

## Regular Article

# A four-year multi-wave prospective study on the role of parental reflective functioning and parenting stress in the development of socio-emotional problems in internationally adopted children

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### Abstract

Parental reflective functioning (PRF) plays a protective role in the development of children with histories of early adversity, including adopted children. This is the first study to investigate the developmental trajectories of PRF and children's socio-emotional problems in the first 4 years after international adoption ( $N = 48$  families, mean age (T1) = 20.7 months) and to examine the mediating role of parenting stress in the relation between PRF and child socio-emotional problems. Multilevel modeling indicated that age at adoption and parent gender moderated the development of PRF and child socio-emotional problems. Moreover, decreases in PRF were associated with more socio-emotional problems in the children. These relations were mediated by parenting stress, and particularly feelings of incompetence and marital dissatisfaction.

**Keywords:** adoption; mentalizing; parental reflective functioning; parenting; stress

(Received 29 October 2021; revised 6 October 2022; accepted 9 October 2022; First Published online 16 November 2022)

Reflective functioning (RF), or mentalizing, refers to an individual's ability to hold another mind in mind, that is, to be able to understand oneself and others in terms of intentional mental states such as feelings, desires, wishes, and attitudes. This capacity allows individuals to perceive both the self and others in terms of mental states, thereby making them meaningful, understandable, and predictable (Fonagy et al., 2021). Parental reflective functioning (PRF) is a specific expression of RF, as it entails the parent's capacity to envision the child as being motivated by internal mental states, and to be able to reflect on their own internal mental experiences, and how they are shaped and changed by interactions with the child (Slade, 2005). PRF has been shown to play an important role in establishing secure attachment relationships between parent and child, and in the socio-emotional development of children more generally (Luyten et al., 2020; Zeegers et al., 2017). Studies suggest that PRF may be particularly important in buffering the effects of early adversity (Ensink et al., 2014; Huth-Bocks et al., 2014). These findings have led several authors to suggest that the capacity for PRF can have specific relevance for parents of adopted children, as adopted children by definition have a history of early separation from attachment figures, often compounded by additional traumatic experiences related to abuse or neglect (Adkins et al., 2018; Midgley et al., 2018). However, to date, research on PRF and the socio-emotional development of adopted children is scarce (Midgley et al., 2018).

There is evidence indicating that parenting stress has a negative impact on PRF (Håkansson et al., 2019; McMahon & Meins, 2012). It is a central assumption of the mentalizing approach to psychological development that the ability to mentalize tends to decrease with increasing stress levels (Luyten & Fonagy, 2015). Impairments in mentalizing are considered to typically manifest in high-stress and -arousal contexts, particularly in the context of close attachment relationships such as parent-child relationships. Research has indicated that with increasing stress the neural regions underlying the ability for "controlled" mentalizing tend to become deactivated, and more posterior brain regions responsible for "automatic", yet biased, processing of social information are activated. Hence, it is hypothesized that with increasing arousal, there is a biobehavioral switch from more controlled mentalizing, characterized by slow, conscious reflection, to more automatic mentalizing, characterized by rapid and often biased assumptions about self and others. Furthermore, early adversity, and insecure attachment experiences more generally, are assumed to influence the point at which an individual switches from controlled to automatic mentalizing. Parenting, and adoptive parenthood in particular, may be an important source of stress for young parents, particularly when parents have the feeling that their child is more "difficult" than expected, leading to negative feelings concerning themselves, their role as parents, their partner relationship, and their adoptive child (Deater-Deckard, 1998). Consistent with these assumptions, research in adoptive families suggests the existence of bidirectional associations between child development and parenting stress. Several studies have indicated that parenting stress in adoptive parents is negatively associated with the socio-emotional development of adopted children (Melançon et al., 2019).

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**Cite this article:** Malcorps, S., et al. (2024). A four-year multi-wave prospective study on the role of parental reflective functioning and parenting stress in the development of socio-emotional problems in internationally adopted children. *Development and Psychopathology* 36: 266–279, <https://doi.org/10.1017/S0954579422001171>

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Similarly, features of adopted children (i.e. age at adoption, children's behavioral difficulties) may contribute to more pronounced parenting stress (Canzi et al., 2019). However, given the dearth of longitudinal studies, more research in this area is needed to better understand potential associations between parenting stress and child development in adopted children and their caregivers.

In what follows, we first provide an overview of empirical research on the relation between PRF and children's socio-emotional development. Next, we review evidence on the relation between parenting stress and PRF. This is followed by a discussion of the potential role of PRF and parenting stress in the socio-emotional development of adopted children. We conclude this introduction with the rationale and aims of the present study.

### Parental reflective functioning and child socio-emotional development

PRF refers to the parent's capacity to think about the child as having an inner psychological world, and hence to treat the child as a psychological agent with their own feelings, wishes, and desires (Slade, 2005). The concept of PRF originated in developmental psychopathology research (Slade, 2005) and can be seen as a specific operationalization of the umbrella concept of "parental mentalizing", which can be broadly defined as the parent's ability to represent and hold in mind the internal states of their child (Zeegers et al., 2017). Other research traditions in this area have focused on conceptually related notions such as parental mind-mindedness (Meins et al., 2013), parental mental-state talk (Tompkins et al., 2018), and parental insightfulness (Oppenheim & Koren-Karie, 2002). While each of these different approaches uses different operationalizations to assess parental mentalizing (see Schiborr et al. (2013) for a comprehensive review) and emphasizes somewhat different aspects of parental mentalizing, they share a focus on parents' capacities to be interested in and reflect on the internal mental world of their child (Zeegers et al., 2017), and their ability to appropriately mirror the child's affective states (Luyten, Nijssens, et al., 2017).

There is now good evidence to suggest that higher levels of parental mentalizing are prospectively related to better child social outcomes and less internalizing and externalizing problems (see Camoirano (2017) for a review). In addition, recent meta-analyses underline the importance of parental mentalizing for parent-child attachment and child mentalizing. For instance, Zeegers et al. (2017) found robust associations between parental mentalizing, infant attachment security (pooled correlation of  $r = .30$  based on 20 effect sizes), and parental sensitivity (pooled correlation of  $r = .24$  based on 24 effect sizes). Similarly, meta-analyses by Aldrich et al. (2021), Devine and Hughes (2018), and Tompkins et al. (2018) revealed consistent modest but significant relations (pooled correlations between .16 and .21) between parental mentalizing and child theory-of-mind development (assessed in terms of false-belief understanding, emotion labeling, and perspective taking), which is considered an important component of child mentalizing.

As noted, high levels of parental mentalizing may be an important protective factor, particularly in contexts characterized by psychological or social risk (Ensink et al., 2016; Meins et al., 2013). In community samples, high levels of PRF have been shown to mitigate the impact of negative parenting behaviors such as high parental control and low parental warmth or involvement (Benbassat & Priel, 2012). In low-socioeconomic status (SES) families, lower income was associated with lower autonomy support in

fathers with low PRF, but not in fathers with moderate to high PRF (Buttitta et al., 2019). In a prospective study, children of parents with high levels of mind-mindedness were also found to exhibit fewer externalizing and internalizing behaviors over time (Meins et al., 2013) compared with children of parents with lower levels of mind-mindedness. Research in mothers and children with a history of early adversity such as childhood abuse and neglect similarly indicates that parental mentalizing may have an important protective effect and may potentially play a role in breaking inter-generational cycles often associated with trauma. For instance, studies have shown that among mothers who themselves experienced severe early adversity, higher levels of PRF were associated with higher levels of attachment security in their children compared with mothers with low reflective functioning (Huth-Bocks et al., 2014; Schechter et al., 2005). In children with histories of child sexual abuse, higher PRF was related to fewer externalizing problems (Ensink et al., 2016). More recent studies have further demonstrated that parents' reflective functioning with regard to their own traumatic history (so-called trauma reflective functioning) is an important predictor of higher engagement with pregnancy and motherhood (Ensink et al., 2014) and a lower likelihood of their children being exposed to sexual abuse (Borelli et al., 2019).

These studies also raise questions about the temporal stability of PRF. While PRF is considered to consist of both trait and state components (Luyten, Nijssens, et al., 2017), currently no studies to date have investigated the temporal stability of PRF.

### Parenting stress and PRF

Although parental mentalizing may protect against the impact of early childhood adversity, at the same time, research has amply shown that high levels of stress typically inhibit parents' capacity for reflective functioning and facilitate a switch to more rapid, automatic, and often biased assumptions about their child's mind (Mayes, 2000), in which non-reflective and negative assumptions dominate thinking about the self and others (Luyten, Nijssens, et al., 2017). Studies suggest that parenting itself may be an important source of stress for young parents (McMahon & Meins, 2012). When parents have the feeling that their child is much more "difficult" than expected, or, more generally, that parenthood is much more challenging than they anticipated, this may lead to considerable distress and negative, or even aversive, feelings concerning themselves, their role as parents, their partner relationship, and their child (Deater-Deckard, 1998). Research has demonstrated a strong association between parenting stress and various negative outcomes in parents, children, and families, such as poor parental mental health, negative parenting behaviors, and child internalizing and externalizing problems (Holly et al., 2019).

Studies have consistently found that that higher levels of stress are associated with lower levels of parental mentalizing (Håkansson et al., 2019; McMahon & Meins, 2012), and that this association is specific to stress related to the child or parenting, and not to general stress (Håkansson et al., 2019; Rutherford et al., 2015). Evidence for the assumption that parenting stress negatively impacts on mentalizing, which in turn has a negative impact on parenting behaviors, also comes from experimental research. Rutherford et al. (2015), for instance, asked recent mothers to comfort a simulated baby until it stopped crying. In reality, the simulator was inconsolable. Mothers with high levels of prementalizing modes (assessed using the Parental Reflective Functioning Questionnaire (PRFQ) before the task) were less persistent in

trying to console the simulated baby and had lower self-awareness of their own tolerance of distress compared with mothers with low levels of prementalizing modes. Prementalizing modes refer to a non-mentalizing stance in which parents have difficulties reflecting on their child's inner mental world, and their attempts to do so are characterized by markedly negatively biased thoughts and feelings about their child's mind. In a study by Krink et al. (2018), psychosocial stress was experimentally induced in infants and their postpartum depressed mothers using a still-face paradigm, in which a mother must remain completely unresponsive to the infant for 1 or 2 min. The still-face paradigm is known to cause stress in both the caregiver and the child. Results showed that mothers with high levels of prementalizing modes demonstrated a greater decrease in observed sensitivity toward the child after completing a still-face paradigm compared with mothers with low levels of prementalizing modes. Similarly, in a study by McMahon and Meins (2012), parental stress mediated the negative association between mind-mindedness and observed maternal hostility during a free-play interaction with the child, suggesting that low mind-mindedness was associated with higher parenting stress, leading to more hostility of mothers toward their child. These results seem to indicate that parenting stress may negatively influence PRF, which in turn may negatively affect child socio-emotional development.

However, it is again important to note that relations between parenting stress, parental mentalizing, and child functioning are most likely to be reciprocal. Child features such as temperament, early childhood trauma, or emotional problems may lead to increased parenting stress and impaired parental mentalizing (Rutherford et al., 2015). Yet, no study to date has investigated potential reciprocal associations between parental mentalizing, parenting stress, and child features.

### Parental mentalizing and parenting stress in adoptive families

Although the majority of internationally adopted children adjust fairly well over time (Van IJzendoorn et al., 2007), a substantial group is at increased risk for psychological problems in later life, as is evidenced by elevated levels of insecure attachment, particularly disorganized attachment (van den Dries et al., 2009), higher levels of externalizing problems in adolescence (Askeland et al., 2017), and the overrepresentation of adolescent adoptees in mental health care services (Miller et al., 2000). Adopted children often have a history of substantial early adversity marked by separation of their biological parents, inadequate care from early caregivers or orphanages, abuse, and/or disruptive changes of context and culture. These difficulties may lead to underdeveloped emotional and relational capacities, which make it more challenging to parent these children than normally developing children (Midgley et al., 2018), as is also evidenced in high levels of placement breakdown (Palacios et al., 2019). The capacity for PRF may play an important role in buffering the effects of early adversity (Adkins et al., 2018), as it allows parents to keep accessing the thoughts and feelings that may underlie challenging behavior by the child, which can result in a more adequate and attuned response instead of reacting in a non-mentalizing and insensitive manner (Meins et al., 2013).

Very few studies have directly investigated the assumption that PRF may play an important role in buffering the effects of early adversity, and the majority of the studies conducted so far are cross-sectional. In one study with 43 adoptive families, higher

levels of positive/reflective parenting, rated on an adaptation of the Parent Development Interview for use in adoptive parents 3 months after placement, were associated with less aggressive themes in children's narratives of attachment-related story stem tasks assessed at the same time point (Steele et al., 2007). In a cross-sectional study of 50 adoptive families, higher levels of maternal reflective functioning, assessed using the Parental Self-Reflectiveness Scale scored on the Parental Awareness Interview, were related to significantly fewer child externalizing problems (Priel et al., 2000). Fishburn et al. (2017) found, in a sample of 36 adoptive families, that mind-mindedness showed a small but negative association with child behavioral difficulties measured at the same time point. Finally, in a longitudinal study, Tarullo et al. (2016) examined the relationship between Parental Mental State Talk and emotion understanding at the ages of 3 and 5.5 years in internationally adopted ( $N = 50$ ) and non-adopted ( $N = 36$ ) children. Results showed that Parental Mental State Talk at 3 years was positively associated with emotion understanding at 5.5 years in the internationally adopted children but not in the non-adopted children, suggesting once again that PRF may be particularly protective in children with a history of adversity.

However, more research in this area is needed, especially given the paucity of longitudinal studies. Moreover, no study to date has investigated potential evocative child-to-parent effects; parenting a child who is more challenging due to their past history of neglect and relational trauma may strain parents' mentalizing capacities (Midgley et al., 2018), which may then in turn negatively impact child socio-emotional development.

Parenting stress might play an important role in such reciprocal relations, as prior studies in adoptive families have shown the existence of bidirectional associations between child development and parenting stress, with clear evidence on the one hand that certain child characteristics lead to more parenting stress (Canzi et al., 2019), and on the other hand that parenting stress has an adverse impact on children's emotional and behavioral problems (Smith et al., 2018).

Child characteristics such as age at adoption (Canzi et al., 2019) and behavioral difficulties (McKay et al., 2010; Palacios & Sánchez-Sandoval, 2006) have indeed been associated with greater parenting stress, even when controlling for other stressors such as parental well-being, quality of the parents' partner relationship, and social support (Canzi et al., 2019). Age at adoption is an often-used proxy for early adversity, because later placement is associated with a longer exposure to disadvantageous situations such as problematic parenting conditions, more changes of residence and caregivers, or longer institutionalization. Research consistently shows that later age at adoption is related to negative outcomes in various developmental areas (Canzi et al., 2019; Julian, 2013).

Other studies have demonstrated the maladaptive effects of parenting stress, as it is prospectively associated with higher levels of internalizing and externalizing problems in adopted children (Melançon et al., 2019; Smith et al., 2018). However, no study to date has examined the possible mediating role of parenting stress in the relation between PRF and child difficulties in adoptive families.

### The present study

The present study aims to fill important gaps in our knowledge concerning PRF, parenting stress, and children's socio-emotional problems in internationally adopted children and their adoptive

parents. This paper presents the first prospective study investigating the temporal stability of PRF and its association with child socio-emotional problems in the first 4 years after adoption in a sample of internationally adopted children and their adoptive parents. In addition, this study investigated the potential mediating role of parenting stress in the relation between PRF and child socio-emotional problems by using a multilevel mediational approach. The aims of this study were therefore threefold.

The first aim was to examine the temporal stability of adoptive parents' PRF in the first 4 years after adoption. Using multilevel growth analyses, we estimated growth trajectories of the three dimensions of PRF (i.e., prementalizing modes [PM], certainty about mental states [CM], and interest and curiosity [IC]) over five data waves for adoptive mothers and fathers separately. As the current sample consisted of a fairly homogeneous group of relatively highly educated, middle- to high-SES parents, we did not expect to find differences in the trajectories of PRF of the adoptive mothers and fathers. However, we did anticipate that the trajectories of parents' PRF over time would differ as a function of child age at adoption. As children who are adopted later in life typically experience more emotional and relational difficulties, and these problems can become more pronounced with increasing age, we expected that, over time, late adoptees would challenge the PRF capacities of their adoptive parents more than early adoptees. In the adoption literature there is currently no consensus regarding a cutoff for "late adoption" (Julian, 2013), and cutoffs used in research range from 12 months to 4 years. Yet, as there is increasing consensus that age of adoption is an important proxy for adversity, a case can be made for the cutoff for late adoption being earlier rather than later. For the current study, we based our cutoff on a study by Merz and McCall (2010), who found that among adopted children (with similar pre-adoptive experiences to those of the children in the current study), those adopted after the age of 18 months had significantly higher levels of social-emotional problems than children adopted at a younger age. Therefore, we hypothesized that, over time, parents of late adoptees ( $\geq 18$  months of age, based on Merz and McCall (2010)) would (a) experience a stronger increase in PM, (b) gain less certainty about what their children are thinking or feeling (a less steady increase in CM), and (c) become less interested in what goes on in their child's mind (a stronger decrease in levels of IC) compared with parents of early adoptees ( $< 18$  months).

A second aim of this study was to examine the trajectories of internationally adopted children's socio-emotional problems in the first 4 years after adoption as a function of children's gender and age at adoption as possible moderating variables. In line with evidence of a negative "age at adoption" effect across multiple domains of developmental outcomes (Julian, 2013), we expected that children's socio-emotional problems would be higher at baseline and would show a greater increase for children who were adopted at an older age ( $\geq 18$  months) than for children who were younger at adoption. We did not expect to find differences between boys and girls (Juffer & van Ijzendoorn, 2005).

Finally, we investigated reciprocal relations between the PRF dimensions and children's socio-emotional problems, and whether these relations were mediated by parenting stress as assessed by the Parenting Stress Index, and in particular by parental feelings of incompetence, role restriction, marital dissatisfaction, and social isolation. As PRF is expected to foster children's socio-emotional development, we expected that higher levels of both CM and IC and lower levels of PM in both mothers and fathers would be associated with less severe child socio-emotional problems. Finally, as

parenting stress can be expected to negatively influence both PRF and child socio-emotional outcomes, we hypothesized that parenting stress would mediate the relations between the different dimensions of PRF and child socio-emotional problems.

## Method

### Participants and procedures

This study is part of the Leuven Adoption Study, a multi-wave, multi-method, and multi-informant study aimed at identifying the developmental trajectories of internationally adopted children and their families in Flanders (Belgium). Recruitment for the study was done through adoption agencies, social media, and meetings of prospective adoptive parents. Couples who were interested in participating in the study met with a research assistant, who provided detailed information about the study. After providing informed consent, participants completed assessments at 2 weeks, 6 months, and 1 year after the arrival of their child, and, from then on, annually. Assessments included interviews, behavioral observations, experimental tasks, and questionnaires to assess the psychological functioning of the children and their mothers and fathers. This study used data collected at 6 months (Time 1, T1), 1 year (T2), 2 years (T3), 3 years (T4), and 4 years (T5) after child arrival.

Participants were 48 adoptive families, each consisting of the mother, father, and adopted child. Heterosexual couples who had applied for the international adoption of a first child and did not have biological children of their own were included in the study. Furthermore, to participate, the adopted children had to be younger than 2.5 years on arrival in Belgium and had to learn Dutch as the main language in their adoptive families. Owing to the age restriction, 10 of the initially screened 58 families were no longer eligible to participate in the study.

All the couples had Belgian nationality and spoke Dutch as their first language. The couples were all married (being married is often a prerequisite for the countries from which children are adopted), and the duration of their relationship ranged from 4.25 to 20.41 years ( $M = 10.83$ ,  $SD = 3.56$ ). The majority of couples reported infertility problems (72%) or chronic diseases (e.g., endometriosis, severe heart failure; 12%) that meant they were unable to have a biological child. The remaining 16% of parents indicated that they mainly wanted to adopt in order to give a child a better future. Overall, the couples represented a relatively older, relatively highly educated, middle- to high-SES group of parents. The mean age of the parents was 33.7 years ( $SD = 3.59$ ) with a range of 27 to 46 years. For 20.8% of parents, the highest obtained level of education was a high school diploma; the other 79.2% of parents had participated in higher education, of whom 41.7% had a bachelor's degree and 37.5% a master's degree. Moreover, at the start of the study all couples had already gone through an extensive psychosocial screening procedure (carried out by social services of the Flemish agency for Public Health, Welfare and Family) before being allowed to adopt a child, the aim of which is to minimize the risk of placement breakdown.

The group of adopted children consisted of 34 boys (70.8%) and 14 girls (29.2%). The mean age at arrival was 13.43 months ( $SD = 6.56$ ), with a range of 4 to 30 months (2.5 years). The children were adopted from eight countries: Ethiopia (27), South Africa (10), Kazakhstan (6), Nigeria (1), Sri Lanka (1), China (1), Burkina Faso (1), and Uganda (1). Parents reported that the children had lived in a range of placements, going from between one and four different placements before being adopted.

## Instruments

### Parental Reflective Functioning Questionnaire

The Parental Reflective Functioning Questionnaire (PRFQ; Luyten, Mayes, et al., 2017; Luyten, Nijssens, et al., 2017) was developed as a brief, multidimensional measure of PRF. The PRFQ consists of three subscales assessing three key dimensions of PRF: (a) the prementalizing modes (PM) subscale assesses a non-mentalizing stance of parents toward their child consisting of severely biased and often malevolent assumptions about the internal world of their child (e.g., “*My child cries around strangers to embarrass me.*”); (b) the certainty of mental states (CM) subscale focuses on parents’ capacity to recognize the opacity of mental states (e.g., “*I always know why I do what I do to my child.*”). Low scores on CM reflect a stance characterized by a lack of certainty about the child’s mind, also referred to as hypomentalizing. Very high scores on CM may reflect a stance in which parents are overly certain about the mental states of their child, which may give rise to hypermentalizing and which may be experienced by the child as intrusive or overcontrolling (e.g., “*I always know what my child wants*”) (Luyten, Mayes, et al., 2017); and (c) the interest and curiosity (IC) subscale assesses the presence or absence of active curiosity about and willingness to understand the mental states of the child (e.g., “*I am often curious to find out how my child feels.*”). While low IC scores reflect a lack of interest in the child’s mind, very high scores reflect an excessive interest in the child’s mind. All items are scored on a 7-point Likert scale, ranging from 1 (*completely disagree*) to 7 (*completely agree*). Regarding internal consistency in this sample, Cronbach’s alpha of PM ranged from .56 to .81, CM from .84 to .86, and IC from .62 to .73 over the five times of measurement. Concerning stability, Tables 3–5 of the online data supplement present correlations for each PRF dimension over the five measurement times (for mothers and fathers).

### Parenting Stress Index

Parenting stress was assessed by the Dutch translation of the Parenting Stress Index (PSI; de Brock et al., 1992). The PSI is a self-report questionnaire that consists of 14 subscales assessing parenting stress and parent and child functioning, of which we included the four parenting stress subscales for the current study: incompetence (13 items; e.g., “*I can’t make a decision without help*”), role restriction (7 items; e.g., “*I feel restricted by my obligations as a parent*”), social isolation (6 items; e.g., “*I am less interested in other people than before*”), and marital relationship (7 items; e.g., “*Raising a child has given more relational conflicts than expected*”). Items are rated on a Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Studies have supported the reliability and validity of the PSI (de Brock et al., 1992). In this study, Cronbach’s alpha ranged from .85 to .91 for incompetence, .85 to .89 for role restriction, .66 to .71 for social isolation, and .69 to .79 for marital relationship over the five times of measurement. In addition, Tables 6–9 of the online data supplement present correlations for each PSI dimension over the five measurement times (for mothers and fathers).

### Children’s socio-emotional problems

At the different measurement times, age-appropriate measures were used to assess the children’s socio-emotional problems: the Brief Infant-Toddler Social Emotional Assessment (BITSEA) was administered when the children were between 1.5 and 3 years old, the Child Behavior Checklist (CBCL; version 1.5–5 years) was used when the children were between 3 and 5 years, and the CBCL (version 5–18 years) was used when the children were more than 5 years old. Both

the BITSEA and the CBCL involve parents rating various features of their children on a three-point Likert scale: 0 (*absent*), 1 (*occurs sometimes*), 2 (*occurs often*). To be able to compare scores and model developmental trajectories, scores of each of these measures were standardized using norms (means and standard deviations) as published in an important European validation study of the BITSEA (Wendland et al., 2014) and in the Multicultural Supplement to the Manual for the ASEBA Preschool Forms and Profiles (Achenbach & Rescorla, 2010) and School-Age Forms & Profiles (Achenbach & Rescorla, 2007). Regarding internal consistency in this sample, Cronbach’s alpha of the BITSEA problem scale ranged from .64 to .72, and that of the CBCL Total Scale ranged from .73 to .78. Table 10 of the online data supplement presents correlations of the child socio-emotional scores over the five measurement times (for mothers and fathers).

## Statistical analyses

Given that the data are hierarchically structured, with five measurement times (i.e., Level 1) being nested within 96 parents (i.e., Level 2), who are nested within 48 couples or families (i.e., Level 3), dependencies within families and within persons were expected. Therefore, multilevel modeling was used to investigate potential changes in PRF dimensions and child socio-emotional problems over time (Singer & Willett, 2009). All analyses were done using SPSS (version 27, 2020) and R version 4.0.2 (R Core Team, 2018), with the lme4 (version 1.1-25), lmerTest (version 3.1-3), and lavaan (version 0.6-7) packages.

First, unconditional means models without predictors were fitted for all target variables to evaluate the extent to which variability was attributable to within-person (Level 1), between-person (Level 2), or between-couple (Level 3) variation. Levels that did not contain a significant proportion of the variability (<10% based on Preacher et al. (2010)) were not included in further analyses.

Next, we used random intercept, random slope, multilevel growth models to investigate trajectories for each of the PRF dimensions and child socio-emotional problems over the five measurement times. Time points were coded –4, –3, –2, –1, and 0, implying that regression coefficients involving time measured the rate of change from 6 months to 4 years after adoption and regression intercepts referenced group differences at 4-year follow-up. For each multilevel growth model, in a first step an unconditional growth model representing the trajectories of BITSEA/CBCL or PRFQ as a linear function of time were run. As a second step, quadratic and cubic time variables were added to the model if likelihood ratio tests showed a significant improvement in fit. In a third step, conditional growth models were fitted including the time-invariant parameters of (a) gender of parent and child, (b) child age at arrival (<18 months, hereafter referred to as *early adoptees*, versus ≥18 months, referred to as *late adoptees*), and (c) the interaction between the two parameters. The significance of regression coefficients and intercepts was tested using Wald tests, and improvement of model fit when introducing new parameters was tested using likelihood ratio tests. The full taxonomy of models for each outcome variable can be found in the online data supplement of this article (see Tables 11–14 in the online data supplement). Here, we present only the tables and figures for the final models (see Tables 1 and 2, and Figure 1). If parameters are not included in the final model, this means that the parameters’ Wald test was not significant ( $p > 0.05$ ) and the addition of the parameter did not improve the model fit.

**Table 1.** Multilevel growth models for trajectories of PRF

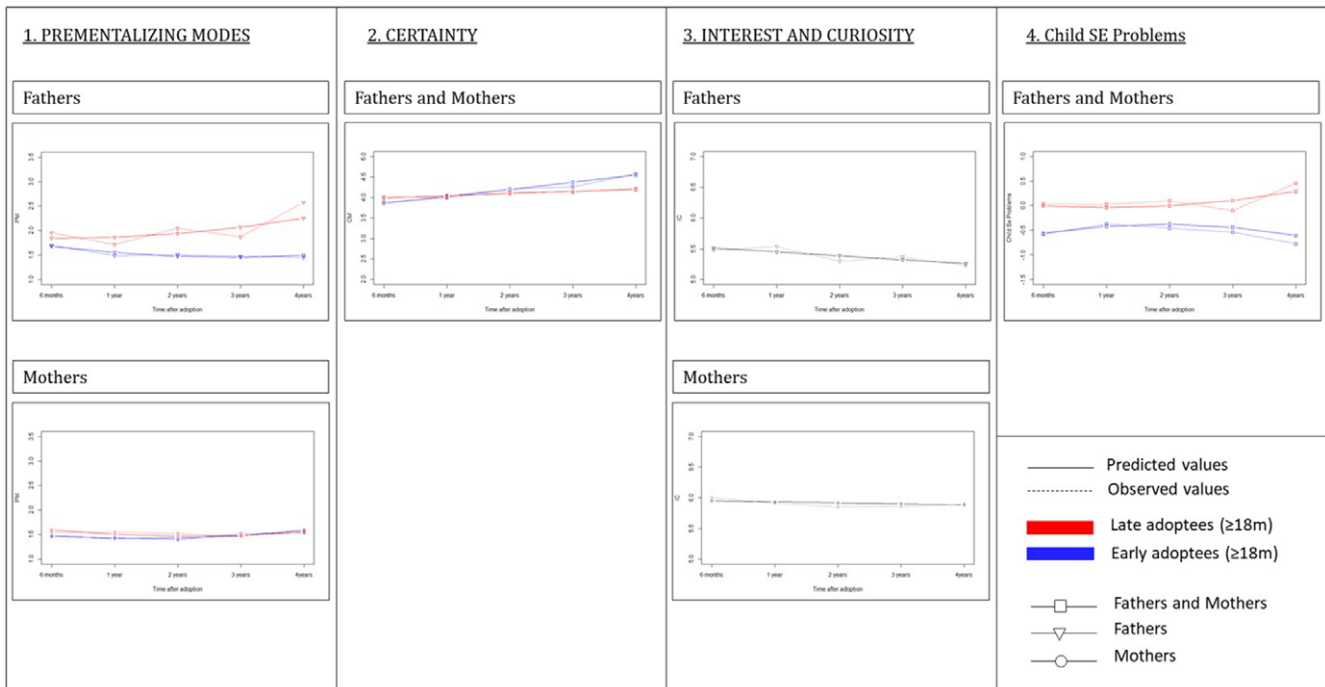
	PRFQ-PM			PRFQ-CM			PRFQ-IC		
	Estimate (SE)	CI	<i>p</i>	Estimate (SE)	CI	<i>p</i>	Estimate (SE)	CI	<i>p</i>
<i>Initial status</i>									
Intercept	1.49 (0.12)	1.26; 1.72	<.001	4.54 (0.14)	4.28; 4.81	<.001	5.26 (0.10)	5.05; 5.46	<.001
Gender of parent	0.10 (0.16)	-0.22; -0.41	.675		-		0.62 (0.15)	0.34; 0.91	<.001
Child age at adoption	0.76 (0.21)	0.35; 1.16	<.001	-0.34 (0.24)	-0.81; 0.14	.17		-	
Gender of parent × age at adoption	-0.80 (0.29)	-1.36; -0.23	.006		-			-	
<i>Rate of change</i>									
Time	0.06 (0.05)	-0.04; 0.17	.241	0.17 (0.03)	0.11; 0.23	<.001	-0.06 (0.03)	-0.12; -0.01	.022
Time × gender of parent	0.08 (0.04)	-0.01; 0.16	.076		-		0.05 (0.04)	-0.03; 0.12	.226
Time × age at adoption	0.15	0.04; 0.26	.008	-0.12 (0.05)	-0.22; -0.01	.027		-	
Time × gender of parent × age at adoption	-0.19	-0.34; -0.04	.014		-			-	
Time <sup>2</sup>	0.03	0.01; 0.05	.01		-			-	
<i>Variances</i>									
Level 1: Within-parent	0.14				0.28			0.23	
Level 2: Between-parent (intercept)	0.31				0.97			0.33	
Level 2: Between-parent (rate of change)	0.01				0.02			0.01	
<i>Model fit indices</i>									
Deviance	601.821				987.737			797.928	
LRT	50.99, <i>df</i> = 8, <i>p</i> < .001				59.07, <i>df</i> = 3, <i>p</i> < .001			29.15, <i>df</i> = 3, <i>p</i> < .001	

Note. SE = standard error, CI: 95% confidence interval, LRT = likelihood ratio test.

**Table 2.** Multilevel model of growth child socio-emotional problems

	Child socio-emotional problems		
	Estimate (SE)	CI	<i>p</i>
<i>Initial status</i>			
Intercept	-0.61 (0.021)	-1.01; -0.20	.003
Sex of child		-	
Age at adoption	0.89 (0.40)	0.21; 1.58	.011
Sex of child × age at adoption		-	
<i>Rate of change</i>			
Time	-0.22 (0.11)	-0.43; -0.01	.036
Time × sex of child		-	
Time × age at adoption	0.44 (0.19)	0.07; 0.81	.02
Time × sex of child × age at adoption		-	
Time <sup>2</sup>	-0.05 (0.02)	-0.09; -0.01	.014
Time <sup>2</sup> × age at adoption	0.09 (0.04)	0.01; 0.16	.022
<i>Variances</i>			
Level 1: Within-parent		0.36	
Level 2: Within-couple		0.09	
Level 3: Between-couple (initial status)		1.15	
Level 3: Between-couple (rate of change)		0.09	
<i>Model fit indices</i>			
Deviance		994.9	
LRT		67.44, <i>df</i> = 5, <i>p</i> < .001	

Note. Children's socio-emotional problems (measured using BITSEA problem score and CBCL Total Score), SE = standard error, CI: 95% confidence interval, LRT = likelihood ratio test.



**Figure 1.** Growth trajectories of PRF (PM, CM, and IC) and child socio-emotional (SE) problems in the first 4 years after international adoption.

Finally, we examined the relations between the PRF dimensions and children's socio-emotional problems, and investigated whether these relations could be accounted for by parenting stress, and more specifically by parental feelings of (a) incompetence, (b) role restriction, (c) marital dissatisfaction, and (d) social isolation. To this end, we tested a series of multilevel mediation models in which the direct and indirect relations between PRF and child socio-emotional outcomes were simultaneously analyzed over the five measurement times. As all variables in the mediation models were measured at the within-person level (Level 1), rather than at the within-couple or the between-couple level, this kind of model is often referred to as a 1-1-1 model (Tofighi et al., 2013). As we wanted to investigate both parent-to-child and child-to-parent effects, each time we ran two models: one with the PRF dimension as independent variable and child socio-emotional problems as dependent variable (parent-to-child), and the other with child socio-emotional problems as independent variable and PRF dimension as dependent variable (child-to-parent).

## Results

### Preliminary analyses

There were no significant differences between mothers and fathers on most of the variables, with two exceptions (see Table 1 in the online data supplement): at T1 mothers reported significantly lower levels of prementalizing modes (PM) and higher levels of interest and curiosity (IC) than fathers.

As expected, parents of late adoptees reported stronger feelings of marital dissatisfaction and role restriction, and higher levels of child socio-emotional problems, than parents of early adoptees.

### Developmental trajectories of PRF

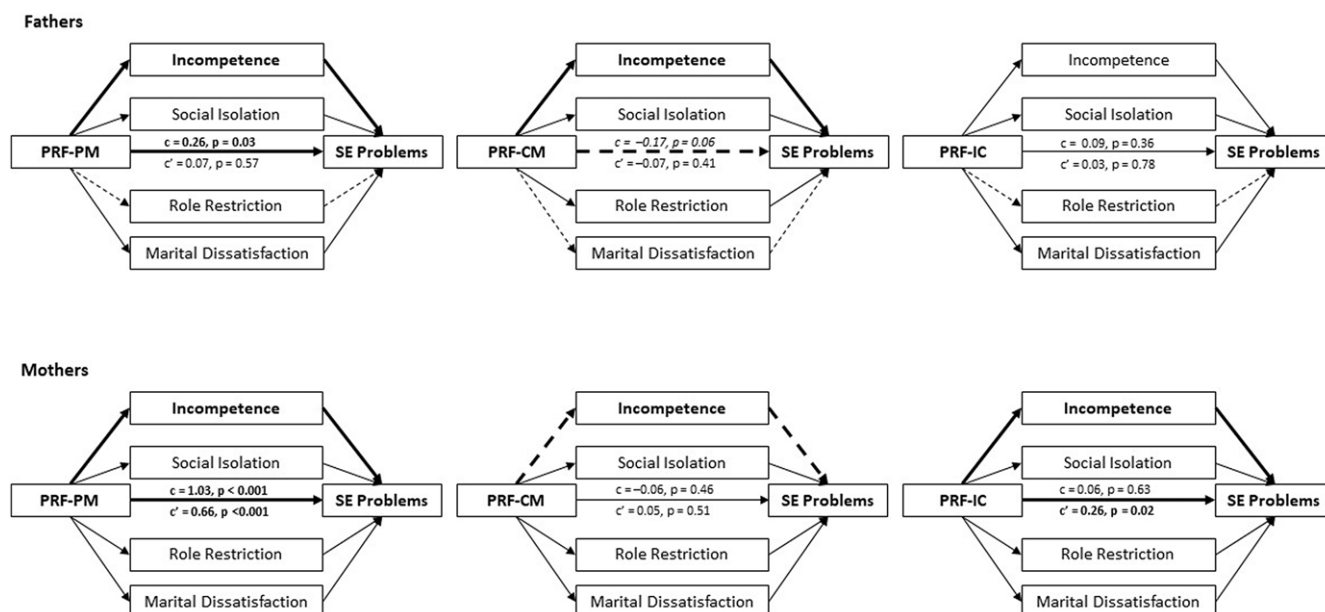
Results of unconditional means models are presented in Table 2 of the online data supplement. While intraclass correlations showed

significant variability at each level for certainty about mental states (CM) and all Parenting Stress Index subscales, for PM and IC no substantial variability was situated at the between-couple level (Level 3). Owing to the lack of variance in two of the three PRF dimensions, we decided not to include the between-couple level in further analyses. Although for child socio-emotional problems only 8% of the variance was due to within-couple variability, we decided to keep the within-couple level in all subsequent models to be able to compare the trajectories of child socio-emotional problems between mothers and fathers.

Next, we examined the growth models of each of the PRF dimensions and child socio-emotional problems (Table 1, Figure 1.1). First, a quadratic random intercepts and slopes model best fitted the change in PM over the 4-year follow-up. Regarding moderation, as expected, the rate of change in PM was significantly different as a function of child age at arrival in fathers; however, contrary to expectations, this was not the case for mothers. As shown in Figure 1, PM of fathers of late adoptees increased over time, while PM of fathers of early adoptees decreased. In contrast, PM of mothers remained stable over time, regardless of child age at arrival.

Second, the trajectory of CM followed a linear pattern from baseline to 4-year follow-up. As expected, the rate of change differed significantly as a function of child age at adoption in both mothers and fathers. As Figure 1.2 shows, CM increased less in parents of late adoptees than parents of early adoptees. However, there was no significant difference in the regression intercepts between early and late adoptees at the 4-year follow-up.

The trajectory of IC also followed a linear pattern. Results further showed that the regression intercept at 4 years post-adoption differed significantly between mothers and fathers, but that the rate of change did not. As can be seen in Figure 1.3, fathers exhibited lower levels of IC than mothers at T1 (see also Table 1 of the online data supplement), and this difference was maintained over time. Furthermore, the level of IC of both mothers and fathers decreased



**Figure 2.** Multilevel mediation models (parent to child). SE Problems: child socio-emotional problems, Bold line = indirect effect  $p < 0.05$ , dashed line = indirect effect  $p < 0.10$ .

slightly but significantly over the 4 years of follow-up. Contrary to expectations, we found no effect of child age at arrival on IC.

Finally, the growth model for child socio-emotional problems (see Table 2 and Figure 1.4) indicated that the development of child socio-emotional problems followed a quadratic trajectory. Furthermore, both the rate of change and the regression intercept at 4 years post-adoption differed as a function of child age at arrival. As expected, late adoptees showed a significant increase in socio-emotional problems over time and a higher level of socio-emotional problems at 4 years post-adoption, whereas early adoptees showed a small, but significant, decrease of socio-emotional problems over time, resulting in lower levels of socio-emotional problems at 4-year follow-up.

### Multilevel mediation models

Results of parent-to-child multilevel mediation models are presented in Figure 2 (see also Tables 15 and 16 in the online data supplement). First, in line with our hypotheses, PM was strongly related to child socio-emotional problems in both mothers and fathers, with the total effect ( $c$ ) indicating that this relation was substantially stronger in mothers ( $Z(c) = 8.02$ ) than in fathers ( $Z(c) = 2.24$ ). For both mothers and fathers, the strength of this relation was reduced substantially after controlling for the different dimensions of parenting stress. However, the direct relation between PM and child socio-emotional problems remained significant only in mothers ( $Z(c') = 4.74$ ), indicating partial mediation by parenting stress between PM and child socio-emotional problems in mothers, and full mediation in fathers. In both mothers and fathers, there was a significant indirect effect only via parental incompetence ( $B(ID) = 0.17, SE = 0.09, p = .043, Z = 2.02$ , and  $B(ID) = 0.11, SE = 0.05, p = 0.025, Z = 2.24$ , respectively), indicating that an increase in PM was related to increased feelings of incompetence, which in turn was associated with an increase in

child socio-emotional problems. The indirect paths via marital relationship, role restriction, and social isolation were not significant

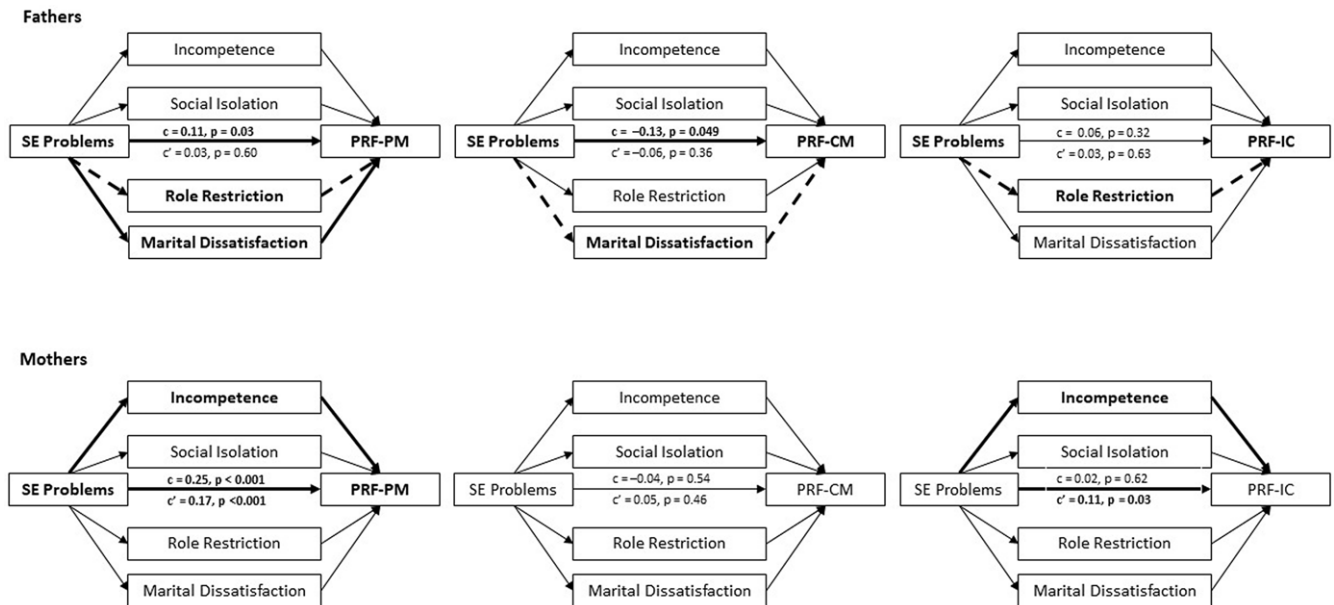
Second, contrary to our expectations, the relation between CM and child socio-emotional problems was not significant in mothers. In fathers, there was a trend for CM to be negatively related to socio-emotional problems, but this trend did not reach significance ( $p = .06$ ). However, there was a significant indirect relation between paternal feelings of incompetence ( $B(ID) = -0.07, SE = 0.04, p = .044, Z = -2.018$ ). In mothers, there was a similar trend for an indirect effect of CM on child socio-emotional problems ( $B(ID) = -0.06, SE = 0.03, p = .064, Z = -1.85$ ), but this trend did not reach significance.

Finally, and also contrary to expectations, there was no total effect ( $c$ ) between IC and child socio-emotional problems in mothers or fathers. After including the parenting stress subscales as mediators, there was a positive direct association ( $c'$ ) between maternal IC and child socio-emotional problems, and a negative indirect relation between maternal IC and child socio-emotional problems via parental incompetence ( $B(ID) = -0.12, SE = 0.024, p = .024, CI = -0.23, -0.02$ ). In fathers, there was no direct or indirect association between IC and child socio-emotional problems.

### Child-to-parent effects

As child socio-emotional problems may also influence the PRF of parents, we also analyzed reversed models in which we investigated whether child socio-emotional problems predicted PRF, with the parenting stress subscales as potential mediators (see Figure 3 and Tables 17 and 18 in the online data supplement). As expected, these child-to-parent models revealed the same total and direct effects between child socio-emotional problems and PM, CM,





**Figure 3.** Multilevel mediation models (child to parent). SE Problems: child socio-emotional problems, Bold line = indirect effect  $p < 0.05$ , dashed line = indirect effect  $p < 0.10$ .

and IC as the parent-to-child models. The only exception was that the relation between child socio-emotional problems and paternal CM ( $Z = -1.97$ ) reached significance ( $p = .049$ ), whereas this was not the case in the parent-to-child model. Hence, as expected, in fathers, more child socio-emotional problems were significantly associated with less certainty about what the child is thinking or feeling.

There were significant differences between the child-to-parent and parent-to-child models testing for mediation, particularly in the models concerning fathers. First, the association between child socio-emotional problems and parental PM was in mothers partially mediated by parental incompetence ( $B(ID1) = 0.05, SE = 0.02, Z = 2.12, p = .034$ ), while in fathers this relationship was fully mediated by marital relationship difficulties ( $B(ID3) = 0.05, SE = 0.02, Z = 2.44, p = .015$ ). For role restriction ( $B(ID3) = 0.03, SE = 0.02, Z = 1.76, p = .08$ ), the latter indirect effect showed only a trend toward significance. Second, by accounting for the different dimensions of parenting stress, the relation between child socio-emotional problems and paternal CM was reduced from  $B(c) = -0.13, SE = 0.07, Z = -1.97, p = .049$  to  $B(c') = -0.06, SE = 0.07, Z = -0.91, p = .36$ , indicating full mediation. The only indirect effect that reached a trend toward significance was again marital relationship difficulties,  $B(ID3) = -0.04, SE = 0.02, Z = -1.70, p = .09$ . For mothers, changes in child socio-emotional problems were not related to changes in maternal CM directly or indirectly through any of the subscales of parenting stress. Finally, the total effect ( $c$ ) did not show an association between child socio-emotional problems and IC for mothers or fathers. However, after including the parenting stress dimensions as mediators, a positive direct relation between child socio-emotional problems and maternal IC, and a negative indirect effect via incompetence, emerged. In fathers, there was no significant direct relation between child socio-emotional problems and IC, and the only mediator that reached marginal significance was role restriction ( $B(ID2) = 0.04, SE = 0.02, Z = 1.68, p = .093$ ).

## Discussion

In light of recent evidence on the importance of parental mentalizing for the socio-emotional development of children who have experienced early adversity (Huth-Bocks et al., 2014), the current study reported results on the developmental trajectories of PRF and child socio-emotional problems in the first 4 years after adoption, and the possible mediating role of parenting stress in the relation between PRF and child socio-emotional problems, in a sample of internationally adopted children and their adoptive parents. As previous studies have convincingly shown that children who were adopted at a later age are at increased risk for a variety of behavioral and psychological problems (Julian, 2013), we also examined the moderating impact of age at adoption throughout the different growth analyses. Overall, three sets of key findings emerged concerning (a) the development of socio-emotional problems in the first 4 years after adoption, (b) stability and change in PRF in the first years after adoption as a function of child features, and (c) the role of parenting stress in explaining relations between PRF and socio-emotional problems in adoptive children.

### *The development of socio-emotional problems in the first 4 years after adoption*

The first set of findings relates to the development of socio-emotional problems in adopted children in the first 4 years after adoption. Compared with population norms, the adopted children in this study presented average levels of socio-emotional problems in the first 4 years after adoption (Achenbach & Rescorla, 2007). These results are in line with the meta-analyses of Juffer and van IJzendoorn (2005) and Van IJzendoorn et al. (2007), who showed that most internationally adopted children develop fairly well and do not differ from children who were not adopted in terms of their levels of physical, social, and emotional outcomes.

Furthermore, as expected, children who were adopted at or after the age of 18 months had a significantly higher level of socio-

emotional problems, both at baseline and at 4-year follow-up, compared with children who were adopted before 18 months of age. These results are consistent with a broader “age-at-adoption” effect, that is, a step-like relationship between age at adoption and various developmental outcomes, whereby children adopted before a certain cutoff generally show similar levels of socio-emotional problems compared with children raised by their birth parents, but children adopted after the cutoff show elevated socio-emotional problems (Julian, 2013). Currently, there is no consensus in the literature with regard to the age at which this cutoff or “step” occurs, but it is generally assumed that it occurs at an earlier age for children who have experienced more severe levels of adversity. For example, in children adopted from Romanian orphanages, significant developmental differences were found in children adopted before or after the age of 6 months (Julian, 2013). In contrast, in children adopted from Russian institutions (where they had received appropriate physical but poor psychosocial care), no differences on the CBCL were found between children adopted before 9 months of age and children adopted between 9 and 17 months of age. Only children older than 18 months at adoption showed significantly higher levels on both internalizing and externalizing problems (Merz & McCall, 2010).

Moreover, the trajectory of socio-emotional problems differed as a function of age at adoption as well. While the level of socio-emotional problems of younger children tended to significantly decrease over time, that of the older children tended to increase significantly. These trajectories are consistent with previous findings that behavioral and internalizing problems worsened over 3 years post-adoption in children adopted at school age (Helder et al., 2016) and that lower levels of pre-adoptive risk were associated with an accelerated decrease in internalizing problems in the first 3 years after adoption (Paine et al., 2021). Based on evidence that age-at-adoption effects are more likely to be detected in adolescence than in childhood (Julian, 2013) and that the impact of pre-adoption adversity on socio-emotional problems does not substantially decrease from childhood to adulthood (van der Vegt et al., 2009), further follow-up research is necessary to investigate whether this increasing trend in socio-emotional problems continues or becomes more pronounced in later developmental phases.

### *Stability and change in PRF*

In line with our hypothesis that late adoptees possibly challenge parental mentalizing more than early adoptees, we found that age at adoption moderated the development of paternal prementalizing modes (PM) and certainty about mental states (CM) in both fathers and mothers. Although CM increased over time in mothers and fathers of both early and late adoptees, this increase was significantly less steep for parents of late adoptees compared with early adoptees. Results also showed that levels of PM decreased slightly over time for fathers of early adoptees, but there was a significant increase in PM for fathers of late adoptees. Contrary to our expectations, these age-at-adoption effects were not found in the development of maternal PM. In mothers, the levels of negative mentalizing and non-mentalizing remained low and stable over the first 4 years of adoption for both early and late adoptees. In addition, levels of parents’ interest and curiosity (IC) were moderated only by the gender of the parent and were not affected by the age of the child at arrival. At baseline (i.e., 6 months after adoption), mothers showed a significantly higher level of IC than fathers, and this difference was maintained over

the first years after adoption. Additionally, there was a slight but significant decrease in IC in both mothers and fathers over time.

These results indicate that the impact of age at adoption on PRF remains relatively limited in this sample. In the group of late adoptees, adoptive parents remained very interested in what their child is thinking and feeling, and mothers in particular typically refrained from making non-mentalizing, negative attributions regarding their child’s mind. We hypothesize that these consistently high levels of PRF are at least in part attributable to the extensive screening process adoptive parents must go through before being able to adopt in Flanders, in which specific attention is paid to the reflective and emotion-regulating capacities of prospective adoptive parents. Previous studies by Palacios et al. (2009) and León et al. (2018) similarly suggest that the preparation and training process that Spanish adoptive parents must undergo may explain why adoptive mothers show more sophisticated and positive levels of PRF compared with non-adoptive mothers.

Nevertheless, there was also evidence for child-to-parent effects, whereby children seem to influence the development of mentalizing dimensions in their parents over time. Specifically, late adoptees seem to challenge their parents’ mentalizing capacities, as is evidenced by significantly smaller increases in levels of CM over time in both fathers and mothers of late adoptees compared with early adoptees. Late adoptees also seem to challenge the mentalizing capacities of fathers more than early adoptees, as evidenced by a significant increase of PM in fathers in the late adoptees group. Further research is needed to better understand these age-at-adoption effects. It is possible that these evocative effects reflect the consequences of longer exposure to early adversity, as expressed in higher levels of emotional problems, in late adoptees.

Exploratory post hoc analyses in the current study showed that the increase in PM occurred specifically in fathers of the late adoptees who demonstrated the highest levels of socio-emotional problems, suggesting that more “difficult” child behavior may impede paternal mentalizing. Evidence of children’s behavioral difficulties challenging parental mentalizing was previously also found in a study by Fishburn et al. (2017), who compared the levels of mind-mindedness, which can be considered a proxy of PRF, of adoptive and biological parents. Whereas adoptive parents appeared to have lower levels of mind-mindedness than biological parents in that study, further analyses showed that these differences stemmed from the fact that adopted children demonstrated more behavioral difficulties than the non-adopted children. After accounting for differences in behavioral problems, the difference in mind-mindedness between adoptive and biological parents was no longer significant. Moreover, studies focusing on adoptive mothers’ representations of their adopted children have also shown that older age at adoption was associated with more maternal disappointment and hostility and perceptions of the child as less affectionate, more aggressive and rejecting (Steele et al., 2007; Steele, 2006), and an overall less positive perception of the child (León et al., 2018).

### *The role of parenting stress*

A final set of important findings concerns the relation between PRF and adopted children’s socio-emotional problems, and the possible mediating role of parenting stress. Of the three PRF dimensions, PM was most strongly related to children’s socio-emotional problems. As expected, in both mothers and fathers, a tendency for hypomentalizing and attributing negative mental

states to the child was strongly associated with more pronounced child socio-emotional problems. Analyses further demonstrated that feelings of parental inadequacy play an important role in this relation, as, for mothers, feelings of parental incompetence were the only significant mediator in both the parent-to-child and child-to-parent models. In fathers, two potential mechanisms seemed to be at play. Feelings of incompetence fully accounted for the parent-to-child relation between PM and the children's socio-emotional problems, but marital dissatisfaction was the only significant mediating mechanism in the child-to-parent model. Finally, whereas parenting stress in fathers fully explained the relationship between PM and child socio-emotional problems, this was not the case in mothers. Even when we accounted for parenting stress, there remained a very strong relation between maternal PM and child socio-emotional problems.

Next, contrary to our expectations, there was no association between maternal CM and child socio-emotional problems. However, higher levels of paternal CM were significantly associated with lower levels of child socio-emotional problems. Once again, paternal feelings of incompetence and of marital dissatisfaction appeared to be important mediating mechanisms: paternal feelings of incompetence fully explained the parent-to-child relation, whereas marital dissatisfaction explained the child-to-parent relation.

Finally, the relation between parental IC, parenting stress, and child socio-emotional problems also differed between mothers and fathers. In fathers, there was no relation between IC and child socio-emotional problems. At first sight this also seemed to be the case for mothers, but subsequent analyses showed that there were opposite direct and indirect relations between maternal IC and child socio-emotional problems. Importantly, when in mediation analyses a direct and a mediated effect of an independent variable on a dependent variable have opposite signs, this may point to a suppression effect (MacKinnon et al., 2000), meaning that the initial lack of an association between maternal IC and child socio-emotional problems was due to the fact that the positive direct effect ( $Z = 2.29$ ) and negative indirect effect ( $Z = -2.26$ ) canceled each other out. These contrasting findings suggest that maternal IC is related to both more child socio-emotional problems and to less child socio-emotional problems, as more IC was also associated with lower feelings of incompetence, which led to less pronounced child socio-emotional problems.

In summary, these results showed that decreases in PRF over time (expressed in more PM, more IC, and less CM) are associated with more pronounced child socio-emotional problems. The results regarding PM and CM were in line with our expectations and previous evidence that has demonstrated how more PM is associated with more hostility and less sensitivity toward the child, and that less CM is related to less parental competence and efficacy (De Roo et al., 2019). However, the positive direct relation between IC and child socio-emotional problems was unexpected. A first possible explanation is that mothers in this study had very high levels of IC ( $M = 5.90$ ,  $SD = 0.50$ ), and both theoretical accounts and research findings suggest that such very high IC scores may reflect intrusiveness rather than genuine adaptive interest in the inner world of the child. Prior studies have shown that high levels of IC are related to insecure child attachment and anxious-resistant attachment more specifically (Luyten, Mayes, et al., 2017).

However, as Luyten, Nijssens, et al. (2017, p. 177) previously warned against "a simplistic and linear understanding of the relationship between PRF and child development", it may be that child socio-emotional problems drive these relations, as more

behavioral difficulties challenge the adoptive parents' capacity for PRF. Indeed, more dysregulated and difficult interactions with the child can elicit a more frequent switch to a more automatic, emotional, non-mentalizing stance, as reflected in the increase in PM in fathers. Furthermore, results of this study suggest that in such circumstances, fathers are more likely to "give up", whereas mothers appear to persist in trying to make sense of their child's mind, which may be experienced as intrusive and/or overcontrolling by the child. The latter is the second possible explanation for the unexpected positive relation between IC and child socio-emotional problems.

Moreover, analyses of the indirect relations demonstrate that children's behavioral difficulties have a differential impact on their mothers and fathers. Indeed, the child-to-parent models indicate that, especially for fathers, a stress spillover effect, or a transfer of negative affect from one relationship directly to another within a family system (Nelson et al., 2009) seems to take place, in which negative affect or frustrations due to the child's socio-emotional problems seem to transfer into the marital relationship. While fathers thus seem to externalize the negative feelings elicited by difficult interactions with the child, mothers seem to internalize these feelings. Indeed, in mothers, a more self-critical tendency becomes apparent, in which more difficult behavior of the child leads to stronger feelings of maternal incompetence. This is in line with a previous study by Priel et al. (2000), who found that while adoptive mothers were highly reflective and positive about their children, they were less able to reflect about themselves and their own competences as mothers, with mothers of late adoptees scoring even lower on the latter than mothers of early adoptees. By contrast, no difference between self and child mentalizing was found for biological parents.

### *Clinical implications*

This study has important clinical implications. While support for adoptive parents often focuses on the pre-adoption process, in particular the preparation and screening of prospective adoptive parents, there is much less focus on continued care and support for adoptive parents after the arrival of the child. However, this study shows that difficult dynamics can arise between adopted children's behavioral difficulties, breakdowns in parental mentalizing, and parents' feelings about their own incompetence and marital dissatisfaction. It is clear that when tensions rise, adoptive families might benefit from professional help that supports parents to understand the mental states underlying the difficult and unpredictable behavior of their child and to endure the relational consequences of early adversity, while also communicating their own feelings, vulnerabilities, and needs to their partner. Specific programs have been developed to scaffold the mentalizing capacity of adoptive (and foster) parents, such as the psychoeducational "Family Minds" program (Adkins et al., 2018, 2022), the "Adopting Minds" therapy program for families in a post-adoption support service (Midgley et al., 2018), and a more extensive treatment guideline for adopted children who have experienced complex trauma and their parents (Vliegen et al., *in press*). We argue that the implementation of such programs in post-adoption support could be of great value for the well-being of both adoptive parents and children.

### *Limitations and strengths*

An important limitation of the current study is the sample size. Although in the current work we selected multilevel modeling

approaches that have been shown to be quite robust in relatively small samples with repeated measures, the study is underpowered to run more complex models that would allow us to effectively disentangle the bidirectional child and parent effects over time, for instance, through random intercept cross-lagged panel modeling.

A second limitation is that we were not able to investigate the trajectories of internalizing and externalizing problems separately over time, due to methodological complexities (i.e., the aggregation of two age-sensitive measures of child socio-emotional problems, one of which does not distinguish internalizing and externalizing problems). This means that we could not make any statements about possible deviations from the normative development of both types of problems we would expect in this preschool-to-latency phase.

Additionally, while the current study focuses on the trajectory of socio-emotional problems and PRF throughout the preschool years, continued research concerning these processes throughout the latency period and in the run-up to puberty would provide extremely valuable information, as in these periods of development external social, emotional, and academic expectations increase, and identity formation and the impact of hormonal changes will play an increasingly important role.

Finally, PRF was assessed in this study using a brief self-report measure, that is, the PRFQ. Future research is therefore needed to replicate these findings using more narrative-based measures of PRF, such as the Reflective Functioning Scale (Fonagy et al., 1998), which can be scored on semi-structured interviews about the parent-child relationship, such as the Parent Development Interview (Slade, 2005) or the Working Model of the Child Interview (Schechter et al., 2005).

This study also has a number of strengths. This is the first paper to report on the evolution of socio-emotional problems of internationally adopted children in Belgium using high-quality, age-sensitive measures. Additionally, while previous research has provided evidence on the reliability, validity, and predictive ability of the PRFQ, this is the first to study the evolution of the three PRF dimensions over time. This study shows that it is important to investigate not just the overall capacity for PRF because the investigation of the different dimensions of PRF provides complementary insight, consistent with the view that PRF is a multidimensional capacity.

Moreover, whereas developmental research has often focused on the mother-child relationship, the current study demonstrates that relations and mediating mechanisms differ between mothers and fathers. Therefore, these findings once again demonstrate the importance of including both mothers and fathers in developmental research, and of studying the differential impact of maternal and paternal reflective functioning on child development (Buttitta et al., 2019).

A final strength of this study is its target group, as families with internationally adopted children provide a unique opportunity to study the impact of parenting abilities on child development without confounding genetic overlap (Devine & Hughes, 2018).

**Supplementary material.** The supplementary material for this article can be found at <https://doi.org/10.1017/S0954579422001171>.

**Acknowledgements.** We would like to express our gratitude to the adoptive families and research assistants who have been part of the Leuven Adoption Study for more than 10 years. We also thank Nele Flamant for her help with the multilevel mediation analyses.

**Funding statement.** The Leuven Adoption Study is funded in part by the Flemish agency Kind en Gezin (<https://www.kindengezin.be/>) with an annual grant of €7,000 rewarded to NV from 2009 to 2021. The funders had no role in the study design, data collection and analysis, decision to publish, or preparation of the manuscript. The study received no other external funding.

**Conflicts of interest.** None.

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