

**Influences of Adoptive Mother and Father's Parenting and Child's Temperament on  
Adoptees' Social Skills: A Hybrid Dyadic Analysis**

(Submitted to Adoption Quarterly)

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This article is based on the PhD thesis completed by Soares (2019). Portions of these findings were presented as a symposium contribution - Social competence, social integration, and relational competence in adopted children, teens, and young adults - at the ICAR7 International Conference on Adoption Research, Milan, Italy. We have no conflicts of interest to disclose.

This research was supported by the Foundation for Science and Technology under Grant [SFRH/BD/77316/2011] and by a philanthropic program of independent patrons. Special thanks go to the children and families who participated in the study.

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### Abstract

Adoption provides a unique opportunity to study the simultaneous effect on adoptees' development of environmental influences related to adoptive parenting, and children's biology-based characteristics. In this paper, two Hybrid Dyadic Models were tested to study the mediational role of the adoptees' negative reactivity on the relationship between mothers and fathers' supportive (Model A) and unsupportive (Model B) parenting, and adoptees' social skills. In a sample of 102 couples, mothers and fathers' reports on adoptees' social skills, the adoptees' negative reactivity, and supportive/unsupportive parenting were explored.

Supportive/unsupportive parenting was assessed individually (mothers and fathers separately), whereas the adoptees' negative reactivity and social skills were treated as common fate variables, with both parents' scores as indicators of a latent construct. Results were non-significant for Model A. Regarding Model B, different relation patterns between unsupportive parenting and social skills were found, depending on whether it was the mother's or the father's parenting. The child's negative reactivity mediated the relationship between the father's (not the mother's) unsupportive parenting and the child's social skills. With information from both parents and considering simultaneously their unique and shared perspectives, this study advances adoption research and strengthens the relevance of dyadic analyses when studying the adoptive family dynamics.

*Keywords:* adoption, social skills, temperament, parenting, hybrid dyadic model

## **Influences of Adoptive Mother and Father's Parenting and Child's Temperament on Adoptees' Social Skills: A Hybrid Dyadic Analysis**

The development of a child is the outcome of a complex interplay between individual characteristics and context influences. Parenting processes may be moderated or mediated by the child's individual characteristics or, conversely, they may moderate or mediate the child's individual characteristics (Reiss et al., 2013). Adoption is a natural research design that allows for the distinction of individual and context-based processes and contributes to the knowledge of the mechanisms through which children shape and are shaped by their rearing environments (Palacios, 2018; Shewark et al., 2021). However, research in this field has mostly focused on the child's heritable characteristics that influence parenting (e.g., Leve, Neiderhiser et al., 2019; Liu et al., 2020), the influence of child-evoked parenting on child's developmental outcomes (e.g., Harold et al., 2013), and the moderation of the child's individual characteristics in the relationship between parenting and child's outcomes (e.g., Leve et al., 2013; Reiss et al., 2013; Shewark et al., 2021).

The present cross-sectional study intends to advance previous research by exploring how the child's negative reactivity (child's individual characteristic) is affected by supportive/unsupportive parenting (parents' reactions to child's negative emotions) and subsequently influences the child's social skills (child's outcome). We are particularly interested in exploring the role of temperament (specifically the negative reactivity) as mediator, not as moderator as has been usual. Moreover, this study is a multi-informant one, since it considers both mothers and fathers' reports for all the study variables. Resorting to a Hybrid Actor Partner - Common Fate Model (Hybrid AP-CF Model; Ledermann & Kenny, 2012; Ledermann & Macho, 2009; Wickham & Macia, 2019), the present study will simultaneously consider the

interdependence between the two informants and each informant in its individuality.

Furthermore, using a dyadic analysis in adoption research will be an advance that will allow for a better understanding of the impact of the adoptive family dynamics on the adoptee's social development.

### **Adopted Children's Social Skills**

Social skills are the building blocks of children's social competence and refer to socially appropriate behaviors (Gresham et al., 2011). It includes cooperative and pro-social abilities, capacity to start and maintain conversations and social connections, flexibility, and engagement in social problem-solving, as well as empathy for others' needs and feelings (Halle & Darling-Churchill, 2016), which are critical requirements for developing successful social relationships. Given the importance of social interactions in the school and other social contexts, being socially skilled in middle childhood is particularly important since this is a period characterized by evident challenges in the social arena which require capacity for flexible social adaptation (Crone et al., 2020).

The earliest building blocks of social functioning lie in the quality of the child's attachment relationships developed with caregivers (Guyon-Harris et al., 2019). When infancy is marked by maltreatment, neglect and/or experience of collective/group care (institutionalization), as it is the case for most adopted children, the overall development and, particularly, the socio-emotional one, are heavily damaged by the lack of an individualized, responsive, supportive, and stable/permanent care. Research has shown that early adversity experiences affect social competence, specifically the acquisition and performance of social skills (e.g., Cáceres et al., 2021; Julian & McCall, 2016; Pitula et al., 2019; Soares et al., 2019).

Recent adoption research has shown that most adoptees present adequate social functioning (e.g., DeLuca et al., 2018), significantly better than children in institutions (e.g., Barroso et al., 2018; Cáceres et al., 2021; Palacios et al., 2013) despite the heterogeneity observed within the adopted-group, with a subgroup of adoptees poorly competent, with less social skills and/or rejected or neglected by peers (Barbosa-Ducharme, 2021). Children with higher exposition to early adversity showed fewer social skills (e.g., Julian & McCall, 2016; Soares et al., 2019), especially when adopted at an older age or from Eastern Europe (e.g., Barcons et al., 2012; Caprin et al., 2017). Recent research has also shown the positive influence of postadoption parenting/family dynamics on adoptees' social skills, as well as the effect of the interplay between past adversity and postadoption experiences on adoptees' social outcomes (e.g., DePasquale et al., 2020; Leve, Griffin et al., 2019; Soares et al., 2019).

Nevertheless, more research exploring the processes that underlie the observed heterogeneity in the adoptees' social competence is needed. The present study aims to contribute to filling this gap by studying adoptees' social skills as a predicted outcome (dependent variable). Since social competence is context and informant-dependent, literature has highlighted the need of considering multiple-informants when studying social outcomes (e.g., Huber et al., 2019). As such, in this study, adoptee's social skills were evaluated by the adoptive mother and father.

### **Adopted Children's Negative Reactivity**

Temperament refers to physiologically based individual differences in reactivity and self-regulation that are influenced by the environment (Rothbart & Bates, 2006). Temperamental behaviors are not only biologically based, but they can also develop over time and be explained by the quality of the interactions/relationships with parents or caregivers (Lipscomb et al., 2011).

Negative reactivity (or negative emotionality) refers to the intensity, duration, and frequency with which the child expresses negative emotions, including fear and frustration, and it is considered a core component of temperament (Putnam & Stifter, 2008). According to the differential susceptibility model (Ellis et al., 2011), children with reactive temperaments may be particularly vulnerable to environment/parenting, for the worse - suffering more the impact of negative parenting practices -, as well as for the better - benefiting more from the positive parenting (Ellis et al., 2011; Kochanska & Kim, 2013; Tung et al., 2018).

In adoption research, negative reactivity has been often used as a variable accounting for a genetic influence (e.g., Leve, Neiderhiser et al., 2019), and it has been mostly explored as a predictor of specific parental responses that affects child's outcomes (e.g., Jaffari-Bimmel et al., 2006; Shewark et al., 2021), with higher negative reactivity associated to worse social outcomes in adopted children (e.g., Leve, Griffin et al., 2019; Shewark et al., 2021; Tung et al., 2018). Following this line of research, in the current study, temperament was studied as a mediator of the relationship between parenting and child's outcomes, because we assumed that parenting can affects (activating or mitigating) individual characteristics of the child, such as the negative reactivity. Furthermore, this study focuses on middle childhood, advancing the existent research on temperament that is mostly centered in infancy and early childhood (e.g., Paulussen-Hoogeboom et al., 2007). Additionally, the adoptees' negative reactivity will be evaluated by adoptive mothers and fathers, to account for shared method variance, i.e., reducing the informant-related bias.

### **Supportive/Unsupportive Adoptive Parenting**

Parental emotion socialization plays a central role in the child's socio-emotional development (Eisenberg et al., 1998). Emotion socialization broadly refers to the multitude of

behaviors that parents engage in to influence children's abilities to understand, experience, and regulate their own and others' emotions (Denham et al., 2007; MacCormack et al., 2019).

Amongst the emotion socialization domains, parents' reactions to children's negative emotions have received significant attention from scholars. A widely used framework considers that some parents' reactions to children's negative emotions, such as actively engaging with children's emotions and accepting their feelings, express supportive parenting, whereas others, such as minimizing, ignoring, denying, shaming, or punishing a child's emotional experience and expression are unsupportive parenting behaviors (Eisenberg et al., 1996). Consequently, through supportive parenting, parents may co-regulate, as well as guide children's thoughts and behaviors, during their negative emotional experiences (Castro et al., 2018; Morris et al., 2017). Contrarywise, unsupportive parenting invalidates children's negative emotions, in an explicitly (e.g., "Stop crying.") or implicitly way ("You're fine.;" Castro et al., 2018).

Research has shown that parenting affects and is affected by the child's temperament (e.g., Kiff et al., 2011). Specifically, in relation to the link between supportive/unsupportive parenting and the child's negative reactivity, a significant number of studies has associated parents' supportive/unsupportive responses to child's regulatory capacities (e.g., Klein et al., 2017; Rogers et al., 2016; Samdan et al., 2020), which are directly related to negative reactivity. Slagt et al. (2016) in a meta-analysis explored whether children vary in sensitivity to parenting depending on their temperament. Children with a more difficult temperament were reported to be more vulnerable to negative parenting, but also benefited more from positive parenting, which is consistent with the differential susceptibility model (Ellis et al., 2011). The support for differential susceptibility regarding negative emotionality was, however, only present when this trait was assessed during infancy (Slagt et al., 2016). In the current study, adoptees are within

middle childhood ages. Slagt and colleagues' meta-analysis also showed that temperament traits have been essentially studied as moderators of the parenting influence (parenting-by-temperament interaction; Slagt et al., 2016), not as mediators, as it will be studied herein. Moreover, the connections between supportive/unsupportive parenting and child's social outcomes have also been well documented, showing, in general, a positive relation between supportive parenting and social skills/competence, and a negative relation with unsupportive parenting (e.g., Baker et al., 2011; Brownell et al., 2013; Eisenberg et al., 1996; Gross et al., 2015). However, recent research brings new evidence questioning if supportive parenting is always "good" for all children and in all contexts (Castro & Nelson, 2018). Mirabile et al. (2018) and Nelson and Boyer (2018) presented evidence for an age-related shift in the role of supportive/unsupportive parenting. These authors showed that for older children, unsupportive responses can play an autonomy promotive role (Mirabile et al., 2018; Nelson & Boyer, 2018). According to Castro and Nelson (2018) parents' supportive responses to child's negative emotions may become less needed as children become older, more autonomous, and emotionally skilled. In this line of research, Castro et al. (2018) and Miller-Slough et al. (2018) also showed how the context and the informant may influence the association between supportive/unsupportive parenting and children's socioemotional competence.

Despite the evidence proving the relevance of the supportive emotion socialization parenting, this is a variable that has received little attention in adoption research (see Herrera, 2014; Soares et al., 2019, as exceptions). In this study, supportive and unsupportive parenting will be explored as predictors of the negative reactivity (child' individual characteristic) and social skills (child's social outcome). The absence of unsupportive responses to children's negative emotions does not necessarily imply the presence of supportive responses (McElwain et



al., 2007), and this was the reason why, in the present study, two separate models, for supportive and unsupportive parenting, were tested. Moreover, in accordance with evidence suggesting that parents' emotion socialization practices operate differently with children in middle childhood compared to preschoolers (Mirabile et al., 2018; Nelson & Boyer, 2018), in the current study, we resort to an age-homogeneous sample (8-10 years). Finally, it should be emphasized that in the current study the effects of mothers and fathers' supportive/unsupportive parenting will be separately considered, given recent research showing the unique contribution of fathers to (un)supportiveness in emotion socialization (Cherry & Gerstein, 2021; Gerhardt et al., 2020; Maia & Pereira, 2021; Yaremych & Volling, 2018).

### **The Present Study**

The current study intends to examine whether supportive and unsupportive parenting influences (independent variables) on the child's social skills (dependent variable) operate through the child's negative reactivity (mediator variable). Specifically, this study aims to analyze: (a) the effects of a supportive and unsupportive adoptive parenting on adoptees' social skills (evaluated by both parents); (b) the effects of supportive and unsupportive parenting on the adoptees' negative reactivity (evaluated by both parents); (c) the effect of the adoptees' negative reactivity on their social skills; (d) the mediational role of the adoptees' reactivity on the relationships between supportive/unsupportive parenting and children's social skills; (e) the differential effect of mothers and fathers' supportive/unsupportive parenting on the adoptees' negative reactivity and social skills.

To accomplish these aims an innovative methodological procedure – Hybrid Dyadic Model was performed. This methodology is a holistic approach that combines the Actor-Partner Individual Model (APIM; Kenny, 1996; Kenny et al., 2006) and the Common Fate Model (CFM;

Kenny & La Voie, 1985; Lederman & Kenny, 2012), which are models of dyadic analyses. This hybrid model allows for accessing the study variables at an individual-level (mother vs father) and a group-level (parents of a child), which are essential in understanding the complexity of family systems. Two models (A and B) were tested differing only in the independent variable – supportive or unsupportive parenting. Figure 1 presents the overall conceptual model proposed.

Based on the reviewed evidence, we hypothesize that:

- (1) The adoptees' negative reactivity mediates the effect of supportive parenting on adoptees' social skills (indirect effect). Higher adoptive supportive parenting predicts higher social skills in adopted children, via reducing/mitigating the adoptees' negative reactivity.
- (2) The adoptees' negative reactivity mediates the effect of unsupportive parenting on adoptees' social skills (indirect effect). Higher adoptive unsupportive parenting predicts lower social skills in adopted children, via increasing/activating the adoptees' negative reactivity.
- (3) Supportive and unsupportive parenting has differential effects on child-related variables (negative reactivity and social skills) depending on whether it is the mother's or the father's parenting.

## Method

### Participants

Participants included 102 different-sex couples/dyads of adoptive parents – 102 mothers and 102 fathers – from a larger multi-informant's study on domestic adoptees' social competence (Soares, 2019). Mothers' age ranged from 32 to 59 years ( $M = 47.88$  years,  $SD = 5.06$ ) and fathers' age ranged from 37 to 59 years ( $M = 46.24$ ,  $SD = 4.89$ ). Mothers had, on average, 12.11

years of formal schooling ( $SD = 4.89$ , range 4-23) and fathers presented a mean of 11.86 years of schooling ( $SD = 4.85$ , range 0-23). No significant differences between mothers and fathers in age and schooling were found. All participants were Caucasian.

Each couple of adoptive parents reported on one adopted child. Out of a total of 102 adoptees, 59 (57.8%) were boys and 43 (42.2%) girls, aged 8 to 10 at data collection ( $M = 8.79$ ,  $SD = 0.78$ ). Children were placed in the adoptive family when they were aged, on average, 3.14 years ( $SD = 2.16$ , range 0.2–8.00) and, at the time of assessment, they had been in their adoptive families between 1.0 and 9.4 years ( $M = 5.65$ ,  $SD = 2.12$ ). Before adoption, children had spent on average 14.76 months ( $SD = 19.02$ , range 0-75) within their birth family and 23.05 months ( $SD = 15.58$ , range 1-66) in care (91% in institutional care; 9% in foster families).

## Measures

### *Child's Social Skills*

Adoptees' social skills were assessed using the social skills scale of the parents' version of Social Skills Improvement System-Rating Scales (SSIS-RS; Gresham & Elliott, 2008a). The social skills scale includes 46 items (e.g., "Makes eye contact when talking."; "Makes friends easily."; "Resolves disagreements with you calmly") that evaluate social behaviors in domains of communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. Each item was rated in a frequency 4-point Likert scale, ranging from 0 (*never*) to 3 (*almost always*). The total score corresponds to the mean of the items' scores. Higher scores mean higher social skills. The SSIS-RS was filled in, separately, by the adoptive mother and the adoptive father within each adoptive family. The SSIS-RS is widely used in research showing good reliability and validity. In this study, excellent internal consistency results were found both for mothers ( $\alpha = .94$ ) and fathers ( $\alpha = .94$ ).

### ***Child's Negative Reactivity***

The adoptees' negative reactivity was measured using the School-Age Temperament Inventory (SATI; McClowry, 1995). The SATI was developed as a parent-report measure to assess the child's temperament including 38 items that define four dimensions: negative reactivity, task persistence, approach/withdrawal, and activity. In this study, only the negative reactivity scale, which describes the intensity and frequency with which the child expresses negative affect, was used. Items were rated on a 5-point Likert scale ranging from 1 = *never* to 5 = *always* (e.g., "Responds intensely to disapproval [shouts, cries, etc.]" ; "Gets mad when mildly criticized"). Higher scores indicated that the child was high on experiencing negative affect (negative reactivity). The SATI was filled in, separately, by adoptive mothers and fathers. The Cronbach's alpha for the internal consistency of negative reactivity was .89, both for mothers and fathers' reports.

### ***Supportive and Unsupportive Parenting***

Supportive and unsupportive parenting was assessed using the Coping with Children's Negative Emotions Scale (CCNES; Fabes et al., 1990). The CCNES is a 72-item scale, which presents 12 scenarios representing common emotionally evocative events that children are exposed to and in which they may experience negative emotions. For each scenario (e.g., "If my child loses some prized possession and reacts with tears, I would..."), parents are asked to indicate the degree to which they respond in six ways of coping with children's negative emotions: emotion-focused ("...distract my child by talking about happy things"), problem-focused ("...help my child think of places he/she hasn't looked yet"), expressive encouragement ("...tell him/her it's ok to cry when you feel unhappy"), minimization ("...tell my child that he/she is over-reacting"), punitive ("...tell him/her that's what happens when you're not careful)

and personal distress (“...get upset with him/her for being so careless and then crying about it”). Parents rate their likelihood of responding in each of the six ways on a 7-point Likert scale from 1 (*very unlikely*) to 7 (*very likely*). The supportive coping responses scale includes emotion-focused, problem-focused and expressive encouragement reactions; the unsupportive coping responses scale includes minimization, punitive and distress reactions. In this study, supportive parenting refers to parents’ supportive reactions to child’s negative emotion and unsupportive parenting refers to parents’ unsupportive reactions to child’s negative emotions. Higher mean scores are indicators of higher supportive or unsupportive parenting, respectively. Adoptive mothers and fathers filled in, separately, the CCNES. The CCNES has been widely used in parenting research and, in the present study, the supportive and unsupportive coping responses scales showed excellent internal reliability for mothers ( $\alpha = .93$  and  $.94$ , respectively) and fathers ( $\alpha = .93$  and  $.93$ ).

### **Procedures**

As above mentioned, this study is part of a broader research, which design and data collection procedures were approved by the Ethics Committee of the University and the Data Protection Commission (authorization 3912/2013). A close collaboration with the National Adoption Agency allowed for the selection of adoptive families according to two criteria: (a) adoptees’ age between 8 and 10 and (b) at least a year after adoption placement. Within each family, the mother, the father and the adopted child were participants, whenever possible. In this paper only data reported by parents are analyzed. Data collection was conducted at home-visits by trained interviewers, who safeguarded all ethical principles and the participants’ confidentiality. Participation was voluntary and participants signed an informed consent form. No economic compensation was given for participation in the study.

## Data Analysis

Preliminary analyses, including basic descriptive analyses, mean differences between mothers and parents' reports (*Student t* test) and Pearson correlations to explore bivariate relationships among study variables, were performed using IBM-SPSS. The analysis of correlations was particularly relevant to protect against any multicollinearity problem.

The Hybrid AP-CF Models were tested through AMOS, modelling individual-level variables (APIM) and common fate variables (CFM) to assess whether they are significantly associated (Ledermann & Kenny, 2012; Ledermann & Macho, 2009). The adoptee's negative reactivity (mediator) and adoptee's social skills (dependent variable) were treated as common fate variables (cf. Figure 1). Thus, the two parents' scores on these child related-variables – the mother and the father's contributions – were indicators of latent constructs (negative reactivity and social skills, respectively; Figure 1). Structural equation modeling (SEM) was used to estimate these latent variables. As parents of the same child, the couple shares an interdependent, relational experience (Galovan et al., 2017), being the child's reactivity and social skills used as couple-based latent variables to account for similarity between parents when reporting on their child. The unshared variance that remains for each individual score is treated as error (Figure 1). The use of common fate variables is especially relevant when the informants' reports are highly correlated, since estimation issues due to multicollinearity are avoided and measurement error is removed.

Supportive parenting (Model A – Figure 2) and unsupportive parenting (Model B – Figure 3) by the mothers and by the fathers (independent variables) were modelled as individual-level variables using independent indicators. Supportive/unsupportive parenting is not considered at the couple level of measurement and may be better suited for the APIM. This decision was

also based in the pattern of correlations among variables (see Results section; Table 1). However, supportive/unsupportive parenting of mother and supportive/unsupportive parenting of father were correlated to account for influence between mother and father (cf. Figures 1, 2 and 3).

To account for missing data, full information maximum-likelihood estimation was employed (Enders, 2010). Despite some variables had 5% to 10% of missing values, the non-significant Little's MCAR (Little, 1988) suggests that missing data in the current study are missing completely at random,  $\chi^2(27) = 36.65, p = .102$ .

To examine the links between the mothers/fathers' supportive/unsupportive parenting and adoptees' social skills, through adoptees' reactivity rated by mothers and fathers, path analyses were conducted. To examine the presence of mediation, the significance of indirect effects was tested using bootstrapping resampling (MacKinnon et al., 2004). Specifically, 5,000 bootstrap samples were randomly drawn and the 95% bias-corrected bootstrapped CI were calculated. A given indirect effect is significant if the respective CI does not contain zero (Shrout & Bolger, 2002).

Models fit were evaluated using the  $\chi^2/df$ , the comparative fit index (CFI) and the root mean square error of approximation (RMSEA). Good fit is defined as  $\chi^2/df$  less than 2 and acceptable when  $\chi^2/df$  is less than 3; CFI values between .90 and .95 imply an acceptable fit and between .95 and 1.00 a good model fit; RMSEA values below .08 indicate acceptable model fit and below .05 point to good model fit (West et al., 2012)

## Results

### Preliminary Analyses: Descriptive Statistics and Bivariate Correlations

Table 1 shows the descriptive statistics and bivariate correlations between the study variables. According to their adoptive parents (no significant differences between mothers and

fathers), adoptees presented mean scores within normative values for social skills (Gresham & Elliott, 2008b). Concerning negative reactivity, scores of mothers were significantly higher than scores of fathers,  $t(101) = 2.24, p = .028, d = 0.22, 95\% \text{ CI } [0.01, 0.22]$ . Scores of supportive parenting were higher than scores of unsupportive parenting. Mothers reported significantly higher supportive parenting than fathers,  $t(101) = 2.91, p = .005, d = 0.29, 95\% \text{ CI } [0.09, 0.50]$ ; in relation to unsupportive parenting, mothers and fathers did not differ significantly (Table 1).

Findings showed that mothers and fathers' reports on their children's social skills were positively correlated, as well as mothers and fathers' reports of their children's negative reactivity. Correlations between mothers and fathers' reports (intradynamic correlations) on child-related variables were large, justifying the modelling of latent constructs resorting to both parents' contributions (common fate variables). Moreover, the higher the children's negative reactivity, the lower their social skills rated both by mothers and fathers (Table 1).

In relation to parenting, mothers' supportive/unsupportive parenting was also positively related to fathers' supportive/unsupportive parenting. Moreover, different patterns of correlations were observed depending on the informant parent. No significant correlations were found between mothers' supportive parenting and child-related variables (social skills and reactivity). However, a significant positive correlation between fathers' supportive parenting and fathers' reports on children's social skills was observed. Mothers' unsupportive parenting was positive and significantly related to mothers' reports of their children's reactivity. Finally, the higher the fathers' unsupportive parenting, the lower the mothers' reports on children's social skills and the higher the mothers and fathers' reports on children's negative reactivity (Table 1).

### **Hypothesis 1: Testing Direct and Indirect Effects of Supportive Parenting on Social Skills (Model A)**



Figure 2 presents the Hybrid AP-CF Model among supportive parenting, negative reactivity and social skills (Model A). Overall, the model was fitted to the data, presenting a good fit,  $\chi^2(4) = 7.27$ ,  $p = .122$ ;  $\chi^2/df = 1.82$ ; CFI = .982; RMSEA = .080. The observed variables are reliable indicators of the latent constructs – negative reactivity and social skills – because they explained a variance of equal or higher than 50%. Only 2% of the variance on the children’s negative reactivity was explained by supportive parenting. The total model explained 43% of the variance in adoptees’ social skills (Figure 2).

Table 2 shows the unstandardized direct effects presented in this model. Direct effect paths from the mothers and fathers’ supportive parenting to children’s social skills were both positive, but non-significant (Table 2, Figure 2). The adoptees’ negative reactivity was directly and negatively associated to their social skills (negative effect), suggesting that parents who reported more negative reactivity in their children attributed them fewer social skills. This is the only significant effect observed in this model. Furthermore, non-significant direct effects of both mothers and fathers’ supportive parenting on children’s negative reactivity were observed (Table 2, Figure 2). As such, there were no significant indirect effects on this model.

### **Hypothesis 2: Testing Direct and Indirect Effects of Unsupportive Parenting on Social Skills (Model B)**

Figure 3 presents the Hybrid AP-CF Model among unsupportive parenting, negative reactivity and social skills (Model B). Overall, the model was fitted to the data, presenting an excellent fit,  $\chi^2(5) = 5.63$ ;  $p = .344$ ;  $\chi^2/df = 1.13$ ; CFI = .997; TLI = .991; RMSEA = .035. The observed variables are reliable indicators of the latent constructs – negative reactivity and social skills – because they explained a variance of equal or higher than 50%. Eight percent of the

variance on the children's negative reactivity was explained by unsupportive parenting. The total model explained 42% of the variance in adoptees' social skills (Figure 3).

Table 3 shows the unstandardized direct effects presented in this model. Direct effect paths from the mothers and fathers' unsupportive parenting to children's social skills were both non-significant. Adoptees' negative reactivity was directly and negatively associated to their social skills (negative effect), suggesting that parents who reported higher scores of their children's negative reactivity also reported lower scores of their children's social skills (Table 3, Figure 3). The direct effect of unsupportive parenting on negative reactivity was significant only for fathers, i.e., the higher the unsupportive parenting by fathers, the higher the children's negative reactivity. Thus, there was a significant indirect effect path going from the fathers' unsupportive parenting to children's social skills, via children's negative reactivity. This indirect effect was negative and significant because CI do not cross zero ( $b = -0.04$ , 95% CI [-0.10, -0.01]). The fathers' unsupportive parenting was predictive of higher levels of adoptees' negative reactivity, and adoptees' negative reactivity was predictive of lower social skills.

### **Hypothesis 3: Testing Differential Effects of Mothers and Fathers' Parenting**

Despite being non-significant, the direction of links between study variables in Model A (Figure 2) was different according whether supportive parenting is from mothers or fathers. Fathers' supportive parenting had no effect (close to zero) on the adoptees' negative reactivity; however, mothers' supportive parenting had a (non-significant) negative association with adoptees' negative reactivity (i.e., there was a slight signal of a mitigating effect).

In relation to Model B (Figure 3), despite being non-significant, the direct effect paths from the mothers and fathers' unsupportive parenting to children's social skills had inverse signs of association: mothers' unsupportive parenting was positively (non-significant) related to social

skills and fathers' unsupportive parenting was negatively (non-significant) related to social skills (Figure 3). Furthermore, mothers and fathers' influences on the adoptees' negative reactivity were different. Fathers' unsupportive parenting activated their children's negative reactivity (directly and positively associated); conversely, mothers' unsupportive parenting showed non-significant effect on the adoptees' reactivity (effect close to zero). The indirect pathway (unsupportive parenting – negative reactivity – social skills) revealed significant for fathers but was non-significant for mothers.

### **Discussion**

This study examined the extent to which adoptive mother and father's supportive and unsupportive parenting were linked to the adopted child's negative reactivity and social skills. Mothers and fathers' reports were used to study these relations with deeper complexity, allowing us to compare mothers and fathers' influences. To carry out this study, a Hybrid Dyadic AP-CF Model was performed, which has been an under-used methodology in adoption research.

This model allowed the simultaneous use of (a) latent variables resulting from both parents' contributions to evaluate their child-related variables (common fate variables) and (b) individual-level variables (mothers and fathers' independent indicators). The choice of these models was adequate because they presented good fit indexes and responded to the goals of the study. Findings regarding the individual contribution of each parent report to each latent variable showed explained variances equal to or higher than 50%, thus, confirming the choice of using common fate variables. Moreover, the differential results that were found for the effect of supportive/unsupportive parenting of mothers and fathers on child-related variables also attest the option of using these variables at the individual level.

Hypothesis 1 was not confirmed. The adoptees' negative reactivity did not mediate the effect of supportive parenting on adoptees' social skills (i.e., there is no indirect effect).

Supportive parenting had a positive direct effect on social skills, but also non-significant.

Hypothesis 2 was partially confirmed. The adoptees' negative reactivity mediated the effect of fathers' (not mothers') supportive parenting on adoptees' social skills. Higher adoptive unsupportive parenting by fathers predicted lower social skills in adopted children, via increasing/activating the adoptees' negative reactivity. Findings showed that, in school-aged adopted children, unsupportive parenting had no direct effect on social skills, but an indirect effect mediated by children's negative reactivity. In contrast with studies in this area seeing temperament as a moderator (e.g., Leve et al., 2013; Reiss et al., 2013; Slagt et al., 2016), these data showed that temperament can also be a mediator in the relationship between adoptive parenting (environment) and adoptees' outcomes.

Since the mediational hypothesis was not verified when supportive parenting was used as independent variable (Hypothesis 1, Model A), we can conclude that children with reactive temperament seem to be more vulnerable to negative/unsupportive parenting. However, these data only confirmed the impact of negative environmental influences (unsupportive parenting) on child's vulnerable characteristics. Since the same was not true for positive environmental influences (supportive parenting), they cannot be taken as evidence of the differential susceptibility model (Ellis et al., 2011).

Overall, the findings revealed that both supportive and unsupportive parenting were not directly associated to child's social outcomes. Further, our results showed that mothers' unsupportive responses can be positively associated to child's social skills. This contradicts some previous research with non-adoption samples (e.g., Baker et al., 2011; Brownell et al., 2013;

Eisenberg et al., 1996; Gross et al., 2015), but aligns with recent evidence, also in non-adoption research, showing that the direction of effects of supportive/unsupportive parenting on child's outcomes may shift as children age (Castro & Nelson, 2018). Similarly to the present study's findings, previous research also showed that in middle childhood supportive parenting can be less valuable for children, and unsupportive parenting can have an autonomy promotive role and a positive effect on children's socio-emotional skills (e.g., Mirabile et al., 2018; Nelson & Boyer, 2018).

These findings also bring new evidence on adoptive parenting processes that influence, i.e., activate or mitigate, adoptees' biology-based characteristics. Model B proved that 8% of the variance on adoptees' negative reactivity was explained by adoptive parenting (unsupportiveness). As postulated by Rothbart and Bates (2006), there are biology-based individual differences that can be influenced by the environment – reactivity seems to be one of these individual differences and supportive/unsupportive parenting one of these environmental processes. These results are particularly relevant for intervention in adoption since adoptees do not grow up with the family with whom they share genetics. Even in older children (8-10 years-old), an adoptive family able to respond to the child's specific characteristics can have a positive influence on individual characteristics that are more resistant to change.

In relation to the effect of negative reactivity on social skills, findings confirmed previous evidence (e.g., Leve et al., 2019; Shewark et al., 2021; Tung et al., 2018). The relevance of considering children's individual characteristics when assessing their outcomes in middle childhood is then emphasized.

The Hypothesis 3 was also proved. The paths between the study variables (direct and indirect effects) are different whether considering the influence of supportive/unsupportive

parenting of mothers or fathers. This was true in relation to direct effects of supportive/unsupportive parenting on social skills, direct effects of supportive/unsupportive parenting on negative reactivity and indirect effects of supportive/unsupportive parenting on social skills. These findings added evidence to recent research valuing the fathers' role in emotional socialization process (e.g., Cherry & Gerstein, 2021; Gerhardt et al., 2020; Maia & Pereira, 2021; Yaremych & Volling, 2018). In the present study, fathers made unique contributions to their children's socio-emotional development. Gender is an important issue in approaching how children learn about emotions, as men and women are socialized to express vs. inhibit/suppress emotions according to gendered roles defined by cultural norms that vary across communities and contexts (Gerhardt et al., 2020). The present study proved that mothers and fathers' emotion socialization practices may be differently linked to child's social outcomes. This is an important consideration for research, using only one informant can bias the results, providing a limited view of a more complex process.

Finally, it is noteworthy that in this study, adoptees presented, on average, normative scores of social skills, which is consistent with previous research (for a more complete research review on this topic see Barbosa-Ducharne, 2021; DeLuca et al., 2018). By explaining the role of supportive/unsupportive parenting (parenting process) and negative reactivity (child individual characteristic) on the adoptees' social skills, this study links individual and contextual variables for a better understanding of the social functioning of adopted children.

### **Limitations**

Although this cross-sectional study provides an advance in the understanding of the processes that underlie the heterogeneity among adoptees' social competence, by exploring the mediational role played by children's temperament in the relationship between parents' emotion

socialization and adoptees' social skills, it presents some limitations. First, due to the cross-sectional nature of the study, the direction of influences was theoretically stated and statistically tested. SEM was used to overcome this shortcoming; however, further research with a longitudinal design should confirm this study findings.

Second, the study variables were operationalized in specific measures, requiring some caution in the reading of the findings. Indeed, in this article supportive and unsupportive parenting refer only to parents' reactions to children's negative emotions, and for the child's temperament only the negative reactivity trait was considered. In the same line, in this study only the social skill component of social competence was studied. Children's behavior problems, which compete with socially adjusted performance, were not included in the models that were analyzed. Future research can further explore the role of temperament traits in the relationship between parenting and children's behavior providing a more complete approach of children's social competence in relation to individual characteristic.

Moreover, the explored models did not include covariate variables. Indeed, since no other study variable presented significant relationships with the dependent one – adoptees' social skills, we considered that there was no need to add covariates to the models. However, future research can explore other covariates, and replicate the models searching for differences according to the child's gender, and/or controlling for the effect of the child's behavior problems, for example.

Finally, the sample of the study is a homogeneous one of domestic adoptees and two-parent families only. Actually, the aim of the study was to capture the complexity of both the mother and the father's influences in child's developmental outcomes, which required to select the two-parent families out of the sample of the larger research. Unknown is if parental

supportive and unsupportive influences remain the same in single-mother or single-father families.

### **Conclusions**

Despite these limitations, this study makes a major contribution to our understanding of the adoptive family dynamics and its influence on the adoptees' developmental outcomes. Firstly, the study's findings allowed for identifying that adoptive mothers and fathers play different roles in the emotion socialization process, which led to different influences on adoptees social outcomes. Unsupportive parenting by adoptive fathers (not by mothers) activates negative reactivity of adoptive children, which in turn reduces their ability to show adequate social behaviors. As such, secondly, this study showed that adoptees' social skills are affected both by the children's negative reactivity (directly) and by the fathers' minimization, punishment and distress when faced with their children's negative emotions (indirectly). This is an important advance in the understanding how parenting impacts children since the effects are both direct and indirect. Resorting to a within-family approach to emotion socialization using an innovative methodological procedure, the current research contributes with new evidence to a better understanding of the processes underlying adopted children' social competence, which still is a field in need of research.

### **Implications for Practice**

Overall, these findings bring evidence on parenting processes that influence, i.e., activate or mitigate, child's individual characteristics, showing that there are biology-based individual differences that can be influenced by the environment. Negative reactivity seems to be one of these individual characteristics and supportive/unsupportive parenting one of those environmental processes. This evidence has important implications for professional practice with



adoptive families, highlighting the importance of considering parental socialization of emotions as a topic in both the preparation of prospective adopters, and the provision of post-adoption services. As the child's emotional learning needs to change with age, support on adoptive parents' supportive/unsupportive responses to their children's negative emotions becomes critical. Parents should adjust their socialization practices as the child grows and according to his/her socialization challenges, needs and expectations. Further, findings also pointed out the importance of promoting parenting skills able to "counteract/mitigate" reactive temperaments that negatively impact child's outcomes. Finally, this study showed how crucial the adoptive fathers' involvement is in the process of parenting adopted children.

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**Table 1***Descriptive Statistics and Bivariate Correlations for Study Variables*

	<i>M</i>	<i>DP</i>	Range	1	2	3	4	5	6	7	8
1. Social skills – Mother Report	2.25	0.34	0 - 3	1							
2. Social skills – Father Report	2.22	0.36	0 - 3	.67***	1						
3. Reactivity – Mother Report	2.80	0.66	1 - 5	-.52***	-.41***	1					
4. Reactivity – Father Report	2.68	0.62	1 - 5	-.43***	-.57***	.67***	1				
5. Mother Supportive Parenting	5.21	0.90	1 - 7	.17	.13	-.02	-.12	1			
6. Father Supportive Parenting	4.91	0.87	1 - 7	.13	.26**	-.01	-.07	.31**	1		
7. Mother Unsupportive Parenting	3.12	0.96	1 - 7	.00	.03	.20*	.04	.42***	.15	1	
8. Father Unsupportive Parenting	3.20	0.95	1 - 7	-.22*	-.14	.27**	.24*	.13	.35***	.52***	1

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

**Table 2**

*Unstandardized Direct Effect Estimates for Model A - Supportive Parenting Predicting Negative Reactivity and Social Skills*

Effect	<i>b</i>	<i>SE</i>	<i>p</i>
Mother supportive parenting --> Child social skills	0.03	0.03	.423
Father supportive parenting --> Child social skills	0.05	0.03	.108
Mother supportive parenting --> Child negative reactivity	-0.07	0.07	.306
Father supportive parenting --> Child negative reactivity	0.02	0.07	.735
<b>Child negative reactivity --&gt; Child social skills</b>	-0.43	0.09	< .001

*Note.* Significant paths are highlighted in bold. No significant indirect effects were observed.

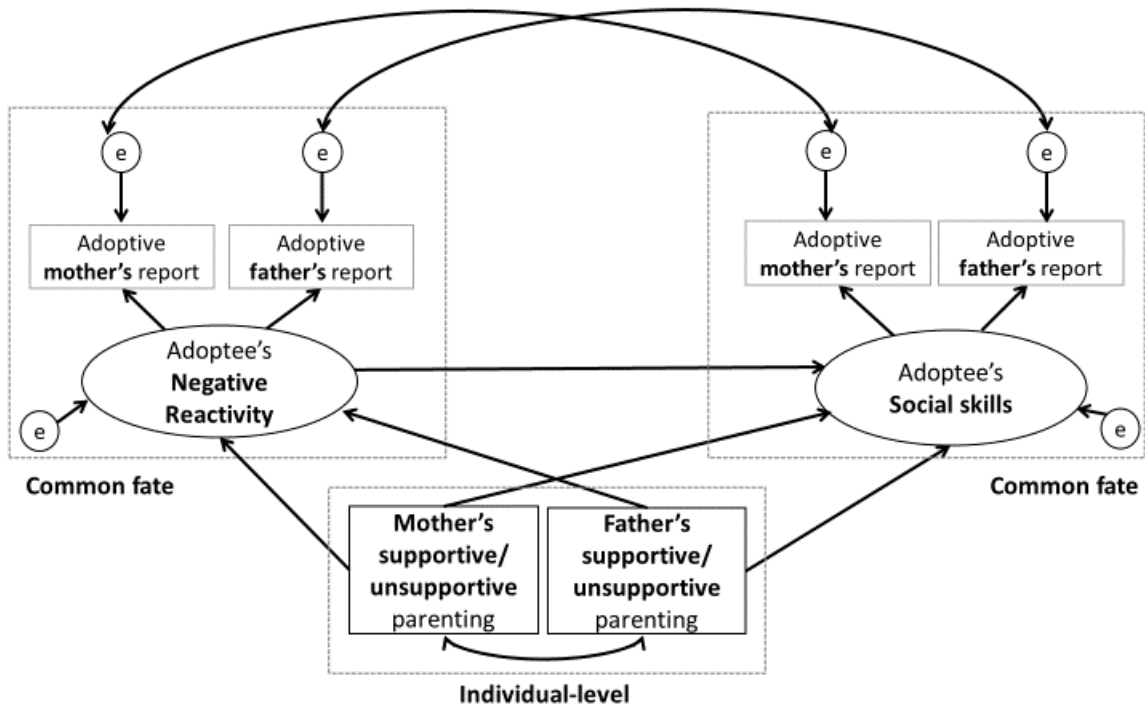
**Table 3***Unstandardized Direct Effect Estimates for Model B - Unsupportive Parenting Predicting**Negative Reactivity and Social Skills*

Effect	<i>b</i>	<i>SE</i>	<i>p</i>
Mother unsupportive parenting --> Child social skills	0.05	0.03	.092
Father unsupportive parenting --> Child social skills	-0.03	0.03	.229
Mother unsupportive parenting --> Child negative reactivity	0.03	0.06	.587
<b>Father unsupportive parenting --&gt; Child negative reactivity</b>	0.12	0.06	.034
<b>Child negative reactivity --&gt; Child social skills</b>	-0.35	0.07	< .001

*Note.* Significant paths are highlighted in bold. A significant indirect effect from father unsupportive parenting to child's social skills (via negative reactivity) were observed ( $b = -0.04$ , 95% CI [-0.10, -0.01]).

**Figure 1**

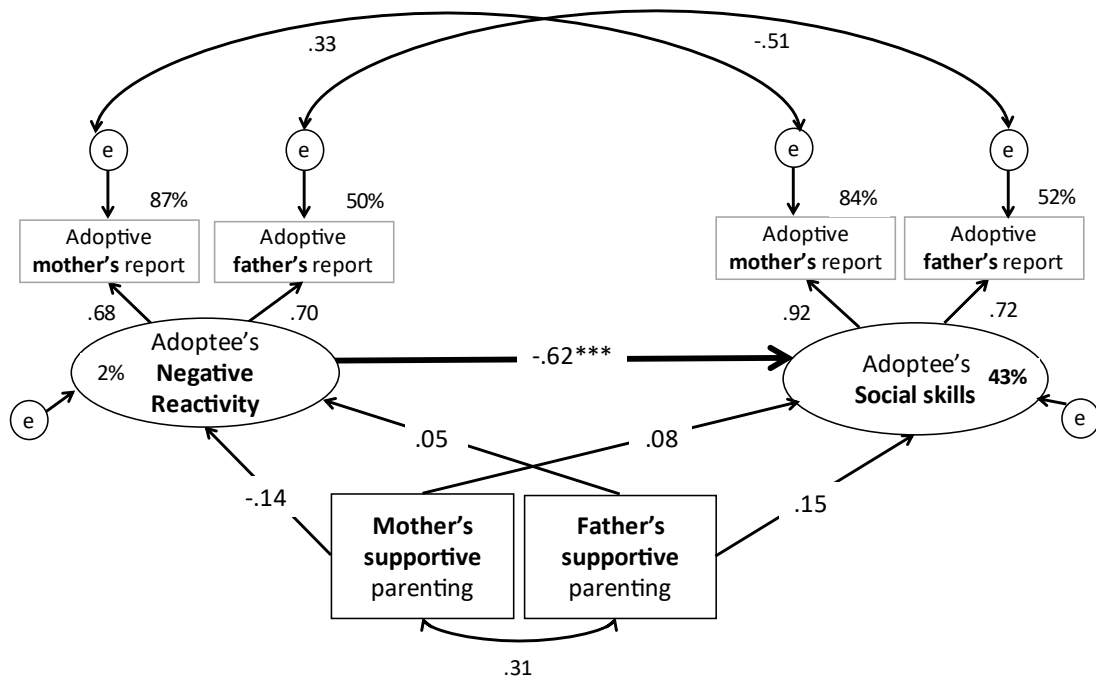
*Hybrid AP-CF Model: Conceptual Model*





**Figure 2**

*Hybrid AP-CF: Model A – Supportive Parenting Predicting Negative Reactivity and Social Skills*

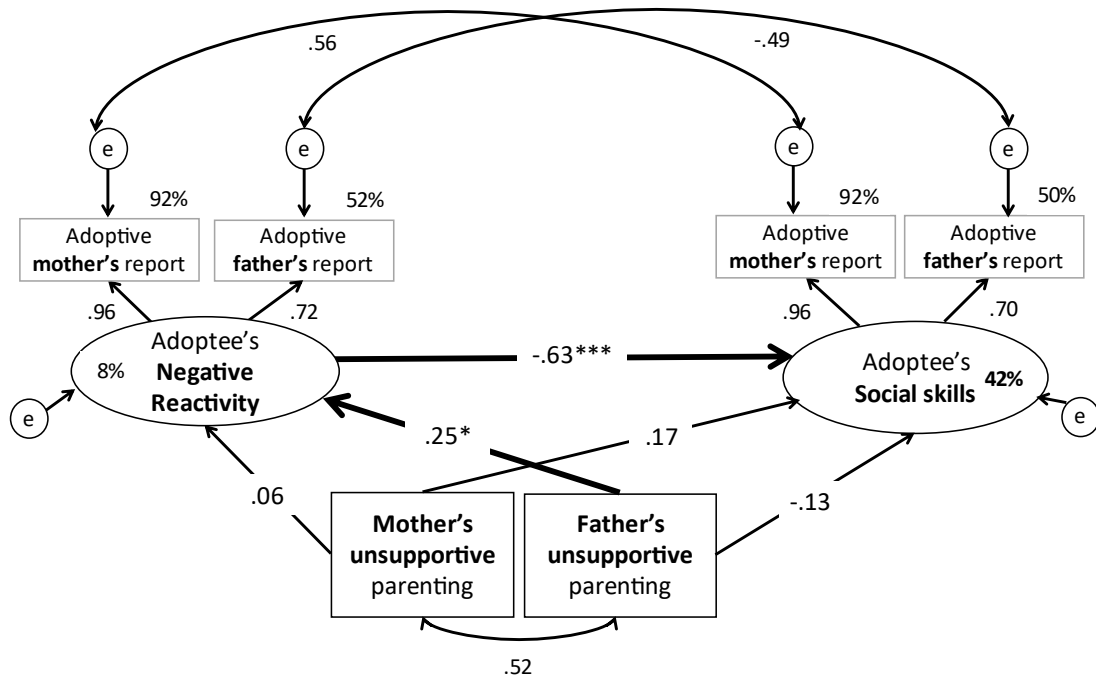


*Note.* Statistics are standardized regression coefficients. Bold lines represent significant paths.

\*\*\*  $p < .001$ .

**Figure 3**

*Hybrid AP-CF: Model B – Unsupportive Parenting Predicting Negative Reactivity and Social Skills*



*Note.* Statistics are standardized regression coefficients. Bold lines represent significant paths.

\*  $p < .050$ . \*\*\*  $p < .001$ .