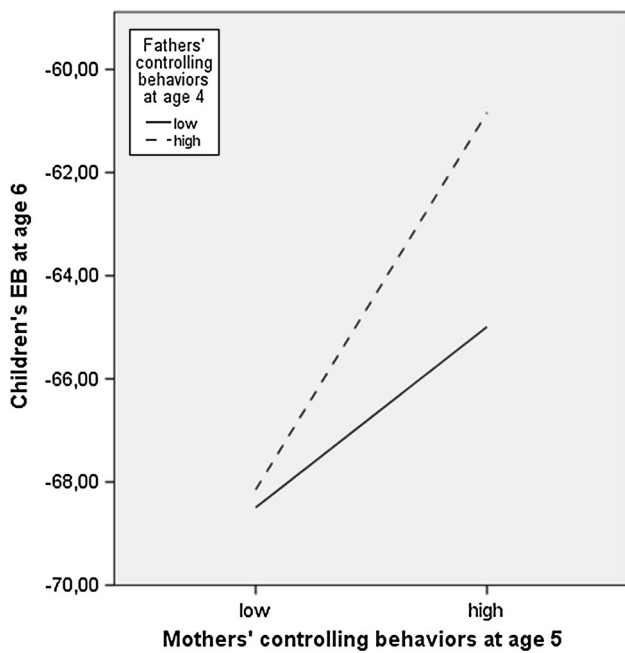


Fig. 5 Interaction effect between mothers' and fathers' controlling behaviors on children's EB

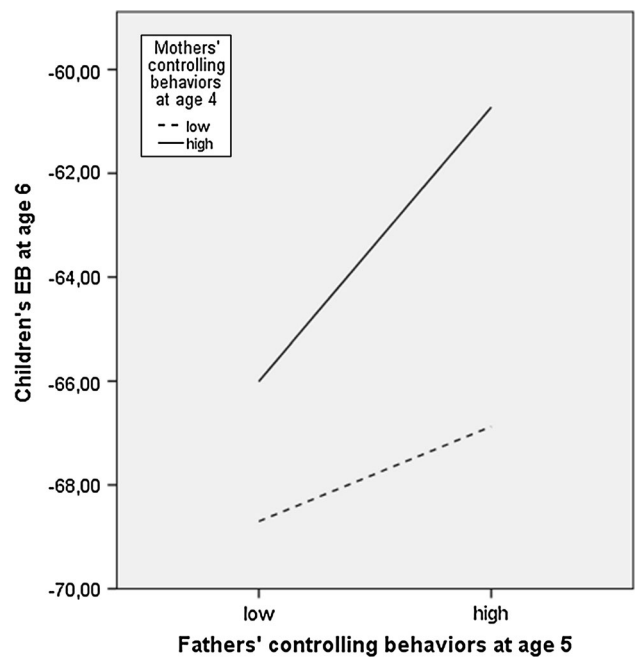


Fig. 6 Interaction effect between fathers' and mothers' controlling behaviors on children's EB

been tested in previous studies did not control either for cross-sectional associations between parental self-efficacy beliefs, controlling behaviors and child EB or for the stability of parents' and children's behavior. It may therefore be suspected that the longitudinal association between parental beliefs and parents' or children's behavioral outcomes is no longer significant when the model controls for both cross-sectional associations and constructs' stability over time. If this is so, parental self-efficacy beliefs will be of great importance with regard to behavioral issues, but

limited to the present. Moreover, it is not possible in our model to test the direction of the association between parental beliefs and behaviors. Previous work has suggested that low parental beliefs would favor the use of controlling behavior (Shumow and Lomax 2002; Zimmer-Gembeck and Thomas 2010) and the intensity of EB in children (Meunier et al. 2011). However, it may be that behaving in a controlling manner or dealing with a child displaying EB tends to contribute to low self-efficacy beliefs. In this sense, parental self-efficacy beliefs should

be considered as a consequence rather than a predictor in the model. Such an interpretation is in line with Bandura's view that one of the most important predictors of self-efficacy beliefs is past experiences. Past success or failure will tend to improve or decrease these beliefs (Bandura 1977, 1982).

Our results for the second model where the interaction terms have been considered provide limited support for a spillover effect of the mother–father subsystem into the parent–child one. Based on the family system approach as well as on an emerging line of research focusing on whether and how mothers and fathers interactively contribute through their beliefs and behaviors to their children's behavioral issues, we hypothesized that considering the moderating role of the other parent in the model should allow children's risk of developing EB to be estimated more accurately. Based on our statistical model, it cannot be concluded that mothers and fathers interactively contribute to children's EB over and above the influence of their individual beliefs and behaviors. Like Lansford et al. (2014) in their study, we failed to verify the moderating role of the other parent's parenting behavior on the relations between one parent's self-efficacy beliefs and controlling behavior as well as between self-efficacy beliefs and child EB. A plausible explanation may be that the choice of the moderator was not relevant. In the present study, we considered the other parent's behavior to represent the spillover effect of the mother–father subsystem. In our design, each parent reported about his/her level of control. It may be that parents' reports about their subjective assessment of the quality of the mother–father relationship would be more effective as a moderator than the statistical interaction between mothers' and fathers' reports about their own parenting behaviors. In other words, it can be suspected that the spillover effect would be better explained by inter-subjective agreement regarding parenting in a subsystem than by statistical interaction between mothers' and fathers' practices and beliefs. Validating such an explanation would involve considering a questionnaire-based assessment of agreement between mothers' and fathers' parenting practices and values. Additional work is therefore needed to further document these fascinating processes within families. Nevertheless, mothers' and fathers' interactive contribution was found to be significant with respect to the effect of their controlling behaviors. In particular, one parent may play a protective role against the other parent's high level of controlling parenting by displaying a lower level of such behavior. A similar protective role had been displayed in several previous studies studying how mothers and fathers interactively contribute through their behaviors to their children's behavioral outcomes (Hoeve et al. 2011; Martin et al. 2010; Papadaki and Giovazolias 2015). A parent may also

amplify the deleterious effect of the other parent's high level of controlling parenting by behaving in the same way. The same deleterious cumulative effect had been found by Hoeve et al. (2011) with regard to adolescents' delinquency. Again, the results reported in the current study were strengthened by the fact that similar results were found for mothers and fathers.

Overall, we still need to accumulate evidence about how mothers and fathers interactively contribute to their child's behavioral adjustment. In this emerging line of research, future attempts to test our main conclusions should also consider additional covariates that have previously been linked with parenting beliefs and behaviors, and problematic behavior in children. For example, whether the parents lived together or were separated should be taken into account in the models. It may be argued that the interactive contribution between mothers' and fathers' behaviors had a more salient effect for two-parent families than for separated ones. Hence, the influence that a parent's controlling behavior exerts on the other's parenting may be higher in families where parents spend time together and face daily triadic situations with their child. The same was true for the amount of time children spent with each of their parents in dyadic situations or with both of them in triadic situations. It may be suspected that this accounts for the impact of parenting variables and potential interaction in the mother–father subsystem on children's EB. The moderation effects should be higher in families where triadic interactions are very common in comparison with families where parent–child dyadic interactions are the most frequent. It would also be interesting for the models to control for family adversity, i.e. parents' educational level, work and family income, since it may lead to variations in the rate of interactive contribution as well as in fathers' involvement in parenting (Cowan et al. 2009). Research during the past decade has shown that socioeconomic status is related to the quality of parent–child relationships, and a range of developmental outcomes for children (Conger et al. 2010). Low socioeconomic status appears to reduce parents' involvement, in particular that of fathers, leading to a reduction in the frequency of triadic interactions (Bradley and Corwyn 2002). Because of financial stress and space constraints for example, it may also enhance controlling parenting (Hoff et al. 2002). However, due to our strategy of recruitment of subjects participating in a 3-year longitudinal research program without any financial compensation, we recruited a homogeneous sample of middle-class families. The parents had completed at least 12 years of education and more than 87 % of the couples were married. Based on the information we collected, there was no evidence that any of these families were facing adversity. Although adversity may be an interesting correlate for the research question, we did not regard a family adversity

variable as relevant to the current analyses. Finally, our main results should be replicated with other measurement methods, as the current results are based exclusively on questionnaires.

Despite inherent limitations, the current study has important clinical implications. An important clinical implication of our results is based on the deleterious impact of controlling parenting behavior. With regard to EB, it seems that reducing harsh punishment, inconsistent discipline and ignoring practices may be an effective way to reduce problematic behaviors. Intervention programs should therefore not only recommend the enhancement of positive parenting but also the management of controlling behaviors in parents (Boeldt et al. 2012; Rodrigo 2010; Rodrigo et al. 2012). In particular, when facing a child displaying EB, the extent to which the parents tend to respond in a controlling manner increases (Meunier et al. 2011). Specific attention should be paid to the negative circle of coercive interactions in this population and in particular to the cumulative deleterious effect coming from the two parents' controlling behaviors (Eddy et al. 2001; Patterson 1982; Snyder and Stoolmiller 2002). There are also clinical implications from the empirical evidence found in this study for the moderating impact of the other parent's controlling behaviors on the relation between the first parent's controlling behaviors and children's EB. This evidence provides support for interventions in at-risk families that urges the parents to be attentive to the protective role they could play. They should be told how to diminish the deleterious impact of high control exerted by the other parent. Nevertheless, given that the first model fits the data better than the second one, the current results also validate to some extent the relevance of interventions involving one parent only. This is important for intervention issues since it can be difficult for the two parents to be available at the same time, or to be equally involved in parenting. For some families also, existing conflict in the mother-father subsystem makes it impossible to attend the same sessions.

In sum, this study has found evidence for the validity of the social learning model, encompassing both cognitive and behavioral aspects of parenting, not only with mothers but also with fathers. However, the model including the other parent's behavior as a moderator of the relations between a parent's controlling behaviors and child EB has not been validated, suggesting that child EB was not estimated with greater accuracy when the interacting contribution of the parents was taken into account. However, a significant moderation effect was found, suggesting that one parent's lack of controlling behavior can protect the child against the other parent's highly controlling behavior. The study also found a deleterious cumulative effect when

the two parents behaved in a highly controlling manner toward their child.

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