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SYNOPSIS

Objective. The goal of this study was to examine how mothers and fathers contribute to each other's autonomy supportive and controlling behaviors toward their child. ***Design.*** The participants were heterosexual parental dyads from two prospective studies (Study 1, n = 289; Study 2, n = 202). Mothers and fathers completed questionnaires assessing their autonomy supportive and controlling behaviors toward their adolescent child. ***Results.*** In both studies, results from structural equation modeling revealed reciprocal partner effects where mothers' autonomy support at Time 1 predicted fathers' autonomy support at Time 2, and fathers' autonomy support at Time 1 predicted mothers' autonomy support at Time 2. Reciprocal partner effects were also observed for controlling behaviors. These reciprocal relations were not statistically different across mothers and fathers. ***Conclusions.*** These results provide support for interparental contributions regarding autonomy supportive and controlling parenting behaviors. Mothers and fathers should thus be aware that their parenting behaviors can be influenced by each other, including both positive and negative parenting behaviors.

INTRODUCTION

Family systems theory posits that cohesion between mothers and fathers in their parenting practices helps their adolescents to negotiate various developmental challenges (Chen & Johnston, 2012). Some studies have examined the degree of cohesiveness between mothers' and fathers' parenting behaviors (e.g., Beiswenger & Grolnick, 2010; Duchesne & Ratelle, 2010), but few have examined the possibility that one parent's behaviors shape the other parent's behaviors (Pleck & Hofferth, 2008; Schofield et al., 2009). Hence, this study examined the influences mothers and fathers have on each other with respect to autonomy support and control toward their child (Grolnick, 2009). This analysis will improve our understanding of dyadic predictors of these parenting behaviors, thereby contributing to the explanatory power of the family systems approach. Below, we define these behaviors and explore why they are often found to be similar in mothers and fathers.

Autonomy Supportive and Controlling Behaviors

Self-determination theory (Ryan & Deci, 2009) identified autonomy support and control as categories of behaviors that respectively promote and hinder children's adjustment (Grolnick & Pomerantz, 2009). *Autonomy support* refers to behaviors that involve recognizing adolescents' perspectives, allowing them to take initiatives and hold age-appropriate responsibilities, offering them opportunities to be autonomous, and providing them with meaningful rationales for parental rules and expectations. *Control* refers to behaviors such as intrusiveness, dominance, and pressure (e.g., the use of rewards, threats, and punishments) to motivate adolescents' behaviors (Soenens & Vansteenkiste, 2010). This definition of parental control is thus similar to the one of psychological control proposed by Barber (2002).

The degree of behavioral similarity among co-parents is relatively high: maternal and paternal levels of autonomy support and control are moderately positively correlated, even when children or parents are asked to report these parenting behaviors. Studies that examined children's perceptions of their parents' autonomy supportive (e.g., Beiswenger & Grolnick, 2010; Gillet, Vallerand, & Lafrenière, 2012; Guay, Ratelle, Larose, Vallerand, & Vitaro, 2013; Roth, 2008) and controlling (De Haan, Soenens, Deković, & Prinzie, 2013; Kins, Soenens, & Beyers, 2012; Miller, 2012; Oudekerk et al., 2014; Stevens & Hardy, 2013; Wei & Kendall, 2014; Yoo, Feng, & Day, 2013) behaviors showed that mothers and fathers are generally perceived to be a moderately similar. Research that focused on parents' self-reports is scarcer. To our knowledge, only two studies reported correlations between mothers' and fathers' self-reported autonomy support, although others assessed both parents but failed to report the association between them. One study reported small-to-moderate amounts of shared variance between mothers' and fathers' self-reports (Annear & Yates, 2010), and the other reported larger amounts (Kins, Beyers, Soenens, & Vansteenkiste, 2009). With respect to parents' controlling behaviors, there are more studies that examined mothers' and fathers' self-perceptions, although most do not report correlations. Overall, the relation between mothers' and fathers' reported control ranged from moderately low to strong (e.g., Aunola, Tolvanen, Viljaranta, & Nurmi, 2013; Jubber, Olsen Roper, Yorgason, Poulsen, & Mandleco, 2013; McCoy, George, Cummings, & Davies, 2013; Nelson, Yang, Coyne, Olsen, & Hart, 2013; Seward, Yeatts, Zottarelli, & Fletcher, 2006; Tynkkynen, Vuori, & Salmela-Aro, 2012).

The positive associations found in the literature between mothers' and fathers' autonomy supportive behaviors and between mothers' and fathers' controlling behaviors support similarity rather than compensatory effects within the parental dyad. Compensatory effects would occur when parenting behaviors of partner A, who does not provide autonomy support to the child, are compensated by parenting behaviors of partner B, who provides this resource to the child, leading to a negative correlation between mothers' and fathers' scores on this type of parenting behaviors. Because past findings suggest that parents do not compensate for each other but, rather, report similar behaviors, a key question arises as to what explains similarities between them.

Mothers' and Fathers' Mutual Influence

Family systems theory (see Bronte-Tinkew, Scott, & Lilja, 2010) and the family process model (Belsky, 1984) stress the notion of interdependent influence between mothers and fathers. Behavior contagion could accordingly be one of the processes that explains their interdependent influence (Rhule-Louie & McMahon, 2007) as proposed by social learning theory (Bandura, 1963). Behavior contagion, as a socialization process, entails a causal effect from one partner's behaviors to those of the other partner (and vice versa). In other words, the similarity between parenting behaviors could result from partners' mutual influence. Behavior contagion has been used to explain phenomena such as partners' emotional convergence (Anderson, Keltner, & John, 2003).

Behavior contagion between parents may be more salient during their child's adolescence, a period where children face important developmental challenges, like school transitions, changes in the social network, puberty, and a developing need for independence. During this period, there are more discrepancies between adolescents' expectations and those of their parents (Collins, 1990), which can lead to conflicts between them (Zimmer-Gembeck & Collins, 2003). These conflicts could be resolved using autonomy support and/or control. In time of conflicts, autonomy supportive or controlling parenting behaviors may be manifested more frequently, and this higher frequency may be detected and emulated by the other parent (Bandura, 1997). More specifically, fathers and mothers may observe each other during interactions with their adolescent child and use this information to become a more effective caregiver. Because there is no absolute value of proficiency related to parenting behaviors, modeling between partners is important. Parents must, therefore, appraise their parenting capacities in relation to the attainment of a similar other, which in this context is their co-parent (Bandura, 1997). Unfortunately, social learning between parents could occur even when one spouse shows ineffective parenting such as using controlling behaviors. From parents' perspective, this strategy could be perceived as beneficial to motivate their child and modeled on across parents. Studies in the motivation field have supported contagion. For example, simply observing a target person's motivational orientation increases the observer's level of motivation (Friedman, Deci, Elliot, Moller, & Aarts, 2010). Moreover, maternal autonomy support predicts increased autonomy support in sibling interactions (Van Der Kaap-Deeder et al., 2015).

Another important question regarding interparental influences is whether maternal parenting behaviors have a stronger influence on paternal parenting behaviors than the opposite. Some studies found that mothers were more likely to influence fathers than vice versa. It was proposed that modeling is a key mechanism through which men learn parenting (Hawkins, Christiansen, Sargent, & Hill, 1993). Fathers may observe mothers during childcare and use this information to learn how to behave toward their children (Masciadrelli, Pleck, & Stueve, 2006). Moreover, some authors suggested that fathers' behaviors are more malleable and vulnerable to environmental influences and, consequently, more readily influenced by mothers' parenting behaviors (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000). In a similar vein, Pleck and Hofferth (2008) found that fathers' involvement in positive activities with the child, closeness and responsiveness, and monitoring and decision-making were positively predicted by mothers' involvement, but that mothers' involvement was not predicted by that of fathers. No similar studies were found for autonomy support and control. One study focused on parenting behaviors (i.e., warmth, monitoring, and harshness) but found no support for the hypothesis that mothers were more influential on fathers than the opposite (Schofield et al., 2009). The inconsistency of these findings may be explained by differences in sample size, the method used to assess parenting behaviors (children's report versus parental self-report), or choice of control variables.

The Present Research

The goal of this research was to test a behavioral contagion hypothesis for autonomy support and control in two prospective studies involving mothers and fathers of

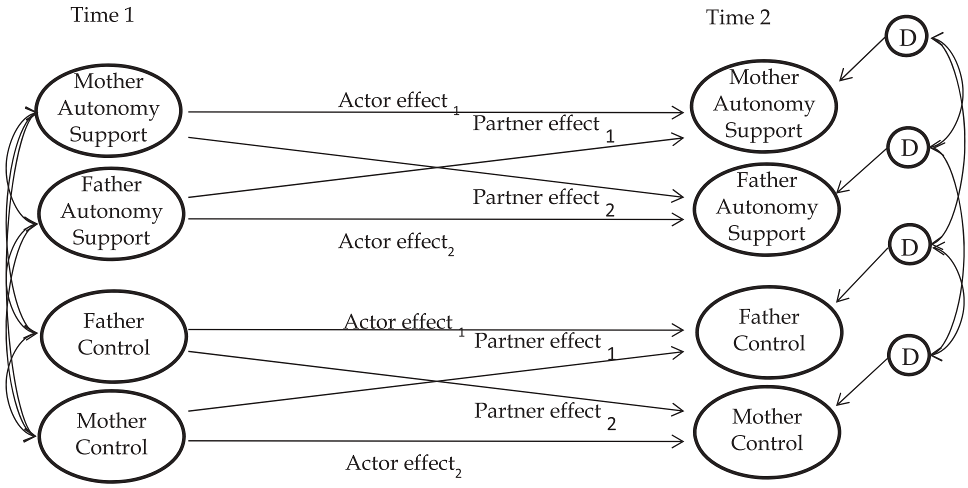

FIGURE 1
Proposed Model. D = disturbance.

adolescents from intact families. First, we hypothesized reciprocal relations between both partners where one partner's self-reported behaviors will predict those of the other (see Figure 1). Second, we tested whether parents had equivalent contributions to their co-parent's behaviors, for both autonomy support and control. In light of the inconsistencies in previous findings, and the fact that different parenting behaviors were examined, we did not formulate specific hypotheses regarding which parent, if any, would have the stronger contribution.

This research contributes to existing knowledge in three ways. First, to our knowledge, it is one of the first to test reciprocal relations between co-parents' autonomy supportive and controlling behaviors. Such an analysis will increase our understanding of dyadic predictors of these behaviors. Second, our hypotheses are tested using self-reports from both parents, in contrast to past studies that relied on children's perceptions of parenting behaviors (e.g., Pleck & Hofferth, 2008). Whereas measuring parenting behaviors from children's perspectives is useful in some contexts, it is unsuitable for estimating partner effects. More specifically, relying on children's perceptions would provide a rather weak test of partner effects because the only possible conclusion would be that children's perceptions of a parent caused their own perceptions of the other parent. Third, our research encompassed two independent studies using a prospective design with intervals of 1 and 2 years between measurement points, different measures to assess parenting constructs, and sophisticated structural equation modeling (SEM) analyses.

STUDY 1

Method

Participants and Procedure. Data from this study came from a longitudinal project on high school students' motivation achievement and persistence. Students and their parents were recruited via a list provided by Quebec's ministry of education, leisure, and sports. Both parents were asked to fill out their questionnaire individually and return it in a separate pre-stamped envelope. Because this research focused on intact families for which both parents participated in the study, we used a subsample of 289 families who had participated in two measurement waves, 1 year apart. Demographic characteristics of the sample at Time 1 are presented in Table 1.

Measures.

Autonomy Support. Maternal and paternal autonomy support were assessed with an adaptation of the Learning Climate Questionnaire (Williams & Deci, 1996), which contains three items. Items were adapted to assess fathers' and mothers' autonomy supportive behaviors toward the children who participated in the study. Mothers and fathers had to rate, on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), the extent to which they agreed with each item (e.g., "My child can freely discuss school matters with me"). Cronbach's alphas were .70 (T1) and .57 (T2) for mothers' self-reports and .77 (T1) and .80 (T2) for fathers' self-reports.

Control. Mothers' and fathers' controlling behaviors were measured with items from the Perceived Interpersonal Style Scale (Pelletier, 1992), adapted to the parenting context. Mothers and fathers rated, on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), the extent to which they agreed with each of the 3 items (e.g., "I punish my child when he/she has bad grades at school"). Cronbach's alphas were .70 (T1) and .64 (T2) for mothers' self-reports and .68 (T1) and .64 (T2) for fathers' self-reports.

Data Analysis.

Analyzing Dyadic Data. The actor–partner interdependence model (APIM; Cook & Kenny, 2005) was used to account for interdependence in partner scores. The APIM was used in the context of longitudinal data where a specific variable was measured twice for both partners. The postulated model is depicted in Figure 1. The APIM is usually tested in regression models and estimates actor and partner effects. In a longitudinal design, actor effects capture the extent to which a person's score is predicted by his/her previous score. In this study, partner effects indicate that a partner's score on autonomy support (or control) predicted his/her partner's autonomy support (or control) score. The partner effect is of central interest in this study. The absence of partner effects would refute a behavior contagion hypothesis. In this study, we estimated four actor effects and four partner effects (see Figure 1).

The APIM estimates correlations between the independent variables and correlations between residual of dependent variables. The correlation between independent variables allows the estimation of actor effects, whereas controlling for partner effects, as well as of partner effects, whereas controlling for actor effects. Because of the likelihood that independent variables will explain all the variance in the dependent variables, a correlation between residual error term is calculated between dependent variables.

In this study, the APIM was tested using SEM in which variables are measured by multiple indicators. Because partner and actor effects are tested longitudinally and the same items are administered to both mothers and fathers on two occasions, the uniquenesses associated with the same observed variables will likely be correlated (*correlated uniquenesses*). Failing to control for these correlated uniquenesses will positively bias the correlations between corresponding latent constructs, which here could result in a

TABLE 1

Descriptive statistics on demographic variables at time 1 for participants of study 1 and study 2, as well as comparisons by participation status (participation at both times and non-participation at time 2)

	Study 1				Study 2			
Variables	Participation at T1 (n = 289)	Participation at both T1 and T2 (n = 201)	Non-participation at T2 (n = 88)	p	Participation at T1 (n = 202)	Participation at both T1 and T2 (n = 160)	Non-participation at T2 (n = 42)	p
Percentage of Mothers	50.0	54.6	42.3	.01	50.0	52.7	42.6	.07
Percentage of Girls	62.7	62.3	63.8	.82	45.3	45.3	45.2	.99
Children's Mean Age	13.7	13.7	13.8	.50	14.1	14.1	14.2	.65
Mothers' Mean Age	42.6	42.6	42.6	.94	44.1	44.2	43.3	.50
Fathers' Mean Age	44.4	44.6	44.1	.52	46.1	46.3	43.7	.01
Mothers' College Diploma (%)	27.4	30.3	20.3	.09	34.0	34.4	32.5	.82
Fathers' College Diploma (%)	21.0	24.6	11.3	.03	30.4	30.8	28.6	.78
Mothers' University Diploma %	16.4	18.0	12.7	.28	44.0	46.9	32.5	.10
Fathers' University Diploma %	22.3	24.6	16.1	.17	37.8	40.9	26.2	.08
Mothers-Work Full Time %	58.8	57.4	62.5	.43	71.8	72.5	69.1	.66
Fathers-Work Full Time %	90.2	91.2	87.7	.42	92.1	94.4	83.3	.05
Family Income Mean ($)	56 752	57 769	54 240	.24	88 342	88 750	86 786	.66

Note. Tests statistics are based on a comparison between participants who have participated at both time points and those who have not participated at Time 2. n = the number of dyads.

spurious partner effect. Hence, uniqueness for the same items across partners and time were correlated.

Goodness-of-Fit Indices. SEM models were estimated using Mplus (Version 6.1) with standardized coefficients obtained using the maximum likelihood robust (MLR) estimator (Muthén & Muthén, 2008). Adequacy of model fit was ascertained using the comparative fit index (CFI), the non-normed fit index (NNFI), and the root-mean-square error of approximation (RMSEA), as well as the x^2 test statistic. The NNFI and CFI vary on a 0-to-1 continuum, with values greater than .90 reflecting acceptable fit to the data (Schumacker & Lomax, 1996) and the RMSEAs below .05 are indicative of a "close fit" (Browne & Cudeck, 1992). Model comparison is also facilitated by positing a nested ordering of models in which the parameter estimates for a more restrictive model are a proper subset of those in a more general model. The difference in x^2 value under MLR was used. When conducting x^2 difference tests using the MLR estimator in Mplus, the x^2 must be adjusted using the Satorra-Bentler scaling correction.

Missing Values. Missing data ranged from 5 to 43% (see Table 2). As in most longitudinal studies, there were more missing values at T2. Little's (1988) test yielded a statistically significant result, $\chi^2(457) = 592.94$, $p = .001$, indicating that the data were not missing completely at random (MCAR). In addition, because more data were missing at T2, we tested for differences on all indicators at T1 between families with complete or missing data. A multivariate analysis of variance (MANOVA) yielded statistically non-significant results, F (12, 200) = 1.26, $p = .25$, suggesting that there were no differences on the indicators used in the SEM analyses between subjects who participated at both time points and those who participated only at T1. Additional analyses were performed on demographic characteristics as a function of parents and students who have participated at both times and those who have not participated at Time 2 (see Table 1). Two differences reached significance: (1) the percentage of mothers who participated at both times was higher than the percentage of mothers who did not participate at Time 2; and (2) fathers who participated at both times were twice as likely (24.6%) to have a college degree than those who did not participate at Time 2 (11.3%). Missing data were taken into account using full information maximum likelihood (FIML; Davey, Shanahan, & Schafer, 2001; Peugh & Enders, 2004).

RESULTS AND DISCUSSION

Preliminary Analyses

The data were screened to ensure they conformed to basic statistical assumptions (Tabachnick & Fidell, 2013). No serious departure from univariate normality was observed on the indicators used to build latent constructs. Kurtosis and skewness values ranged between –2 and 2, except for one indicator on maternal autonomy support at T2 whose skewness value was –3.50 and kurtosis was 23. Ten multivariate outliers (3%) were identified and, because removing these cases did not change model fit indices and parameter estimates of the tested models, they remained in the sample for the analyses.

TABLE 2
Study 1: Means, standard deviations, missing values, and factor loadings for the sem model

Latent Factors and Indicators	*M*	*SD*	% of MV	Factor Loadings
Mother Autonomy Support T1				
The feedback that I provide to my child helps him/her to develop his/her confidence	6.02	1.074	5.2	.64
My child can freely discuss school matters with me	6.63	0.736	5.5	.68
When I ask my child something, I give him/her a sufficient amount of supervision in order for him/her to know what he/she has to do without any feelings of constraint	5.76	1.011	5.2	.64
Father Autonomy Support T1				
The feedback that I provide to my child helps him/her to develop his/her confidence	5.61	1.15	19.0	.80
My child can freely discuss school matters with me	6.22	1.05	18.6	.66
When I ask my child something, I give him/her a sufficient amount of supervision in order for him/her to know what he/she has to do without any feelings of constraint	5.42	1.17	18.6	.74
Mother Autonomy Support T2				
The feedback that I provide to my child helps him/her to develop his/her confidence	6.07	1.04	32.1	.58
My child can freely discuss school matters with me	6.63	0.68	31.7	.63
When I ask my child something, I give him/her a sufficient amount of supervision in order for him/her to know what he/she has to do without any feelings of constraint	5.85	1.08	32.4	.51
Father Autonomy Support T2				
The feedback that I provide to my child helps him/her to develop his/her confidence	5.85	1.05	43.1	.83
My child can freely discuss school matters with me	6.19	0.98	43.4	.69
When I ask my child something, I give him/her a sufficient amount of supervision in order for him/her to know what he/she has to do without any feelings of constraint	5.40	1.11	43.4	.75
Mother Control T1				
I'm angry when my child does not succeed well at school	3.03	1.63	5.2	.83
I punish my child when he/she has bad grades at school	1.95	1.37	4.8	.73
I often speak to my child about his/her mistakes	3.43	1.79	5.5	.38
Father Control T1				
I'm angry when my child does not succeed well at school	2.92	1.65	18.6	.84
I punish my child when he/she has bad grades at school	2.11	1.41	19.3	.70
I often speak to my child about his/her mistakes	3.57	1.63	18.6	.40
Mother Control T2				
I'm angry when my child does not succeed well at school	2.62	1.49	31.7	.82
I punish my child when he/she has bad grades at school	1.72	1.19	32.1	.72
I often speak to my child about his/her mistakes	2.90	1.63	31.7	.36
Father Control T2				
I'm angry when my child does not succeed well at school	2.78	1.70	43.1	.85
I punish my child when he/she has bad grades at school	2.03	1.44	43.1	.73
I often speak to my child about his/her mistakes	2.96	1.45	43.4	.45

Note. MV = missing values; T1 = Time 1, T2 = Time 2.
Possible ranges for autonomy support and control items are 1 to 7.

Confirmatory Factor Analysis (CFA)

We performed CFA to evaluate relations among latent constructs and to ensure that latent constructs were adequately assessed by their respective indicators. It is important to verify that parents have the same interpretation of latent constructs over time and across members of the dyad (Putnick & Bornstein, 2016). Hence, we tested three CFA models: one containing free factor loadings (Model 1), another constraining factor loadings to be invariant over time (Model 2), and a third one constraining factor loadings to be invariant over time and between members of the dyad (Model 3). Because the NNFI, CFI, and the RMSEA were identical among the three models (see Table 3), and the Chi-square difference test statistically nonsignificant, factor loadings were assumed to be invariant across time and partners. The reported parameters estimates are, therefore, those of Model 3. Factor loadings for latent constructs ranged from .36 to .85 (see Table 2). Fit indices for the CFA model (see Table 3) were all acceptable.

Correlations among latent factors are presented in Table 4. Positive and moderate-to-high correlations were obtained between measures of mothers' and fathers' autonomy support (rs = .43 and .58 for T1 and T2, respectively) and control (rs = .64 and .60 for T1 and T2, respectively). Correlations between T1 and T2 measures of a same latent construct were high (ranging from .65 to .78; see Table 4), suggesting substantial actor effects. Correlations between mothers' and fathers' scores were high (see Table 4), which suggest partner effects. Also, the correlation between T1 mother autonomy support and T2 father autonomy support (.56) was equivalent to the one between T1 father autonomy support and T2 mother autonomy support (.52). Partners' correlations were also both strong for controlling behaviors (.50 and .60).

Although dyad members were distinguishable (being heterosexual couples), they might not be *empirically distinguishable*. For this reason, an omnibus test of distinguishability (Kenny, Kashy, & Cook, 2006) was conducted with a CFA model that constrained item intercepts, variances, and covariances to equability between dyad members. Fit indices for this constrained model were worse, CFI = .88, NNFI = .86, RMSEA = .05, χ^2 (222) = 398.73, than those of the initial CFA model (Model 1), suggesting that dyad members were distinguishable.

Model Testing

Based on CFA results, we estimated SEM models with time/gender-invariant constraints. Models were estimated to determine actor and partner effects, in line with the APIM. Three models were tested: In Model 1, partner and actor effects were freely estimated (i.e., no constraints were imposed; see Figure 1). In Model 2, partner effects on autonomy support were constrained to equality. In Model 3, partner effects on both autonomy support and control were constrained to equality. Equality constraints were imposed to determine whether partner effects varied as a function of the partner (mother versus father). Fit indices of these three models were identical (CFI, NNFI, and RMSEA; see Table 3), and the scaled x^2 difference test did not yield any statistically significant differences, revealing that partner effects were equivalent for autonomy support and control. From these findings, Model 3 was considered a better fit for the data and interpretations were based on it (see Figure 2).

Results of Model 3 supported reciprocal partner effects on control and autonomy support. Mothers' autonomy support at T1 predicted an increase in fathers' autonomy

TABLE 3
Study 1 and 2: Fit indices for CFA and SEM models

Models	Npar*	x^2	*df*	*p*	CFI	NNFI	RMSEA [CI]	Comparison
Study 1								
CFA-Model 1	124	290.16	200	.001	.94	.92	.039 [.029, .049]	
CFA-Model 2 loadings invariant across time	116	297.61	208	.001	.94	.92	.039 [.028, .048]	CFA M2 versus CFA M1 (*ns*)
CFA-Model 3 loadings invariant across time and gender	112	301.39	212	.001	.94	.92	.038 [.028, .048]	CFA M3 versus CFA M2 (*ns*)
Model 1: Partner and actor effects freely estimated	104	308.44	220	.001	.94	.93	.037 [.027, .047]	
Model 2: Partner effects on autonomy support constrained to equality	103	311.58	221	.001	.94	.93	.038 [.027, .047]	M2 versus M1 (*ns*)
Model 3: Partner effects on both autonomy support and control constrained to equality	102	311.52	222	.001	.94	.93	.037 [.027, .047]	M3 versus M2 (*ns*)
Study 2								
CFA-Model 1	124	358.52	200	.001	.92	.89	.063 [.052,.073]	
CFA-Model 2: Loadings invariant across time	116	365.05	208	.001	.92	.90	061[.051, .072]	CFA M2 versus CFA M1 (*ns*)
CFA-Model 3: Loadings invariant across time and gender	112	365.97	212	.001	.92	.90	060 [.050, .070]	CFA M3 versus CFA M2 (*ns*)
Model 1: Partner and actor effects freely estimated	104	380.13	220	.001	.92	.90	.060 [.050, .070]	
Model 2: Partner effects on autonomy support constrained to equality	103	380.52	221	.001	.92	.90	061 [.051, .071]	M2 versus M1 (*ns*)
Model 3: Partner effects on both autonomy support and control constrained to equality	102	380.28	222	.001	.92	.90	060 [.049, .070]	M3 versus M2 (*ns*)

Note. Npar = number of parameters in model. *ns* = non-significant.
Level of significance used for models comparison = .01.

support at T2 (β = .17), over and beyond the contribution of fathers' autonomy support at T1 (β = .60). Fathers' autonomy support at T1 also made a contribution to mothers' autonomy support at T2 (β = .34), over and beyond the contribution of mothers' autonomy support at T1 (β = .61). Partner effects were observed on controlling behaviors, but these effects were weak: Mothers' controlling behaviors at T1 predicted a small increase in fathers' controlling behaviors at T2 (β = .15, $p < .10$), over and beyond the contribution of fathers' controlling behaviors at T1 (ββ =.55). Fathers' controlling behaviors at T1 predicted an increase in mothers' controlling behaviors at T2 (β = .18, $p < .10$), over and beyond the contribution of mothers' controlling behaviors at T1 (β = .66).

Overall, the results of Study 1 corroborated our hypothesis. Partner effects were obtained for autonomy support for both mothers and fathers as well as for control. Constraints analyses revealed no statistically significant differences between mothers' and fathers' contributions to each other's behaviors. This first study, however, had some weaknesses. First, the number of items used to measure each construct was limited (three items per latent construct). Second, some of these items had low factor loadings

TABLE 4
Study 1 and 2: Correlations among latent factors.

Variables	1	2	3	4	5	6	7	8
1. T1 Mother AS	—	.22	.44*	.11	.56*	.24*	.16	.09
2. T1 Father AS	.43*	—	.13	.51*	.29*	.66*	.14	.19
3. T1 Mother C	−.34*	−.08	—	.31*	.21*	.14	.70*	.45*
4. T1Father C	−.27*	−.26*	.64*	—	.09	.27*	.43*	.72*
5. T2 Mother AS	.78*	.52*	−.24*	−.35	—	.29*	.45*	.18
6. T2 Father AS	.56*	.65*	−.22*	−.36	.58*	—	.18	.41*
7. T2 Mother C	−.41*	−.14	.78*	.60*	−.15	−.30*	—	.56*
8. T2 Father C	−.22	−.11	.50*	.65*	−.07	−.16	.60*	—

Notes. Coefficients below the diagonal are those of Study 1, those of Study 2 are above. AS = autonomy support, C = control, T1 = Time 1, T2 = Time 2. Entries 1 through 8 are latent factors.
$^*p < .05$.

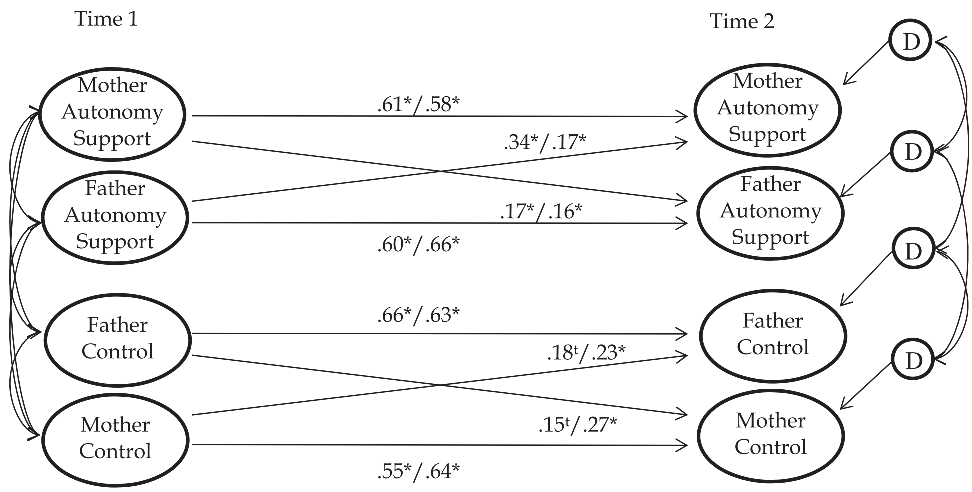

FIGURE 2
Study 1 and 2: Results of model 3 based on latent factors. Correlated uniquenesses are not depicted in the figure for the sake of clarity, nor are correlated uniquenesses for actor and partner effects. $^*p < .05$, $^t p < .10$. Results of study 1 are before the slash, those of study 2 after it.

(<.40) and some scales had low reliability coefficients. A second study aimed to overcome these shortcomings.

STUDY 2

Method

Participants and Procedure. Data from this study came from a longitudinal project on parents' contribution to their child's academic and vocational trajectories. It began when adolescents were in their third year of high school

(15 years old) and surveyed adolescents, their mothers, and fathers. As in Study 1, it focused on intact families where both parents participated in the study. We thus used a subsample of 202 families who participated in two measurement waves, 2 years apart. Demographic characteristics of the sample are presented in Table 1. Participants came from a random sample, provided by the Quebec ministry of education, leisure, and sports, of students who were in Secondary 3 at a French-speaking high school during the 2011–2013 academic year. The sample was stratified based on gender, geographic location (rural or urban), type of school (public or private), and socioeconomic status. Participants were surveyed each year in the fall.

Autonomy-Supportive and Controlling Behaviors. The Parental Autonomy Support Scale (Mageau et al., 2015) was used to assess mothers' and fathers' self-reported autonomy support and control. Mothers and fathers were asked to indicate the extent to which each item applied to them, using a 7-point Likert scale ranging from 1 (*almost never*) to 7 (*always*). Autonomy support was assessed via components of acknowledging feelings (4 items), providing choices (4 items), and providing a rationale (4 items). Control included components of guilt induction (4 items), ego induction (4 items), and threat (4 items). Cronbach alphas ranged from .59 to .93 with most values being higher than the .70 (see Table 5).

Data Analysis.

Analyzing Dyadic Data. As in Study 1, we used the APIM and the same statistical parameters were estimated. The scores from the rationale, choices, and acknowledgment subscales used to evaluate autonomy-supportive behaviors were regressed on the latent constructs assessing mothers' and fathers' autonomy support at both time points (see Table 5). Latent constructs used to assess mothers' and fathers' controlling behaviors at T1 and T2 were also assessed using the scores from the guilt, threat, and ego subscales. All models were tested with standardized coefficients obtained using the MLR method of estimation.

Missing Values. Missing data ranged from 1 to 33% (see Table 5). Little's (1988) test was computed for all individual indicators and yielded a statistically significant result, $\chi^2(531) = 584.63$, $p = .05$, indicating that the data were not MCAR. In addition, because more data were missing at T2, we tested for differences on all T1 indicators between families with complete or missing data. A MANOVA yielded statistically significant results, F (1,178) = 2.09, $p = .02$, $\eta^2 = .01$), suggesting that there were differences on indicators used in the SEM analyses between participants at both time points and those who participated only at T1, although it explained little variance. Additional analyses were performed on demographic characteristics as a function of parents who participated at both times and those who did not participate at Time 2 (see Table 1). Only one difference reached significance: Fathers who participated at both times were older than those who did not participate at Time 2. To account for missing data in SEM analyses, FIML estimation was used under MLR.

TABLE 5
Study 2: Means, standard deviations, missing values, and factor loadings for the SEM model.

Latent Factors and Indicators	Alpha for subscale scores	*M*	*SD*	% of MV*	Factor Loadings
Mother Autonomy Support T1					
Acknowledging	.70	4.98	1.07	.5	.79
Choice	.62	5.31	.98	.5	.80
Rationale	.80	5.61	1.01	1	.80
Father Autonomy Support T1					
Acknowledging	.79	4.58	1.16	1.5	.80
Choice	.59	4.91	.98	1	.81
Rationale	.67	5.13	1.08	2	.78
Mother Autonomy Support T2					
Acknowledging	.72	5.06	1.13	22.8	.85
Choice	.65	5.30	1.03	24.8	.84
Rationale	.74	5.37	1.09	24.8	.80
Father Autonomy Support T2					
Acknowledging	.74	4.68	1.07	31.2	.88
Choice	.65	4.89	1.06	31.7	.84
Rationale	.74	4.96	1.23	33.2	.78
Mother Control T1					
Guilt	.86	3.64	1.54	.5	.79
Threat	.85	3.24	1.51	1.5	.64
Ego	.78	3.55	1.49	2	.59
Father Control T1					
Guilt	.81	3.31	1.39	2	.82
Threat	.86	3.35	1.50	2	.63
Ego	.81	3.83	1.47	2	.55
Mother Control T2					
Guilt	.86	3.62	1.63	24.8	.89
Threat	.91	3.05	1.68	25.2	.73
Ego	.87	3.55	1.63	24.3	.66
Father Control T2					
Guilt	.86	3.42	1.53	33.2	.87
Threat	.92	3.05	1.67	32.2	.70
Ego	.86	3.79	1.58	32.7	.63

Note. MV = missing values; T1 = Time 1, T2 = Time 2. Possible ranges for autonomy support and control items are 1 to 7.

RESULTS AND DISCUSSION

Preliminary Analyses and CFA

Data screening revealed no serious departure from univariate normality. Ten multivariate outliers were identified (5%) and, because removing these cases did not change model fit indices and parameter estimates, they remained in the sample for all analyses. As in Study 1, we tested the same three CFA models. Because the NNFI, CFI, and the RMSEA were identical among models, and the Chi-square difference test was statistically nonsignificant, factor loadings were assumed to be invariant across time and gender. Fit indices for the CFA-Model 3 were all acceptable (see Table 3). Factor loadings for latent constructs were high (ranging from .55 to .88; see Table 5), supporting the adequacy of the measurement model.

Correlations among latent factors are presented in Table 4. As hypothesized, a positive correlation was found between measures of mothers' and fathers' autonomy support (rs = .22 and .29 for T1 and T2, respectively) and control (rs = .31 and .56 for T1 and T2, respectively). Correlations between T1 and T2 measures of a same latent construct were high (ranging between .56 and .72; see Table 4), suggesting substantial actor effects (i.e., temporal stability). Correlations between mothers' and fathers' scores were moderate (see Table 4), which support partner effects. The correlation between T1 mother autonomy support and T2 father autonomy support (.24) is similar to the one between T1 father autonomy support and T2 mother autonomy support (.29). Partners' correlations are also nearly identical for controlling behaviors (.45 and .43). As in Study 1, an omnibus test of distinguishability was conducted and the constrained model offered a worse fit to the data, CFI = .91, NNFI = .88, RMSEA = .07, χ^2 (222) = 411.03, than the initial CFA model (Model 1) supporting the distinguishability of dyad members.

Model Testing

The same three models in Study 1 were tested in this study (see Table 3). Fit indices of these three models were identical (CFI, NNFI, and RMSEA), and the scaled χ^2 difference test did not yield statistically significant differences, revealing that partner effects were equivalent for autonomy support and control. Based on these findings, Model 3 was considered as best fitting the data and interpretations are based on it (see Figure 2).

Results from Model 3 supported reciprocal partner effects on control and autonomy support. Mothers' autonomy support at T1 predicted a small increase in fathers' autonomy support at T2 (β = .16), over and above the contribution of fathers' autonomy support at T1 (β = .66). Fathers' autonomy support at T1 also made a small contribution to mothers' autonomy support at T2 (β = .17), over and beyond the contribution of mothers' autonomy support at T1 (β = .58). Partner effects were also observed on control. Mothers' controlling behaviors at T1 predicted a moderate increase in fathers' controlling behaviors at T2 (β = .26), over and beyond the contribution of fathers' controlling behaviors at T1 ($\beta\beta$ = .64). Fathers' controlling behaviors at T1 predicted a small-to-moderate increase in mothers' controlling behaviors at T2 (β = .23), over and beyond the contribution of mothers' controlling behaviors at T1 (β = .63).

Overall, these findings replicated the reciprocal relations between mothers' and fathers' autonomy support and control obtained in Study 1 using stronger psychometric measures of parental behaviors and having a different time interval between data waves. Moreover, results from constrained analyses suggested that partner effects were equivalent for mothers and fathers, contradicting the assumption that one partner has a greater contribution than the other.

GENERAL DISCUSSION

The goal of this research was to examine interparental contributions between mothers' and fathers' autonomy supportive and controlling behaviors by testing a behavior contagion hypothesis where one partner's self-reported behaviors of autonomy and control would predict those of the other partner. This hypothesis was supported in both studies. In addition, the partner effects on both parenting dimensions were found to be equivalent for mothers and fathers. These findings have scientific and applied implications.

Behavior Contagion

Correlational findings suggest that mothers and fathers reported similar levels of autonomy supportive and controlling behaviors. These results concur with those from previous studies (e.g., Abad & Sheldon, 2008; Beiswenger & Grolnick, 2010; D'Ailly, 2003). Our findings, based on the APIM, demonstrated that co-parents' behavioral similarity was a result of reciprocal contributions as both mothers and fathers predicted each other's controlling and autonomy supportive behaviors. Mothers' and fathers' self-reported autonomy support and control predicted increases in each other's behaviors over time (partner effects), even when actor effects and various statistical parameters (correlated uniquenesses, correlated disturbances) were controlled. These findings are consistent with a behavior contagion hypothesis and social learning theory (Bandura, 1997), positing that individuals emulate each other's behaviors.

The similarity in parenting behaviors observed in this study may also result from assortative mating (see Rhule-Louie & McMahon, 2007). Assortative mating occurs when individuals choose a life partner based on their similar characteristics, which can stem from a common ecological niche (i.e., social homogamy) or phenotypic preference. Because individuals choose partners with similar characteristics, they may, likewise, adopt parenting behaviors stemming from these characteristics (e.g., Prinzie, Stams, Deković, Reijntjes, & Belsky, 2009). Consequently, assortative mating and behavior contagion may not necessarily be two competing processes, but may rather occur in a complementary fashion over long developmental periods. In early parenting, mothers' and fathers' similarities in autonomy support and control may be explained by assortative mating, due to their similar upbringing and background or in personality characteristics. As children grow and develop, behavioral contagion may become more prevalent between parents. Future research will be needed to test this proposed developmental sequence.

Given that behavior contagion can explain similarities between parents' behaviors, it becomes important to further our understanding of the processes, whereby parenting behaviors may be learned, modeled, or promoted within the context of co-parenting. Observations of partner discussions can provide meaningful information regarding potential underlying mechanisms responsible for partners' mutual influences. For example, it is possible for parents to overtly discuss their parenting strategies and work toward adopting similar strategies with their teenager. If future research supports this mechanism, parenting interventions will benefit from focusing on spousal communication to help mothers and fathers develop uniform parental practices with their teenagers. Specifically, mothers and fathers who participate in such intervention might report improvements in communication, increased frequency of communication, and increases in shared decision-making regarding parenting practices (see Hartman, Gilles, Shattuck, Kerner & Guest, 2012), which may directly contribute to their own autonomy supportive and controlling behaviors.

Similarities between partners might also be explained by emotional processes. Providing autonomy support yields emotional benefits to the provider (Cheon, Reeve, Yu, & Jang, 2014; Deci, La Guardia, Moller, Scheiner, & Ryan, 2006). Thus, when a parent supports her child's autonomy, she/he experiences gains in happiness and energy, which improves the positive affective atmosphere at home and contributes to the well-being and vitality of the other parent who, in turn, has more energy and creativity available to adopt autonomy supportive behaviors. In contrast, when a parent acts in a controlling fashion, it may increase tension, such that the partner experiences more stress, anxiety, or anger and becomes more inclined to vent his/her emotions by being controlling.

An unexpected finding was that reciprocal effects between mothers' and fathers' controlling behaviors were weak in Study 1 and moderate in Study 2. This difference in magnitude may reflect discrepancies in sample characteristics such as marital negativity, which might be higher in the first sample. More specifically, Schofield et al. (2009) showed that the correlation between mothers' and fathers' harshness was weakest in families characterized by high levels of marital negativity. Differences in partner effects for control may also be explained by adolescents' gender. In Study 1, the sample included more girls, whereas Study 2 had more boys. Because previous studies have shown that emerging adult females perceive their parents as less controlling than emerging adult males (Guay, Senécal, Gauthier, & Fernet, 2003), it is possible that gender moderated the reciprocal relations between partners. Hence, for parents of adolescent boys, the reciprocal relations for controlling behaviors may be stronger than those for parents of adolescent girls. Future studies should, therefore, test for potential moderators of partner effects.

Differential Effects of Mothers and Fathers on Parenting Behaviors

Partner effects were found to be equivalent for mothers and fathers, suggesting that mothers' contribution was no greater than fathers' contribution. Thus, mothers and fathers both learn from each other's behaviors when interacting with their teenager. These findings are consistent with those of Schofield et al. (2009), who showed that mothers and fathers contribute to each other's monitoring, warmth, and harshness to similar extents. However, our findings differ from those of studies on parental involvement, which demonstrated that mothers' scores are stronger predictors than fathers' scores (Pleck & Hofferth, 2008). The nature of parenting constructs may explain these differences. More specifically, involvement is usually assessed by parents' participation in various childcare activities. Generally, less involved in child rearing than mothers, fathers may be more inclined than mothers to emulate their partners' involvement. Fathers may, therefore, view their partner's involvement as a baseline on which to calibrate their own behaviors (Pleck & Hofferth, 2008). With respect to other parenting dimensions, such as autonomy support and control, the amount of time spent on a parenting behavior is more difficult to evaluate. Rather, autonomy support and control focus on relational skills and competencies that could be used by both partners, even if they differ in level of involvement. Fathers and mothers may be willing to emulate each other's behaviors, especially when a given parenting behavior has been successful to modify adolescents' behaviors. In addition, this emulation could be reinforced when both partners perceive themselves as involved in adolescent-care activities. This hypothesis accords with social learning theory, which posits that similar models are more emulated than dissimilar ones (Bandura, 1997). Finally, modeling influences that reinforce their perceived efficacy in dealing with their adolescent child may weaken the impact of subsequent difficulties with their adolescent and sustain their effort in trying to negotiate those difficulties.

Strengths and Limits

Although this study used a prospective design, relatively large dyadic samples, and sophisticated data analyses, some limitations need to be taken into account when interpreting the findings. First, data on parenting behaviors were obtained via parents' self-reports. Although this procedure has clear advantages over the use of children's perceptions when testing a behavior contagion hypothesis, reports of parenting behaviors may be positively biased due to social desirability concerns. Future research could try to replicate these findings using observed ratings of autonomy support and control. Second, this study covered only part of the adolescence period. It is important to replicate the findings with parents of younger and older children to see their generalizability. Third, the samples were rather homogeneous in terms of family characteristics. It is important to verify whether the observed effects can be replicated in samples including various ethnicities, educational backgrounds, and incomes. Fourth, in both studies, some differences were obtained between those who dropped out at T2 and those who did not. Although, we used a sophisticated procedure to handle missing data, future research should aim to reduce attrition in replicating contagion effects. Fifth, other factors, such as marital satisfaction, may moderate the observed reciprocal relationships and would need to be considered in subsequent studies.

IMPLICATIONS FOR PRACTICE, APPLICATION, THEORY, AND POLICY

Results of this study have important implications for practice. First, parents should be made aware that their own parenting behaviors affect those of their partner. Being autonomy supportive increases the probability that the partner will as be more autonomy supportive, but similarly, being controlling increases the probability that the partner becomes more controlling. Second, these results also suggest that having mothers participate in an intervention program designed to increase autonomy support and reduce control could improve father's parenting behaviors as well, through behavior contagion. Knowing that fathers may be more reluctant to participate in such programs, these findings suggest that therapists can nevertheless, albeit indirectly, shape fathers' behaviors. Finally, understanding determinants of autonomy supportive parenting behaviors in future research may be crucial to ensure synchronicity in spouses' parenting behaviors, which could maintain or even increase marital satisfaction overtime.

ADDRESSES AND AFFILIATIONS

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