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PARENTAL AFFECTIVE PERSONALITY AND CHILD SOCIO-EMOTIONAL ADJUSTMENT

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LIST OF ABBREVIATIONS AND ACRONYMS

ANPS Affective Neuroscience Personality Subscales

BPI Berkeley Puppet Interview

EFER Emotional facial expression recognition

EMIGARDE Étude de Milieu de Garde (translation: Study on Child Care Services)

RT Reaction time

RÉSUMÉ

L'adaptation socio-émotionnelle de l'enfant, un concept incluant diverses composantes, est importante pour le bien-être. Deux aspects importants et complémentaires de l'adaptation socio-émotionnelle incluent les comportements intériorisés et extériorisés de l'enfant, ainsi que la capacité à traiter et reconnaître les expressions faciales émotionnelles. La présence de difficultés avec l'une ou l'autre de ces composantes a été associée à des conséquences néfastes telles que des relations plus faibles, une performance académique moins élevée et un risque plus élevé de psychopathologie à l'adolescence. Étant donné l'importance d'une saine adaptation socio-émotionnelle des enfants, plusieurs recherches ont examiné les facteurs associés à son développement. Le rôle des parents est l'un des principaux facteurs examinés puisqu'ils représentent une source primaire de socialisation de la petite enfance jusqu'au milieu de l'enfance. Spécifiquement, certaines caractéristiques parentales, telles que la santé mentale, les pratiques parentales et la personnalité ont été étudiées en relation avec l'adaptation socio-émotionnelle de l'enfant. Cependant, l'association entre l'émotivité parentale (par exemple, l'intensité et la fréquence d'émotions) et l'adaptation socio-émotionnelle de l'enfant n'a pas été entièrement élucidée. En outre, les études récentes se sont centrées sur la personnalité affective –une forme plus stable et constante d'émotivité– une série de traits basés sur six systèmes neuronaux retrouvés dans toutes les cultures: SOIN, le SYSTÈME LUDIQUE, EXPLORATION, COLÈRE, PEUR, et TRISTESSE. Bien que de nombreuses études aient porté sur la personnalité affective, très peu ont examiné les associations entre la personnalité affective parentale et l'adaptation socio-émotionnelle de l'enfant. De plus, la littérature actuelle comporte certaines limites, puisque les études excluent souvent les pères et présentent des problèmes concernant la variance de méthodes partagées dû au manque fréquent d'informateurs multiples. L'objectif de la présente thèse était d'évaluer les liens potentiels entre la personnalité affective parentale, mesurée séparément pour les mères et les pères en utilisant l'échelle neuro-affective de personnalité et les difficultés comportementales auto-rapportées des enfants (article 1) ainsi que la reconnaissance des expressions faciales émotionnelles (article 2) en considérant le rôle modérateur du sexe de l'enfant. Les deux études se sont déroulées dans le contexte de l'étude longitudinale communautaire qui incluait 326 enfants de 7-8 ans et leurs parents.

Les résultats du premier article indiquaient que des scores plus élevés sur la sous-échelle de COLÈRE chez les mères étaient associés à des niveaux plus élevés de comportements extériorisés chez les garçons. Les mères ayant des scores d'EXPLORATION plus élevés avaient des garçons avec de plus faibles scores de comportements extériorisés, alors que les mères ayant des scores du SYSTÈME LUDIQUE plus élevés avaient des garçons avec de plus faibles scores de comportements intériorisés. Les pères ayant des scores de TRISTESSE élevés avaient des enfants avec des scores plus élevés de comportements intériorisés, alors que les pères ayant des scores de PEUR plus élevés avaient des enfants avec de plus faibles scores de comportements intériorisés.

Dans le deuxième article, les mères et les pères ont été classés selon des profils de personnalité affective latents (par exemple, faibles émotions négatives, balancé ou émotivité élevée). De plus, les habiletés de l'enfant à traiter les émotions primaires de joie, de tristesse, de colère et de peur ont été mesurées avec une tâche de reconnaissance des expressions faciales émotionnelles explicite dans laquelle les enfants associaient l'émotion d'un individu cible, une tâche implicite dans laquelle les enfants devaient ignorer le stimulus facial émotif et apparier l'identité de l'individu ainsi qu'une tâche de sensibilité évaluant l'intensité d'expression la plus faible requise pour identifier avec précision l'émotion présentée. Les enfants de mères ayant un profil de faibles émotions négatives reconnaissaient la peur à une intensité plus élevée comparé aux enfants de mères des autres profils. Les enfants de pères ayant un profil d'émotivité élevée étaient plus lents à reconnaître la colère à une faible intensité comparé aux enfants de pères du profil balancé. Les interactions profil-par-sexe ont révélé que les garçons de pères ayant un profil d'émotivité élevée, comparé aux autres profils affectifs, reconnaissaient implicitement la joie plus lentement, alors que leurs homologues féminines reconnaissaient implicitement la joie plus rapidement.

Cette thèse s'ajoute à la littérature sur la personnalité affective parentale et l'adaptation socio-émotionnelle de l'enfant. La pertinence clinique et les avantages potentiels sont présentés, ainsi que des pistes de recherches futures.

Mots clés : personnalité affective parentale; adaptation socio-émotionnelle; intériorisé; extériorisé; reconnaissance d'expressions faciales émotionnelles; enfance

ABSTRACT

Child socio-emotional adjustment is very important to overall well-being. Socio-emotional adjustment is an umbrella term that includes various components. Two important and complementary aspects of socio-emotional adjustment include child internalising and externalising behaviours, as well as the ability to process and recognise emotional facial expressions. Difficulties with either of these components have been associated with negative outcomes such as depression, poorer social relationships, lower academic performance and a greater risk for psychopathology in adolescence and adulthood. Given the importance of healthy child socio-emotional adjustment, a large body of research has focused on examining factors that are associated with its development. One major focus has been on the role of parents, since they are a primary source of socialisation from infancy through middle childhood. In particular, key parent characteristics such as mental health, parenting practices and personality have been examined in relation to child socio-emotional adjustment. However, the association between relatively stable parent emotionality (i.e., the consistent experience, including intensity and frequency, of emotions such as sadness or fear) and child socioemotional adjustment has not been fully elucidated. Specifically, recent research has focused on affective personality, a neurobiologically-based series of consistent traits of emotionality including PLAY, CARE, SEEKING, ANGER, FEAR, and SADNESS that have been found across cultures and in all mammals. Although affective personality has been well researched over the past 20 years, very few studies have examined associations between parental affective personality and child socio-emotional adjustment. In addition, the current literature has some limitations, given that many studies often excluded fathers, may have issues pertaining to shared methods variance given the frequent lack of multiple informants, and tends to rely on theoretically, rather than biologically-based measures of parent personality. Thus, the goal of the current thesis was to assess potential links between parent affective personality, as measured separately for mothers and fathers utilising the Affective Neuroscience Personality Subscales (ANPS), and self-reported child behavioural difficulties (article 1) as well as emotional facial expression recognition (EFER; article 2) in middle childhood, while considering the moderating role of child sex. Both studies took place in the context of a community-based longitudinal study, which included 326 7- to 8-year-olds and their parents.

In the first article, findings indicated that higher scores on the ANPS subscale of ANGER among mothers were associated with higher levels of externalising scores in boys. Mothers with higher scores on SEEKING had sons with lower scores of externalising behaviours, while mothers with higher PLAY scores had sons with lower scores of internalising behaviours. Fathers with higher SADNESS scores had children with greater internalising scores, while fathers with greater FEAR traits had children with lower scores of internalising behaviours.

In the second article, mothers and fathers were classified into latent affective personality profiles, (i.e., low negative emotions, balanced or high emotional). In addition, child emotion processing abilities for the primary emotions of happiness, sadness, anger and fear were assessed with an explicit emotion-matching task in which children matched the emotion of a target individual, an implicit task whereby children ignored the emotive facial stimulus and matched identity, and a sensitivity task which assessed the lowest expression intensity required to accurately identify the target emotion. Children of mothers in the low negative emotions profile recognised fear at a higher intensity compared to children of mothers with balanced and high emotional profiles. Children of fathers in the high emotional profile were slower to recognise anger at a low intensity compared to those of fathers in the balanced profile. Profile-by-sex interactions revealed that boys of fathers in the high emotional profile, compared to the low negative emotions and high emotional affective profiles, had slower implicit recognition of happiness, while their female counterparts had faster implicit recognition of happiness.

This thesis adds to the literature on parent affective personality and child socio-emotional adjustment. Avenues for future research as well as the potential clinical relevance and benefits are presented.

Keywords: parent affective personality; socio-emotional adjustment; internalising; externalising; emotional facial expression recognition; middle childhood

INTRODUCTION

Socio-emotional adjustment in childhood is a complex, integrated process that plays an important role in the development of emotion regulation, adaptive behaviours and successful social interactions. Much research has focused on socio-emotional adjustment and its essential role in the global functioning of children (e.g., social and academic adjustment; Morris et al., 2007; Sroufe, 1997). Children's socio-emotional adjustment has been extensively explored in the literature, including the assessment of factors that influence its development (e.g., external factors such as the role of parents and the home environment; Denham & Grout, 1993; Sroufe, 1997). One such factor, poorer parent psychological health (e.g., depression and other psychological difficulties), has been consistently linked with child socio-emotional adjustment (Caplan et al., 1989; Kvalevaag et al., 2015). However, the association between stable patterns in parents' emotionality, namely parent affective personality, and child socio-emotional adjustment has not been fully elucidated. Thus, this thesis aimed to study the relationship between parent affective personality and child socio-emotional adjustment in a community sample of families. Specifically, this thesis had two main aims that constituted two scientific articles: (1) to examine the links between parent (mothers and fathers separately) affective personality and common child self-reported behaviour difficulties, generally classified as either internalising behaviours (i.e., sadness, anxiety and withdrawal), or externalising behaviours (i.e., aggression, oppositional behaviours and impulsivity), and (2) to explore the associations between subgroups of parent affective personality and children's emotional facial expression recognition (EFER), which is the ability to recognise and identify emotions expressed on others' faces (Herba & Phillips, 2004). This thesis comprises four chapters. The first chapter presents

the conceptual framework that underlies this thesis and is divided into the following sections: 1) introduction of the concept of affective personality, 2) children's socio-emotional adjustment, 3) the theoretical model that provides a framework for the processes that are associated with child emotion socialisation, which is important in socio-emotional adjustment, and finally, key predictors or mediators of children's socio-emotional adjustment including 4) parent and child characteristics. The chapter ends with a description of the research objectives and hypotheses and an overview of the methodology of the 'Étude de Milieu de Garde' (EMIGARDE) study (translation: Study on Child Care Services). The subsequent two chapters present the scientific articles (both submitted for publication). Article 1 deals with the outcome of self-reported internalising and externalising behaviour; Article 2 focuses on child EFER. These articles include a review of the literature, methodology, statistical analyses and results obtained. Finally, the fourth and last chapter presents a general discussion and synthesis of the results of the two articles, as well as overall strengths, limitations and avenues for future research and clinical implications.

1.1 Affective personality

Traditional conceptualisations of personality (i.e., "a system of parts that is organised, develops, and is expressed in a person's actions"; Mayer, 2017, p.1), have been theoretically-based and created from lexical perspectives (Davis & Panksepp, 2011; Knežević et al., 2020). Specifically, these lexical perspectives of personality employ descriptive adjectives and sentences to categorise dimensions of personality (Costa & McCrae, 1992; Digman, 1990; Goldberg, 1990; Knežević et al., 2020; Lee & Ashton, 2014). Although measures based on a lexical perspective of personality such as the Five Factor Model (McCrae & John, 1992) or the six-factor HEXACO Personality

Inventory (Međedović et al., 2019) are widely used and well-accepted (Davis & Panksepp, 2011; Knežević et al., 2020), the number of basic personality factors are difficult to classify and may vary across cultures (Saucier, 2008, 2009). In pursuit of a more unified classification of personality characteristics over the past 20 years, a biologically-based perspective has been proposed to better understand the individual as a whole, highlighting the role of the brain in personality (DeYoung, 2010; Knežević et al., 2020). The Affective Neuroscience Theory, a biologically-based perspective of personality, was thus proposed on the basis of basic emotional action systems (Knežević et al., 2020; Montag & Panksepp, 2011; Panksepp, 2005). This theory conceptualised personality as pertaining to an individual's unique emotional profile, namely their tendency to experience emotions in a relatively stable manner despite temporary, situational fluctuations that quickly return to baseline affective levels once the situation concludes (Diener & Emmons, 1984; Lyubomirsky et al., 2005; Panksepp, 2005; Zanon & Hutz, 2013). For example, an individual who typically experiences higher levels of positive affect and lower levels of negative affect may respond with negative emotions (e.g., frustration, distress) to a specific environmental trigger such as getting into an argument, but will eventually return to their baseline levels of affect. These relatively stable expressions of emotion despite situational variability have been termed 'affective personality' (de Haan et al., 2004; Norlander et al., 2002; Panksepp, 2005; Zanon & Hutz, 2013). Biologically-informed affective personality has been defined as "primary-process mammalian brain systems that have components based on the six primary emotions found across humans and animals" (Davis & Panksepp, 2011, p. 1956; Panksepp, 1998). Positive emotional systems include CARE (i.e., emotional and nurturing urges to care for children and others, which in turn increases offspring survival), PLAY (i.e., system for social competence and bonding and regulation of emotions; laughter and generally having fun with others) and SEEKING (i.e., a motivation-emotional system to achieve goals, anticipate new positive experiences, and explore the environment). Negative emotional systems include ANGER (i.e., rage system that encourages resource guarding including defensive protection of self and

loved-ones against threat; rapid irritation and low frustration tolerance), SADNESS (i.e., system to counteract isolation and separation from loved ones through social separation distress and loneliness), and FEAR (i.e., system to manage threats by eliciting defensive mechanisms such as the freeze/flight response; anxiety, worry, tension; Davis & Panksepp, 2011; Montag, Elhai, & Davis, 2021). Note that these primary affective systems will be capitalised throughout this thesis in order to distinguish them from emotion terms commonly employed in the literature (Montag et al., 2021).

The biologically-based perspective of affective personality (Panksepp, 2005) has previously been compared to lexically-based personality measures, such as the Five Factor Model (Davis & Panksepp, 2011; Davis et al., 2003; Knežević et al., 2020; Montag et al., 2019). Strong associations were found between extraversion and PLAY, while agreeableness was positively correlated with CARE and inversely related to ANGER. In addition, openness to experience was linked to SEEKING. Finally, neuroticism was inversely correlated with ANGER, FEAR, and SADNESS, while conscientiousness was inversely correlated more weakly with the negative emotion systems (Davis et al., 2003). However, despite their correlation, the six dimensions of the biologically-based affective personality have not been found to map directly, on a one-to-one basis, onto personality traits derived from lexically-based measures (see Knežević et al., 2020). This suggests the relevance of utilising a biologically-based conceptualisation of personality in future research.

Furthermore, the influence of the six primary affective personality systems is pervasive and impacts the perceptions, thoughts, actions and reactions of individuals (Panksepp,

1998). In fact, certain affective systems have been linked with emotional difficulties, such as depression and anxiety (Montag, Elhai, & Davis, 2021; Montag et al., 2017; Davis & Panksepp, 2011; Savitz et al., 2008). In addition, traditional analyses of personality have relied on variable-centered approaches whereby the focus is on the correlation between affective personality traits and other variables of interest, such as emotional difficulties, in a given population. For example, higher scores on SADNESS have been associated with depressive tendencies (Montag et al., 2017), meaning that – on average in the population as a whole – individuals with high SADNESS are more likely to show depressive tendencies. On the other hand, a person-centered conceptualisation of affective personality focuses on identifying subgroups within the population that are characterised by similar patterns of affective personality traits (Bauer & Curran, 2004; Pyburn, 2015). For example, individuals with elevated ANGER and SADNESS levels along with lower SEEKING and PLAY are at greater risk of depressive symptoms and emotional distress compared to those with different affective patterns (Davis & Panksepp, 2011; Savitz et al., 2008). Thus, the use of both variable-centred and person-centered approaches in operationalising affective personality offer "alternative views of the same reality" (Morin et al., 2017, p. 400). This thesis thus aimed to examine the link between parental biologically-based affective personality, utilising both variable- (article 1) and person-centered (article 2) approaches, and child socio-emotional adjustment.

1.2 Child socio-emotional adjustment

Child socio-emotional adjustment involves the gradual acquisition of social, emotional, cognitive and behavioural competencies throughout childhood (Denham & Grout,

1993). A healthy socio-emotional adjustment includes the ability to identify, understand, and regulate one's own emotions and behaviours as well as those of others in order to establish and maintain social relationships (Benson & Haith, 2010). Socio-emotional adjustment in childhood has been linked to social and academic success, healthy peer relationships and general well-being in children (Denham, 2003; McLeod & Kaiser, 2004; Morris et al., 2007; Reinherz et al., 1995; Shonkoff et al., 2000). While socio-emotional adjustment is a broadband concept that comprises several components, this thesis will focus on two specific aspects of child socio-emotional adjustment: (1) self-reported behaviour difficulties and (2) emotional facial expression recognition (EFER) abilities given their value to address the research questions and the ability to measure these concepts directly with the child.

1.2.1 Child behaviour difficulties

Child behaviour difficulties, a key sub-component of socio-emotional adjustment, are generally classified as either internalising or externalising.

Internalising behaviours comprise anxiety, depression, somatic complaints, social withdrawal, and feelings of loneliness and worthlessness (Kovacs & Devlin, 1998; Liu, Chen, & Lewis, 2011; Gutman & Codiroli McMaster, 2020; Rosenfield et al., 2005; Zdebik et al., 2019). However, it is important to distinguish between internalising behaviours and diagnosed internalising disorders (Merikangas & Avenevoli, 2002). When internalising behaviours persist or become elevated in terms of the number of symptoms and/or their intensity, they may then be diagnosed as an internalising

disorder such as major depression or generalised anxiety disorder (Hughes & Gullone, 2008; Merikangas & Avenevoli, 2002).

Externalising behaviours (i.e., disinhibition, irritability, aggression, oppositionality, hyperactivity, rule breaking and interpersonal difficulties; Achenbach & Edelbrock, 1978) can co-occur with or present independently from internalising behaviours (Chase & Eyberg, 2008; Lilienfeld, 2003; Reef, Diamantopoulou, van Meurs, Verhulst, & van der Ende, 2011; Wang, Fu, & Wang, 2021). Externalising behaviours are directed towards others rather than the self (Hinshaw, 1992). When these behaviours cluster together in terms of high frequency and intensity, they may become diagnosable as a disruptive behaviour disorder such as oppositional defiant disorder, conduct disorder or attention deficit hyperactivity disorder (Cicchetti & Toth, 1991; Reef et al., 2011; Wang, Fu, & Wang, 2021).

For this thesis, please note that the first article focused on child behaviour difficulties rather than examining internalising or externalising disorders, given the use of a community sample.

The developmental pathways of internalising and externalising behaviour difficulties in young children tend to be fairly stable over time (Hill et al., 2006; Kerr et al., 2007; Patterson et al., 2005; Pihlakoski et al., 2006; Reef et al., 2011; Wang, Fu, & Wang, 2021).

Infants who presented with internalising behaviours (e.g., sadness, anxiety, and withdrawal) during their first year of life continue to experience such behaviours up to age five years (Briggs-Gowan et al., 2000). In addition, it has been found that during the preschool years, those who present with internalising behaviours were three times more likely to experience internalising disorders over a decade later (Anselmi et al., 2008; Gutman & Codiroli McMaster, 2020; Zdebik et al., 2019). In middle childhood, those presenting with internalising disorders (i.e., simple phobia, separation anxiety, generalised anxiety disorder, major depression or dysthymia) continued to exhibit symptoms of these disorders for a year following their initial assessment (Briggs-Gowan et al., 2000). However, findings from previous research have indicated that the patterns of internalising behaviours from childhood to adolescence vary, with some studies reporting decreased or stable patterns as children enter adolescence (Gazelle & Ladd, 2003; Keiley, Lofthouse, Bates, Dodge, & Pettit, 2003), while others have found slight increases in internalising behaviours (Achenbach, Howell, Quay, Conners, & Bates, 1991; Bongers, Koot, van der Ende, & Verhulst, 2003; Colder, Mott, & Berman, 2002; Costello et al., 2003; Gilliom & Shaw, 2004; Gutman & Codiroli McMaster, 2020; Twenge & Nolen-Hoeksema, 2002; Zdebik et al., 2019).

In terms of the consequences of internalising behaviours, it is also of note that difficulties in middle childhood are associated with social rejection and academic struggles (Guttmannova, Szanyi, & Cali, 2007). During the adolescent period, internalising behaviours are associated with substance use, an increased risk of school dropout, and major depression (Green, Zebrak, Fothergill, Robertson, & Ensminger, 2012; King et al., 2004; McLeod & Kaiser, 2004; Reinherz et al., 1993). Furthermore, research has revealed that child internalising behaviours such as anxiety can lead to other difficulties down the line (e.g., social isolation and perceptions of social

incompetence; Hymel, Rubin, Rowden, & LeMare, 1990; Huberty, 2012; Zahn–Waxler, Klimes–Dougan, & Slattery, 2000; Gutman & Codiroli McMaster, 2020).

With respect to sex differences in child internalising behaviours, findings have been mixed. Several studies revealed a slight elevation of anxiety, depression and somatic symptoms (e.g., stomach ache) in females compared to males throughout childhood and adolescence (Angold, Erkanli, Silberg, Eaves, & Costello, 2002; Keiley et al., 2003). However, others have found similar rates of internalising behaviour difficulties in prepubertal boys and girls, with an increase in internalising behaviours for girls compared to boys occurring during adolescence and adulthood (Hankin et al., 2008; Nolen-Hoeksema & Hilt, 2009; Twenge & Nolen-Hoeksema, 2002; Wu & Lee, 2020).

In terms of the developmental path of externalising behaviours, results have also been mixed (Reef et al., 2011). Infants who demonstrated aggression were more likely to exhibit disruptive behaviour in the preschool years (Shaw, Keenan, & Vondra, 1994). In addition, while some studies have revealed that externalising behaviours decrease during the transition from childhood to adolescence (Bongers, Koot, van der Ende, & Verhulst, 2003; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003), others have found increases in behaviour difficulties well into adolescence and adulthood (Farrington, 1997; Liu, 2004; Liu, Chen, & Lewis, 2011; Mannuzza, Klein, Konig, & Giampino, 1989; Reef et al., 2011). Difficulties include substance abuse, academic failure and antisocial traits (Breslau et al., 2009; Chan, Dennis, & Funk, 2008; Krueger, Markon, Patrick, Benning, & Kramer, 2007). Furthermore, it has been found that childhood externalising behaviour difficulties are associated with decreased adult

psychological well-being and family support, as well as poor intimate and parent-child relationship quality (Knoester, 2003).

In terms of sex differences for externalising behaviour, boys typically demonstrate greater frequency and intensity of difficulties (e.g., hyperactivity, aggression, anger, irritability, temper tantrums) compared to their female counterparts (Broidy et al., 2003; Mayes, Castagna & Waschbusch, 2020). This pattern also tends to hold when considering disruptive behaviour disorders such as oppositional defiant disorder or conduct disorder (Waschbusch & Willoughby, 2008; Maughan et al., 2004).

Given the negative consequences of internalising and externalising behaviour difficulties in childhood, understanding the contributing factors linked to child socio-emotional adjustment is highly relevant. However, it is of note that the majority of studies that have assessed child internalising and externalising difficulties and relevant contributing factors have typically employed observational or parent-reported assessment measures rather than self-reported child behaviours (Gartstein et al., 2009; Müller et al., 2011). The use of information collected from parents about themselves as well as their children, while valuable, can be subject to rater biases, leading to shared methods variance (i.e., an issue that results in inflated associations among variables). In addition, one explanation for variability in findings pertaining to child behaviour difficulties may be related to the informant or measures utilised to assess such behaviours (Leve, Kim & Pears, 2006; Dwyer, Nicholson, & Battistutta, 2006). For example, a longitudinal study by Keiley, Howe, Dodge, Bates, and Pettit (2001) found that teachers reported higher levels of child behaviour difficulties compared to the children's parents (Keiley et al., 2001). Although there is no gold standard, each method of measurement contributes unique information pertaining to child behaviour

difficulties (De Los Reyes et al., 2015). It is of note that within the context of this thesis, child self-reported measures of internalising and externalising behaviour were utilised to avoid shared method variance.

1.2.2 Child emotion processing: EFER

Emotions are a fundamental component of human nature; they contribute significantly to humans' effective adjustment to their environment (Izard, 2002). Emotions also motivate adaptive thought and action, and facilitate prosocial behaviour (Salovey & Grewal, 2005). The ability to accurately interpret the emotional experiences and expressions of others is essential to smooth social interactions (Ackerman & Izard, 2004). According to Ekman (1992), there are six universally displayed primary emotions: anger, sadness, fear, disgust, happiness and surprise. Ekman proposed that these primary emotions are universal to all world populations, having evolved through their adaptive value in coping with fundamental life tasks and challenges. All six primary emotions have certain shared characteristics (e.g., rapid onset, short duration, unintentional occurrence, automatic appraisal), yet each emotion differs from the others in important ways (e.g., expression, antecedent events and behavioural response). However, while primary emotions are universal, their activation and expression are partially learned through socialisation and are influenced by cultural differences (Ekman, 1992).

Emotion processing, a crucial component of harmonious social interactions, is defined by the ability to identify and understand one's own feelings and the emotional states of

others (Herba & Phillips, 2004). Emotion processing includes the transmission, recognition and interpretation of emotional information, both verbal (e.g., word choice, tone of voice) and nonverbal (e.g., smell, body language that includes gestures, posture and facial expressions; McClure, 2000). The majority of studies that examined emotion processing skills have utilised the recognition of emotional facial expressions (i.e., the ability to effectively read other people's emotional facial signals during interactions). When interpreted correctly, the recognition of emotional facial expressions allows for a better understanding of the emotional states of others, which can in turn influence an individual's own subsequent behavioural response (Lemerise & Arsenio, 2000). For example, a misbehaving child who can recognise a teacher's angry expression may then use that information to read the situation and modify their behaviour accordingly. In fact, children's ability to recognise facial expressions has been found to predict social success (Miller et al., 2005) and scholastic performance (Agnoli et al., 2012). Given that the ability to identify facial expressions of emotion is considered an important component of emotion processing skills, the present thesis focused on EFER abilities as a measure of child socio-emotional adjustment.

EFER abilities are often assessed by indices of accuracy (i.e., correct identification of an emotion) and speed (i.e., the time taken to adequately identify facial expressions; Herba & Phillips, 2004). The latter can have a marked impact on social communication given that facial expressions can change very quickly in a naturalistic context and therefore may require a rapid speed of recognition (de Sonneville et al., 2002). Indicators of EFER capabilities also include sensitivity, which has been defined as the lowest intensity of expression at which an emotion is correctly identified (Benson, 1994; Porter-Vignola et al., 2021). For tasks that assess sensitivity to recognising facial expressions, emotions are presented at a low intensity (e.g., only 10% of a complete emotional facial expression) which is then increased successively by specific

increments (e.g., 10%) until it reaches the maximum intensity of this emotion's expression (e.g., 100%). These different indices of EFER can provide relevant information that captures distinctive aspects of emotion processing abilities.

The ability to identify facial expressions first begins in childhood with the recognition of happiness, followed by sadness and anger, and ultimately by fear, surprise and disgust (de Sonneville et al., 2002; Vicari et al., 2000). In fact, even infants are able to distinguish between happy, sad and surprised faces at different intensities (i.e., expressions of emotions that are more or less intense; Nelson & de Haan, 1997). The labelling of primary emotions such as happiness, sadness, anger and fearfulness begins to develop at 18 months of age (Michalson & Lewis, 1985) while the ability to name disgust and surprise develops later (Widen & Russell, 2003). In addition, EFER accuracy and speed have been found to improve from early to middle childhood (Karayanidis, Kelly, Chapman, Mayes, & Johnston, 2009). Furthermore, when compared to preschoolers, those in middle childhood have a better understanding of mixed emotions (i.e., facial expressions combining multiple emotions, such as anger and fear) and begin to interpret emotions using contextual and environmental information in addition to facial expressions (Hoffner & Badzinski, 1989; Izard & Harris, 1995). The development of EFER continues to evolve during adolescence and adulthood, such that the rate of reaction time (RT) in adults is almost twice as fast as that of children (de Sonneville et al., 2002). Adults have also been shown to perceive subtle changes in emotional expressions (e.g., the identification of a progressive morph from a neutral or specific emotional facial expression to another emotion, such as a fearful face transitioning to anger) more effectively than children and adolescents (Thomas, De Bellis, Graham & LaBar, 2007). These differences are attributed to adults' increased efficiency in facial coding (Chung & Thomson, 1995; de Sonneville et al.,

2002), although there is an eventual decline in EFER skills in older adults (Sullivan & Ruffman, 2004).

In terms of sex differences found for facial emotion recognition, females have been shown to have a slight advantage (Lawrence, Campbell, & Skuse, 2015; McClure, 2000). Specifically, previous research has found that males have greater difficulty distinguishing between different emotions than their female counterparts (Thayer & Johnsen, 2000; Wingenbach, Ashwin, & Brosnan, 2018). In addition, other studies have found faster EFER speed in adult women, especially for the negative emotions of fear, disgust, sadness, and anger (Hampson, van Anders, & Mullin, 2006). It should be noted that a similar sex effect is also found in infancy and early childhood (McClure, 2000). The fact that a female advantage is evident so early in life suggests that multiple factors play a role in the development of emotion processing skills, including social learning and neural mechanisms (Blair, 2003). For example, not only is it possible that the social rules that guide EFER abilities differ for boys and girls (Herba & Phillips, 2004), but specific brain regions such as the amygdala and prefrontal cortex may also be differentially implicated in EFER according to child sex (see Blair, 2003; Killgore & Yurgelun-Todd, 2004). It was thus important to consider child EFER abilities according to child sex in this thesis.

According to Izard (2002), EFER difficulties may serve as a risk factor for socio-emotional maladjustment and later adverse outcomes (Izard, 2002). Specifically, the inability to recognise nonverbal forms of emotion expressions can negatively impact intra- and interpersonal functioning and may serve as a risk factor for reduced social and academic success (Agnoli et al., 2012; Izard, 2002; Miller et al., 2005). In addition,

alterations in EFER have been implicated in many psychiatric problems, including schizophrenia, depressive disorder and bipolar disorder (Herba & Phillips, 2004; Phillips, Drevets, Rauch, & Lane, 2003; Pollak & Kistler, 2002). In fact, it has been theorised that one core component of many psychiatric illnesses is poor social functioning, which may be associated with impaired or inappropriate regulation of EFER (Herba & Phillips, 2004; Phillips et al., 2003).

1.3 Child socio-emotional adjustment: a model of emotion socialisation

Given the links between child socio-emotional adjustment and overall well-being, it is important to understand the key components that underlie its development. It has been theorised that the development of child socio-emotional adjustment is associated with the socialisation of emotions (Mirabile, Oertwig, & Halberstadt, 2018). An important and robust factor associated with child emotion socialisation is the role of parents (Grusec & Davidov, 2019; Halberstadt, 1991). It has been found that children's socio-emotional adjustment, particularly from infancy to middle childhood, is shaped through various parent emotion socialisation practices, including, but not limited to, social referencing, modeling, coaching, and discussing of emotions and their corresponding behaviours (Brand & Klimes-Dugan, 2010; Klimes-Dougan & Zeman, 2007). In fact, Eisenberg (1998, 2020) posited a widely recognised model of emotion socialisation that highlighted the key role that parents play in their child's development of both emotional competence and well-being (Eisenberg, Cumberland & Spinrad, 1998; Eisenberg, 2020; see Figure 1.3). According to this model, parents' emotion socialisation behaviours are influenced by characteristics such as their personality and psychological health, which in turn are linked with children's emotional arousal and

emotion-related behaviours (Eisenberg et al., 1998). Eisenberg's model also ascribed a particularly important role to parenting practices (e.g., warmth, hostility) and child characteristics (e.g., sex, age, temperament) as both predictors and moderators of the relationship between parents' emotion socialisation behaviours and child outcomes (Eisenberg et al., 1998). Finally, Hajal and Paley (2020) recently elaborated on Eisenberg's model by stressing the particular importance of parent emotionality on children's social emotional competence. Drawing from Eisenberg (1998, 2020) and Hajal and Paley's (2020) models of emotion socialisation, the present thesis aimed to focus on several key components highlighted as particularly relevant to the emotion socialisation process, such as parent emotionality, personality and parenting practices as well as child sex and age, examining their link with child socio-emotional adjustment outcomes, including internalising and externalising behaviours as well as EFER abilities (Eisenberg et al., 1998; Eisenberg, 2020; Hajal & Paley, 2020).

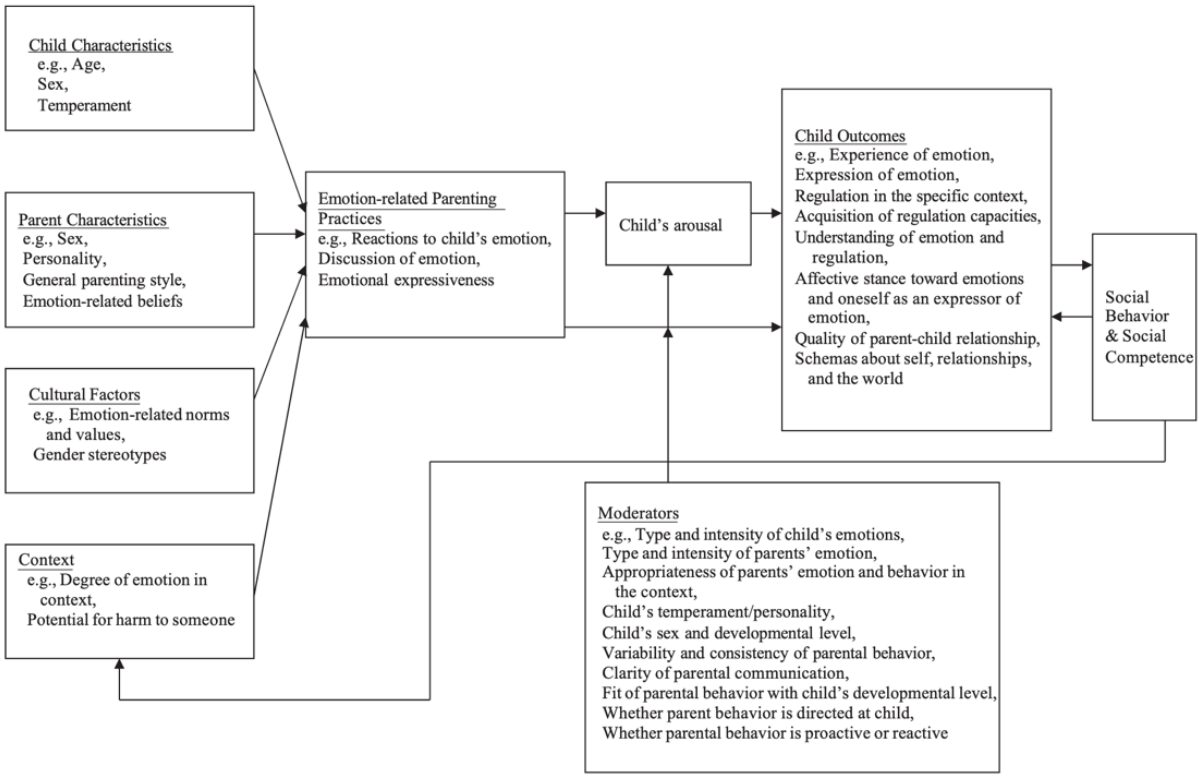

Figure 1.1. Model of emotion socialisation (Eisenberg, 2020). Figure reproduced with permission.

1.4 Parent emotion socialisation and child socio-emotional adjustment

1.4.1 Parent characteristics

Young children are sensitive to emotional displays in close relationships, particularly with their primary caregivers (Montague & Walker-Andrews, 2002). For example, adverse home environments, such as those characterised by atypical parent emotionality and maladaptive parenting behaviours, have been linked to cortical delays in middle childhood, as evidenced by electrophysiological measures (Bick, Palmwood, Zajac, Simons, & Dozier, 2019). Such negative impacts on children's development have been associated with increased risk of poor socio-emotional adjustment (McLaughlin et al., 2014). Thus, the following section will examine the relevant links between parent characteristics, particularly in terms of parent psychological health, personality, emotionality, sex, and parenting practices, and child socio-emotional adjustment.

1.4.1.1 Parent psychological health

Past research has also revealed that parent psychological health and emotionality are linked to child socio-emotional adjustment, including child behaviour difficulties and EFER abilities (Denham et al., 1997).

In terms of child internalising and externalising behaviours, the presence of parent depression and anxiety, particularly with regards to mothers, has been related to a greater likelihood of difficulties in infants and children (Briggs-Gowan et al., 2000; Connell & Goodman, 2002; Roelofs, Meesters, ter Huurne, Bamelis, & Muris, 2006). It has been theorised that mothers with a history of depression or emotional distress may offer less supportive responses to their children's negative emotions, which in turn has been linked to increased risk of child internalising behaviours (Silk et al., 2011). When examining the link between paternal psychological distress, defined as depression, anxiety and anger (Bailey & Marker, 2021), and children's behaviour difficulties, results have been mixed. While some studies have found that elevated levels of paternal anger (i.e., fathers who are unable to manage feelings of anger, frustration, and impatience during child interactions) and distress are linked to greater child internalising behaviours (Bailey & Marker, 2021; Kane & Garber, 2004), others have found no such association (Hughes & Gullone, 2010). The results have also been mixed regarding fathers with child externalising behaviours. That is, while paternal distress and aggression are linked to increased child externalising behaviours (Bailey & Marker, 2021; Denham et al., 2000; Ramchandani et al., 2005; Smith & Day, 2018), others have been associated with fewer externalising problems in children (Weijers, van Steensel, & Bögels, 2018).

Although some studies have previously revealed a link between parent psychological health and children's socio-emotional adjustment according to parent sex (e.g., Denham et al., 1997), the majority of research on parent psychological health and child EFER focuses solely on the role of the mother, with fathers largely excluded from studies to date. Thus, the literature cited below focuses exclusively on the link between maternal depression and anxiety and children's EFER abilities.

Depressive mothers typically have a withdrawn interactional style including low-intensity emotional expressions and reduced reactivity to their children's signals (Beck, 1999; Diego et al., 2002; Reck et al., 2011). Interactions between children and mothers diagnosed with depression are typically characterised by more negative or neutral emotions and fewer positive emotions (Dawson et al., 2003; Kluczniok et al., 2016). These mother-child interactions have been found to be linked to child EFER, whereby mothers with depression (current or remitted) and their children both demonstrate a negative processing bias for sadness (i.e., greater accuracy for identifying sadness and misinterpreting other facial expressions as sadness; Kluczniok et al., 2016). In addition, maternal depressive symptoms have been linked with decreased emotion labeling accuracy in young children (Székely et al., 2014). Previous studies have found that infants of mothers with depression have difficulty discriminating between neutral and happy expressions (Bornstein et al., 2011) and are unable to perceive sad expressions as new information (Hernandez-Reif et al., 2006). One study using a task in which faces morphed from neutral to their full emotional expression found that girls of mothers with a history of depression required greater intensities of sadness to correctly identify sad faces following a mood-induction task (Joormann, Gilbert, & Gotlib, 2010). However, another study found that boys of mothers with elevated symptoms of depression displayed a bias of over-identification of sadness in ambiguous faces demonstrating multiple emotions (Lopez-Duran, Kuhlman, George, & Kovacs, 2013).

Maternal anxiety has also been linked to alterations in child EFER. Specifically, mothers who suffer from anxiety have been found to be more intrusive and less sensitive to their infant's signals, and display flat affect during child interactions, thereby exposing their children to diminished or inadequate facial expressions (Feldman et al., 2009; Kaitz & Maytal, 2005; Nicol-Harper et al., 2007). In fact, it has been found that children of anxious mothers struggle to label facial expressions of primary emotions (Meiser, Zietlow, Reck, & Träuble, 2015). It has thus been suggested that maternal anxiety may interfere with mothers' ability to support the emotional development of their children, including emotion recognition and labeling skills, by allowing fewer opportunities for children to observe a range of emotions (Meiser et al., 2015).

1.4.1.2 Parent personality

Previous research has revealed associations between parent personality and child socio-emotional adjustment, including child behaviour difficulties and EFER abilities (Puff & Renk, 2016; de Haan et al., 2004).

Past research has indicated direct links between certain lexically-based parent personality traits and child behaviour difficulties (Downey & Coyne, 1990; Kochanska, Clark, & Goldman, 1997). Much of the research examining the relationship between parent personality and child internalising and externalising behaviours has focused on

neuroticism (e.g., negative emotionality). Specifically, several studies have found that in parents with high rates of negative emotionality (e.g., the experienced intensity and frequency of negative emotions such as sadness or fearfulness; Sallquist et al., 2009), their children exhibited more internalising problems (Ellenbogen & Hodgins, 2004; Kochanska, Clark, & Goldman, 1997; Kurdek, 2003). In addition, parent neuroticism and emotional instability have been found to relate positively to externalising behaviour difficulties in children from early to middle childhood (Bates, Bayles, Bennett, Ridge, & Brown, 1991; Kochanska et al., 1997; Nigg & Hinshaw, 1998; Prinzie et al., 2004; Prinzie et al., 2005; Puff & Renk,2016). Elevated levels of neuroticism in fathers were also linked to antisocial tendencies in a sample of 6- to 12-year old boys with externalising disorders (Nigg & Hinshaw, 1998). Beyond neuroticism, other parent personality traits from the Five Factor Model have been associated with children's behaviour difficulties. Specifically, mothers high on conscientiousness and agreeableness had children with fewer internalising behaviour difficulties (Prinzie et al., 2004; Puff & Renk, 2016). Furthermore, increased parent extraversion has been linked to childhood internalising behaviours (Crawford, Schrock, & Woodruff-Borden, 2011). High levels of parent extraversion (Prinzie et al., 2005; Slatcher & Trentacosta, 2012) and conscientiousness (Nigg & Hinshaw, 1998; Prinzie et al., 2005) have been associated with fewer externalising behaviours in children. Finally, while lower paternal agreeableness and greater openness to experience was positively related to children's increased externalising and antisocial behaviours (Oliver, Guerin, & Coffman, 2009; Nigg & Hinshaw, 1998), lower rates of maternal conscientiousness was associated with attention deficits in boys (Nigg & Hinshaw, 1998). Furthermore, to our knowledge, the studies that examined traditional lexically-based measures of personality have not found child sex to moderate the relationship between parent personality and child behaviour difficulties (e.g., Prinzie et al., 2004). Based on the sum of these findings, there is research to support an association between parent personality and behaviour difficulties in children.

Biologically-based parent emotionality, or affective personality, has been previously evaluated in relation to child socio-emotional adjustment, and more specifically, child behaviour difficulties, when analysed as latent profiles (Orri et al., 2018). Specifically, utilising a person-centered approach, Orri and colleagues (2017) identified subgroups of affective personality that were characterised by similar patterns of primary emotion systems in the sample population (i.e., CARE, PLAY, SEEKING, FEAR, ANGER and SADNESS; Dong & Dumas, 2020; Orri et al., 2017). Three latent parent profiles were created, including 1) low negative emotions (low scores on negative emotions and slightly high scores on positive emotions compared to the overall sample mean), 2) balanced (positive and negative emotionality levels nearest to the overall sample mean) and 3) high emotional (high levels of negative emotionality and CARE; Orri et al., 2017). Subsequently, Orri and colleagues (2018) found that the direct effect of parent affective personality profiles on child behaviour difficulties was dependent upon the sex of the child. For example, compared to the other profiles, mothers in the high emotional profile had boys with greater internalising behaviours and girls with greater externalising behaviours (Orri et al., 2018). It is interesting to note that no direct link between fathers' affective personality profiles and child behaviour was found. Orri's exploratory work used latent profiles to offer a broad perspective on the link between a fairly novel biologically-based measure of parent affective personality and child behaviour difficulties. Now that such a link has been established, it would prove important to more fully elucidate the salience of specific primary systems (i.e., CARE, PLAY, SEEKING, ANGER, FEAR and SADNESS) in relation to child internalising and externalising behaviours, while considering the moderating role of child sex. Examining such relationships would allow for a more nuanced understanding of specific parent affective traits that are linked with child behaviour difficulties and could inform relevant intervention and prevention targets.

It has been proposed that parent personality may also be associated with child EFER abilities (de Haan et al., 2004). However, to our knowledge, recent studies have focused solely on affective components of parent personality, as measured by the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), in relation to infant emotion processing abilities (Aktar, Mandell, de Vente, Majdandžić, et al., 2018; Aktar et al., 2016; de Haan et al., 2004). Findings from these studies revealed longer looking times toward negative emotions in infants of mothers with higher levels of positive affect. Specifically, the infants focused more on fearful than happy faces, which the authors theorised was indicative of a habituation response to happy faces that can occur following repeated exposure to parent happiness (de Haan et al., 2004). Conversely, greater maternal negative affect was associated with infants' decreased arousal to multiple emotional expressions (i.e., happy, fearful, sad, and angry) compared to neutral faces in one study; Aktar et al., 2018). Infants' decreased physiological activation when presented with primary facial emotional expressions was interpreted to result from repeated exposure to more maternal negative emotions (Aktar et al., 2018). However, others found no such relationship between maternal negative affect and infant recognition of fearful faces (de Haan et al., 2004). Furthermore, while paternal negative affect was related to greater infant interest in emotional expressions (Aktar et al., 2016), no direct link was found between paternal affect and infant emotion recognition skills (Aktar et al., 2018). It is of note that while two studies included fathers (Aktar et al., 2018; Aktar et al., 2016), they have been largely excluded from the literature, particularly in community samples (de Haan et al., 2004). These prior findings lack generalisability due to the limited target population and measurement of emotion processing abilities. Firstly, most of these studies explored the link between parent affective personality and emotion recognition in infants. One limitation in using infants in these studies is that their emotion recognition abilities are limited and they lack the verbal abilities to communicate perceived distinctions in emotional

expressions. Researchers must thus rely on physiological measures of emotion recognition such as habituation paradigms or EEG readings (Herba & Phillips, 2004; McClure, 2000). It has been recommended to use different tasks to address complementary aspects emotion recognition abilities, including tasks that differ in the extent to which they rely on linguistic and visuospatial abilities (Herba et al., 2006). In addition, given the lack of studies examining parental affective personality and EFER in children, examining the moderating role of child sex in terms of the above-mentioned link will also be of particular relevance.

Given that the link between parent affective personality and child recognition abilities has been relatively unexamined beyond the information presented in the above-mentioned section, it was decided to focus on latent classes of affective personality as developed by Orri and colleagues (2017; 2018) rather than each of the six affective traits, in order to better explore the nature of this relationship. Such an approach allowed for an extension of (1) the literature linking latent classes of affective personality and behaviour outcomes to EFER outcomes; (2) the literature beyond the dichotomisation of negative and positive emotionality in parents and EFER in infants. Given the number of between and within subjects factors, a final consideration pertained to the complexity of analyses and interpretation of results.

1.4.1.3 Parent sex

Most studies have focused on the link between maternal characteristics such as emotionality or parenting practices and child emotion socialisation (Parent, Forehand,

Pomerantz, Peisch, & Seehuus, 2017). Thus, little is known about the role of fathers in child socio-emotional adjustment. However, a growing body of research has suggested important differences between maternal and paternal characteristics and child socio-emotional adjustment (e.g., Majdandžić, Möller, de Vente, Bögels, & van den Boom, 2014; Möller, Nikolić, Majdandžić, & Bögels, 2016; Wong et al., 2009; Kahn, Brandt, & Whitaker, 2004; Gerhardt et al., 2020; Fivush, Brotman, Buckner, & Goodman, 2000; Chaplin, Cole, & Zahn-Waxler, 2005). Therefore, the relationship between parent characteristics and child socio-emotional adjustment, according to parent sex, will be explored in the sections below.

A recent meta-analysis found that fathers play an important and unique role beyond mothers' contribution to their children's internalising and externalising behaviours (Gerhardt et al., 2020; Jeynes, 2016). Specifically, an increase in father involvement (i.e., caring for and interacting with children, showing concern) has been linked to decreased behaviour difficulties in children over the course of early to middle childhood (Aldous & Mulligan, 2002; Amato & Rivera, 1999; Carlson, 2006). Another study found that a lack of maternal support in response to child sadness and an increased dismissive and invalidating paternal response to child anger were linked to greater child internalising behaviours (Sanders et al., 2015). In addition, although not directly compared, the association between lower levels of paternal negative emotionality and fewer child externalising behaviours was stronger than the association between mothers' negative emotionality and child externalising behaviours (Orri et al., 2018). Furthermore, while some studies found differences in the relationship between parenting practices and child behaviour difficulties according to parent sex (e.g., Van Lissa, Keizer, Van Lier, Meeus, & Branje, 2019; Möller, Majdandžić, de Vente, & Bögels, 2013; Elgar, Mills, McGrath, Waschbusch, & Brownridge, 2007), few studies

examining parent personality found similar patterns for mothers and fathers (e.g., Prinzie et al., 2005).

In addition, previous research has found differences in the nature of the relationship between maternal and paternal positive and negative affect and infant emotion processing (de Haan et al., 2004; Aktar et al., 2016; Aktar et al., 2018). However, to our knowledge, no studies have examined parental affective personality and offspring EFER abilities beyond infancy according to parent sex.

Thus, although this thesis did not directly compare mothers and fathers, it was important to consider patterns in the association between parent sex (separately for mothers and fathers) and child socio-emotional adjustment given the key role each parent plays in their child's development.

1.4.1.4 Parenting practices

Parenting practices are considered behaviours that parents use to guide, discipline and socialise their children (Alwin, 2004). In addition, parenting practices are associated with a variety of different parent qualities and circumstances, such as parent psychological health and parent personality (Downey & Coyne, 1990; Goodman et al., 2020; Kochanska, Clark, & Goldman, 1997; Rothenberg et al., 2020). A growing body of research has demonstrated that parent emotional states may predict their parenting

practices (e.g., Rueger et al., 2011). Furthermore, particular associations have emerged between discrete parent emotions and their resultant parenting styles. Specifically, positive parent affect has been linked with sensitive, supportive parenting (Rueger et al., 2011); anger with harsh, hostile or reactive parenting (Ateah & Durrant, 2005; Leung & Slep, 2006); anxiety with overprotection and control (Dix et al., 2004; Kaitz & Maytal, 2005); and sadness with passivity as well as detachment from children's needs (Bradley et al., 2013; Dix et al., 2004). It would thus be important to clarify the relationship between parent affective personality and child socio-emotional adjustment, considering pathways that are both direct (i.e., first-hand exposure to parents' emotional expressions) and indirect (i.e., parenting behaviours impacted by parent emotions). Note that the models of emotion socialisation posited by Eisenberg (1998, 2020) and Hajal and Paley (2020) consider parenting practices to be an indirect pathway that impacts children's socio-emotional adjustment (Eisenberg et al., 1998; Eisenberg, 2020; Hajal & Paley, 2020).

Parenting practices, including harsh and positive styles, have been linked to children's behaviour difficulties (Braza et al., 2015; Rothenberg et al., 2020). Specifically, internalising behaviours in children have been associated with parent hostility (e.g., punishment, criticism) and conflict (Yap & Jorm, 2015). In addition, elevated parent emotional warmth is associated with lower child internalising and externalising behaviours (Connell & Goodman, 2002; Roelofs, Meesters, ter Huurne, Bamelis, & Muris, 2006), whereas children who are exposed to harsh, insensitive, unsupportive, or inconsistent parenting are at greater risk for externalising problems. These associations have been shown in adolescents as well, suggesting a persistent link between parenting practices and offspring behaviour difficulties (Rothenberg et al., 2020). While there may be cultural differences in how parent warmth and control are defined, research has shown cross-cultural consistency in the abovementioned associations between parenting practices and children's behaviour (Deater-Deckard et al., 2011). In addition to warmth and control, previous research has found that parents' psychological health

and personality can influence their parenting practices, which are in turn associated with child behaviour difficulties (Prinzie, Onghena, & Hellinckx, 2005; Orri et al., 2018; Puff & Renk, 2016). For example, altered parenting practices have been found to mediate the relationship between maternal depression and children's behaviour difficulties, highlighting the importance of parenting practices as an indirect pathway (Goodman et al., 2020). Previous research has also found that parent personality can influence parenting practices, which are themselves associated with child behaviour difficulties (Prinzie, Onghena, & Hellinckx, 2005; Orri et al., 2018; Puff & Renk, 2016). For example, greater neuroticism and lower agreeableness in parents have been associated with harsher, less positive parenting practices (Kochanska, Clark, et al., 1997); the latter are in turn related to greater externalising behaviours in children (Brook, Whiteman, & Zheng, 2002; Prinzie et al., 2005). In addition, higher maternal conscientiousness has been linked with more positive parenting practices (e.g., limit setting), which in turn were associated with fewer adolescent behaviour difficulties (Oliver et al., 2009). Orri and colleagues (2018) analysed the mediating role of parenting practices on the association between parent affective personality profiles with internalising and externalising behaviours in middle childhood. Parenting practices and affective personality were measured when children were aged four, and parent-reported child behaviours were then evaluated when the children were seven to eight years of age. The authors found that higher levels of harsh parenting mediated the relationship between the high emotional maternal affective personality profile and girls' elevated internalising and externalising behaviours. In addition, lower levels of harsh parenting mediated the association between the low negative emotions maternal affective personality profile and decreased internalising and externalising behaviours in girls. Finally, lower levels of harsh parenting practices mediated the association between the paternal low negative emotions affective personality profile and lower father reports of sons' externalising behaviours (Orri et al., 2018). Thus, it is relevant to consider parenting practices when examining association parent affective personality and child behaviour difficulties in the current thesis.

Child exposure to positive parenting practices (e.g., warmth, encouragement and commitment) has also been linked to EFER skills (Deslandes and Cloutier, 2005; Morris, Silk, Steinberg, Myers, & Robinson, 2007) and a better understanding of context-specific emotions (Morris et al., 2007). In contrast, negative parenting practices (e.g., harsh and coercive behaviours) were adversely related to children's emotion processing skills (Pollak, Cicchetti, Hornung and Reed, 2000). In fact, recent brain-imaging studies have found a link between parenting behaviours and children's processing of emotional information (Kopala-Sibley et al., 2020; Pozzi et al., 2020; Romund et al., 2016; Tan et al., 2020). For example, when mothers displayed high warmth and support, their children were less activated by fearful faces (Romund et al., 2016). Maternal hostility also predicted more activation of the amygdala in response to sad faces in early and middle childhood (Kopala-Sibley, 2020). Given the well-established link between parenting behaviours and children's abilities to process emotion expressions, it was important to consider their relevance when examining the relationship between parent affective personality and child EFER abilities in the current thesis.

1.4.2 Child characteristics

Following the examination of the role of parents in child socio-emotional adjustment, other contributing factors, including those child characteristics suggested by Eisenberg (1998; 2020) and Hajal & Paley's (2020) models, such as child age and sex, will be considered (Eisenberg et al., 1998; Eisenberg, 2020; Hajal & Paley, 2020).

1.4.2.1 Child age

Middle childhood proved interesting as the focus of this thesis because of the intriguing socialisation paradox at this age, with parents retaining influence regarding children's socio-emotional competence (Spinrad, Morris, & Luthar, 2020), and children simultaneously developing greater behavioural independence (Wray-Lake, Crouter, & McHale, 2010). Children in middle childhood have also demonstrated rapid development of cognitive and social skills, such as a greater understanding of their own and others' social and emotional experiences (Eccles, 1999). Although social interactions with peers have become more central at this age, child-parent interactions have remained important, providing opportunities for continued emotion socialisation (Sosa-Hernandez et al., 2020). In fact, parent emotional socialisation behaviours have been linked to socio-emotional adjustment in middle childhood (Baker, Fenning, & Crnic, 2011). In addition, although several psychopathological conditions often emerge in middle childhood, it is also a propitious time for prevention and intervention (Cervin, Pozza, Barcaccia, & Dèttore, 2020; Charlesworth, Wood, & Viggiani, 2011). Thus, evaluating the relationship between parent affective personality and child socio-emotional adjustment in middle childhood was quite interesting given this relevant period of child social development.

1.4.2.2 Child sex

According to Eisenberg (1998, 2020) and Hajal and Paley's (2020) models, child sex may moderate the role between parent characteristics that influence their emotion socialisation behaviours (e.g., personality, psychological health; Deater-Deckard & Dodge, 1997) and child socio-emotional adjustment (Eisenberg et al., 1998; Eisenberg, 2020; Hajal & Paley, 2020). Findings from past research has lent support to this theory as they have found child sex to moderate the relationship between parental characteristics (e.g., warmth, harsh discipline, and degree of familial conflict) and child behaviour difficulties (Hosokawa & Katsura, 2019; Orri et al., 2018; Wang, Fu, & Wang, 2021). For example, Hosokawa and Katsura (2019) found that child sex moderated the relationship between parent conflict and child internalising and externalising behaviours. Specifically, it was found that verbal aggression and avoidance during marital conflict was linked with increased externalisng difficulties in boys, and internalising behaviours in girls (Hosokawa & Katsura, 2019). However, no such moderation was found when examining the link between maternal mental health and preschooler's EFER abilities according to child sex (Szechely et al., 2014). In terms of the parental characteristic of affective personality, research by Orri and colleagues (2018) found that maternal and paternal affective personality profiles were differentially linked with parent-reported child internalising and externalising problems according to child sex (Orri et al., 2018). However, no studies to date have examined parental affective personality and self-reported child socioemotional adjustment according to child sex. Thus, it is important to consider the moderating role of child sex on the relationship between parent affective personality and self-reported child behaviour difficulties and EFER abilities in this thesis.

1.5 The current research project

1.5.1 Project innovations: addressing gaps in the literature

This thesis will contribute to a greater understanding of the associations between parent affective personality and certain aspects of children's socio-emotional adjustment (i.e., behaviour difficulties and EFER abilities) in middle childhood. Specifically, although parent emotionality and child socio-emotional adjustment have been previously found to be associated, the relationship between mothers' affective personality and children's socio-emotional adjustment at school-age has yet to be elucidated and will thus be explored in this thesis. Furthermore, few studies have explored the associations between fathers' affective personality and children's socio-emotional adjustment. Given that the role of fathers in their children's socio-emotional adjustment has been largely ignored in the past, it would be important to examine their influence. Thus, the present thesis includes parenting information from both mothers and fathers.

The first article aimed to evaluate the link between individual parent affective personality systems and self-reported child internalising and externalising behaviours in an attempt to address several identified gaps in the literature: although links have previously been found between latent parent affective profiles and child behaviour difficulties, no studies to our knowledge have assessed the unique contribution of individual biologically-based parent affective personality systems on child behaviours. Such an examination could help to identify whether there are specific primary emotion

systems that might be especially salient in relation to child internalising and externalising behaviours. In addition, the majority of studies that have assessed parent characteristics and child behaviour difficulties typically employed observational or parent-reported assessment measures, rather than having children report on their own difficulties. When parents report on their own behaviours and those of their children, this may result in the problem of shared methods variance (i.e., inflated associations among variables; Kerr, Lunkenheimer & Olson, 2007). Thus, of particular importance to the first article of this thesis was that children reported their own behaviour difficulties. This is an innovation of the project given that child self-reported behaviour difficulties have not been frequently utilised in past research and minimise the problem of shared methods variance.

The second article addressed a complementary question by examining associations between parent affective personality profiles and child EFER abilities within a community sample of school-age children while addressing relevant gaps in knowledge. Specifically, current literature on parent affect and offspring EFER has focused mainly on infancy rather than childhood and lacks a biologically-based measure of affective personality. Furthermore, the nature of sex differences in EFER abilities as related to parent affective personality is also unknown. Thus, by assessing mothers' and fathers' affective personality profiles separately in relation to child EFER, considering the moderating role of child sex as well as using complementary and age-appropriate tasks, we aimed to address current gaps in the literature.

1.5.2 Objectives and hypotheses

The primary objective of the first study was to examine associations between parent affective personality systems (i.e., CARE, PLAY, SEEKING, ANGER, FEAR, and SADNESS) and child behaviour difficulties. Specifically, this study aimed to (1) explore the separate role of mothers' and fathers' affective personality systems utilising a variable-centered approach, (2) investigate child-reported internalising and externalising behaviours, (3) test the indirect pathway of parenting behaviours as well as (4) explore the moderating role of child sex in the association between parents' affective personality traits and child behaviour difficulties. It was thus hypothesised that the six parental affective personality systems would be differentially associated with child internalising and externalising behaviours according to child sex, both directly and indirectly through positive and harsh parenting practices.

The primary objective of the second article was to investigate the association between parents' affective personality profiles and offspring EFER in middle childhood. More specifically, this article aimed to examine the link between parent affective profiles (i.e., low negative emotions, balanced emotional and high emotional; Orri et al., 2018) and child EFER abilities for the emotions of happiness, sadness, anger and fear. Relying on data from a community-based cohort, this study (1) explored the role of mothers' and fathers' affective personality utilising a person-centered approach, (2) investigated three tasks assessing complementary aspects of EFER for happy, sad, angry and fearful expressions, and (3) tested the moderating role of child sex in the association between parents' affective personality profiles and child EFER. Given that parent personality has not previously been examined in relation to child EFER abilities, hypotheses were exploratory.

1.5.3 Relevance and implications

Findings from the complementary studies in this project will advance the understanding of the associations between parent (maternal and paternal) affect and children's socio-emotional adjustment in middle childhood. Furthermore, such knowledge could help to inform future research into childhood well-being, since understanding the potential associations between maternal and paternal affective personality and child socio-emotional adjustment could inform means of targeting children's healthy development. For example, parents could be coached to manage their own emotionality and dysregulation in order to increase the frequency and quality of parent-child interactions. Increased positive parent-child interactions, in which parents model appropriate emotion regulation strategies and support their children, can be considered an essential component in children's optimal development. Such initiatives, along with the purported ensuing improvements in children's socio-emotional adjustment, would likely have a positive impact on both familial and community functioning. This goal will be further discussed in Chapter IV.

1.5.4 Study context

The objectives of the present thesis were carried out within the context of the community-based longitudinal EMIGARDE study (see Charrois et al., 2017, 2019; Côté et al., 2013). Participants were selected from a larger sample of 515 families recruited during prenatal medical appointments at maternity hospitals that had taken part in a larger perinatal study survey (Kramer et al., 2001). Children in this sample were born between June 2003 and April 2004. Families were re-contacted before their

child's second birthday to participate in the EMIGARDE study. The first EMIGARDE data collection took place in 2005-2006 when children were 24 months of age (n = 497 families). Subsequent data collections took place in 2006-2007 (36 months, n = 440 families), 2007-2008 (48 months, n = 396 families), 2010-2011 (60 months, n = 311 families), and finally in 2011-2012 (7-8 years, n = 326 families). Article 1 had a total of 272 mother-child dyads and 208 father-child dyads, while article 2 had a total of 288 mother-child dyads and 222 father-child dyads. Ethics approval was granted by the Centre de Recherche du CHU Sainte-Justine Research Ethics Board for each data collection phase of the study. In addition, parents provided informed consent for their participation and that of their child, while children provided assent.

1.5.5 Procedures

Home visits were conducted with participants of the EMIGARDE study, whereby a number of tasks were administered to the children. In addition, interviews were conducted, and questionnaires given to the parents. Typically, all interviews were conducted with the mothers (as a majority of fathers were absent at the time of the home visit). However, questionnaires were left for the fathers to complete and to be returned by post or were completed online. Additional information about procedures was presented in articles 1 and 2.

1.5.6 Article 1 overview

1.5.6.1 Measures

The main predictor variable, parent affective personality, was assessed when children were aged 7-8 years, utilising the Affective Neuroscience Personality Scales (ANPS; Davis & Panksepp, 2011). The ANPS, a well-documented biologically-based measure of affective personality (Knežević et al., 2020), contains items that correspond to each of the six primary emotion systems (CARE, PLAY, SEEKING, ANGER, FEAR, and SADNESS). The ANPS also contains a spirituality dimension (e.g., "feeling "connected" to humanity and creation as a whole, feeling a sense of "oneness" with creation, striving for inner peace and harmony, relying on spiritual principles, and searching for meaning in life"; Davis et al., 2003, p.60). However spirituality was not included in the present thesis given it was unrelated to primary affect (Davis & Panksepp, 2011). More details about the ANPS subscales were presented in the first article.

The main outcome variable, children's behaviour difficulties, was assessed with the Berkeley Puppet Interview (BPI; Ablow & Measelle, 2003). Specifically, child-reported broadband internalising and externalising behaviours at 7-8 years of age were utilised. More information about the BPI was presented in the first article.

In order to evaluate whether the relationship between parent affective personality systems and child behaviour difficulties was associated through the indirect pathway of parenting behaviours, parenting practices was measured with the Parent Practices

Scale (Stattin & Kerr, 2000; Strayhorn & Weidman, 1988). The items on this scale focus on the frequency of various positive and negative parenting behaviours (e.g., 'in the past 12 months how often did you grab firmly or shake your child when he/she was difficult?'). The subscales of harsh and positive parenting were utilised in the analyses. More details about these variables were presented in article 1.

1.5.6.2 Data analytic approach

To address the objectives of the first article, multiple linear regression analyses were conducted within Statistical Package for the Social Sciences (SPSS 27.0). Separate regression analyses were conducted for mothers and fathers for both child externalising and internalising behaviours. This resulted in a total of four regression models, whereby all six parent ANPS subscales were included in each specific model to examine the unique contribution of the primary emotion systems for child behaviour (internalising and externalising behaviour difficulties). These exploratory regressions analyses included sex moderation through backwards stepwise multiple regression. In addition, any significant associations that emerged between parent ANPS subscales and children's behaviour were further probed both directly and indirectly through parenting practices, using the macro add-on Process in SPSS which allowed for regression path analyses (Hayes, 2017). For additional details, please refer to Chapter II.

1.5.7 Article 2 overview

1.5.7.1 Measures

The main predictor variable, parent affective personality, as measured by the ANPS (Davis & Panksepp, 2011), was assessed using three latent class profiles originally developed by Orri and colleagues (2017). The low negative emotions, balanced and high emotional profiles were calculated based on mother and father response patterns on the six ANPS subscales. Latent profile analyses allowed for a more person-centered perspective of affective personality given that it examined how the subscales related within individuals in the sample and thus revealed "qualitatively different (and more homogenous) subgroups" (Orri et al., 2017, p. 2). For additional details concerning the latent affective personality profiles, please refer to Chapter III.

The main outcome variable, child EFER, was assessed by employing two computerised emotion-matching tasks with a corresponding control task and one emotion sensitivity task (morphing). The EFER tasks were developed to be age-appropriate for the children in this study. The facial stimuli used for each of the EFER tasks were taken from the widely used Ekman and Friesen set (FEESR; Ekman & Friesen, 1976). The stimuli in this database have been validated for different intensities of emotion expression and allowed for the assessment of complementary aspects of EFER.

The two emotion-matching tasks were administered to assess both explicit and implicit EFER. For the *explicit emotion-matching task*, children were required to match a target stimulus with one of two choices on the basis of emotion category. During the *implicit emotion-matching task*, children had to match the target stimulus with one of two choice stimuli on the basis of identity (and to ignore emotion category). This task was chosen in order to examine the distracting influence of particular emotion-categories and expression intensity on performance. In addition, children were required to match a target shape to one of two choice shapes in order to control for matching ability (i.e., to ensure that children understood the concept of matching). Twenty trials were administered using five different target shapes and total scores were derived for both accuracy and for the speed in correct responses (RT; see Herba, Landau, Russell, Ecker, & Phillips, 2006). A final morphing task was administered in order to assess child sensitivity according to emotion category (see Porter-Vignola et al., 2021 for more details about all three EFER tasks).

1.5.7.2 Data analytic approach

To address the objectives of the second article, analyses were conducted within SPSS Version 27 with mixed models, utilising a similar approach to that of Porter-Vignola and colleagues (2021). Models assessing affective personality profiles (i.e., low negative emotions, balanced and high emotional) and child EFER were run separately for mothers and fathers and according to emotion category for each of the three EFER tasks (i.e., explicit and implicit matching tasks, sensitivity task). We included the three-

way interaction between parent affective personality profile, emotion intensity and child sex. For additional details, please refer to Chapter III.

The next two chapters present the academic articles which address the two main objectives of this thesis.

CHAPTER II

FIRST SCIENTIFIC ARTICLE : PARENTAL AFFECTIVE PERSONALITY AND CHILDREN'S SELF-REPORTED INTERNALISING AND EXTERNALISING BEHAVIOUR

Note. An updated version of this article has been published in the journal *Social Development*.

Reference : Thaw, A., Herba, C. M., Orri, M., Paquin, S., Séguin, J. R., Berthoz, S., Kim-Cohen, J., Tremblay, R. E., & Côté, S.(2022). Parental affective personality and children's self-reported internalising and externalising behaviou. *Social Development*, 1– 19. https://doi.org/10.1111/sode.12594

Abstract

Past research has demonstrated associations between parental personality traits and children's behaviour. However, fathers have been largely excluded from this research, and mothers often rate both their own personality and child's behaviour, contributing to shared-method variance. This study contributes to the literature by examining associations between parental biologically-based affective personality traits, analysed separately for mothers and fathers, and seven- and eight-year-old children's self-reported internalising and externalising behaviour. Data were analysed for 272 mother-child dyads and 208 father-child dyads. A series of multiple linear regressions was utilised to test associations between mothers' and fathers' traits of PLAY, CARE, SEEKING, ANGER, FEAR, and SADNESS, assessed using the Affective Neuroscience Personality Scales (ANPS), and children's self-reported internalising and externalising behaviours, assessed using the Berkeley Puppet Interview. Results revealed that higher ANPS ANGER scores among mothers were associated with higher levels of externalising behaviours in boys. Mothers with higher scores on SEEKING had sons with lower scores on externalising behaviours, while mothers with higher PLAY scores had sons with lower scores on internalising behaviours. Fathers with higher ANPS SADNESS scores had children with greater internalising behaviours, while fathers with greater FEAR traits had children with lower internalising behaviours. Indirect associations through harsh or positive parenting were not significant. Findings demonstrate that ANPS traits of ANGER, PLAY and SEEKING for mothers and FEAR and SADNESS for fathers are associated with children's self-reported externalising

and internalising behaviours. This study adds to the literature on biologically-based parental affective personality and child internalising and externalising behaviours.

Keywords: parent, personality, child, behaviour, externalising, internalising

2.1 Introduction

Personality encompasses expectations and beliefs about the self and others and influences how people respond to their environment (Rothbart, 1989). Much of the past research has measured personality in terms of overall dimensions using the Five Factor Model (i.e., openness, conscientiousness, extraversion, agreeableness and neuroticism (McCrae & John, 1992)). Over the past 20 years, biologically-based alternatives have been proposed to better understand the individual as a whole, highlighting the role of the brain in personality (DeYoung, 2010; Knežević et al., 2020). One such example is the Affective Neuroscience Personality Scales (ANPS), which is anchored to a phylogenetic emotional system found across humans and animals (Panksepp, Knutson, & Pruitt, 1998). The ANPS components are derived from six primary emotions (Davis & Panksepp, 2011; Davis, Panksepp, & Normansell, 2003), which include ANGER (e.g., irritation, poor frustration tolerance), SADNESS (e.g., distress, loneliness), FEAR (e.g., anxiety, worry), PLAY (e.g., joy, having fun), SEEKING (e.g., exploring, anticipating new positive experiences), and CARE (e.g., nurturing tendencies). The measure includes a spirituality dimension that was not utilised in the present study given that the subscale does not correspond to biologically-based primary affect, but rather a secondary, culturally-influenced process (Davis & Panksepp, 2011). The ANPS allow for the assessment of unique differences in these primary emotions as the basis of an individual's biologically-based personality (Davis & Panksepp, 2011;

Montag & Panksepp, 2020). The ANPS have previously been compared to the Five-Factor Model (McCrae & John, 1992) in adults across cultures and countries (Davis et al., 2003; Montag & Panksepp, 2017, 2020). Extraversion was found to be positively linked to PLAY, while agreeableness was positively correlated with CARE and inversely related to ANGER. Openness to experience was positively associated with ANPS SEEKING traits. Finally, neuroticism was positively related to the ANPS subscales of ANGER, SADNESS and FEAR, whereas conscientiousness was negatively associated with these subscales.

2.1.1 Parental personality and child behaviours

Parental personality, often measured by the Five Factor Model, has been associated with child emotional and behaviour difficulties, generally classified as internalising (anxiety, depression and social withdrawal; Rosenfield, Lennon, & White, 2005) or externalising (irritability, aggression, oppositionality, hyperactivity and impulsivity; Hinshaw, 1992). Parental neuroticism (Prinzie et al., 2005; Slatcher & Trentacosta, 2012), openness to experience (Oliver, Guerin, & Coffman, 2009) and extraversion (Nigg & Hinshaw, 1998; Puff & Renk, 2016), as well as lower levels of agreeableness and conscientiousness (Oliver et al., 2009; Xing, Gao, Liu, Ma, & Wang, 2018) have been associated with higher levels of externalising behaviours in their offspring. These same parental traits have also been associated with children's internalising behaviours (Crawford, Schrock, & Woodruff-Borden, 2011; Ellenbogen & Hodgins, 2004; Kochanska, Clark, & Goldman, 1997; Kurdek, 2003; Prinzie et al., 2004; Puff & Renk, 2016). As such, the specificity of associations between the Five Factor Model parental personality traits and offspring behaviour is not clear, particularly given that the Five

Factor Model of personality was created by individuals attributing qualitative adjectives, factor analyses and theoretical language, without being anchored in neurobiology. Biological bases of personality are important to consider given their consistency across culture, and even mammals (Davis & Panksepp, 2011). Employing biologically-based constructs of parental personality could yield further clarification on these potential associations.

Although past research has evaluated the links between parental personality traits and child behaviour difficulties, to our knowledge only one study has assessed associations between parental biologically-based personality traits based on ANPS profiles and school-aged children's behaviour difficulties (Orri et al., 2018). This study, based on data from the same cohort as the current study, utilised latent classes to capture broad parental ANPS personality profiles and studied associations with parent-reported child emotional and behaviour difficulties. The three latent parental ANPS profiles were *low negative emotions* (greater levels of CARE, PLAY and SEEKING, lower levels of ANGER, SADNESS, and FEAR), *balanced* (average levels of all subscales) and *high emotional* (greater levels of ANGER, SADNESS, FEAR and CARE; Orri et al., 2018). When considering direct associations between parental ANPS profiles on parent-reported child behaviours, Orri and colleagues (2018) found that mothers in the high emotional ANPS profile reported greater internalising behaviours in their sons and more externalising behaviours in their daughters. In addition, mothers in the low negative emotion ANPS profile had sons with fewer internalising behaviours. No direct link between fathers' ANPS personality profiles and child behaviour was found although an indirect effect through parenting was reported (see below).

Previous research has explored the relevance of direct and indirect pathways to explain the associations between parental personality and child behaviours. Direct pathways could occur through genetics or observational learning (Brook, Whiteman, & Lu, 2002; Prinzie et al., 2005). Indirect pathways are also considered relevant because parental personality can influence parenting practices, which in turn is associated with child behaviour (Orri et al., 2018; Prinzie, Onghena, & Hellinckx, 2005; Puff & Renk, 2016). For instance, higher levels of parental neuroticism and lower agreeableness have been linked to more harsh and less positive parenting practices (Kochanska, Clark, et al., 1997), which in turn are associated with higher levels of externalising behaviours in children (Brook, Whiteman, & Zheng, 2002; Prinzie et al., 2005). In addition, higher scores on maternal conscientiousness have been linked to more positive parenting practices such as limit setting, which have been associated with lower levels of externalising behaviour in early adolescence (Oliver et al., 2009).

In addition to assessing direct pathways, Orri and colleagues (2018) assessed the mediating effect of harsh parenting practices on the association between parental ANPS profiles and child internalising and externalising behaviours. Parenting practices and personality were measured when children were four years of age, after which parent-reported child behaviours were measured at seven to eight years of age. Higher levels of harsh parenting were found to mediate the association between mothers in the high emotional profile and daughters' elevated internalising and externalising behaviours. Lower levels of harsh parenting mediated the relationship between mothers in the low negative emotion profile and lower levels of internalising and externalising behaviours in daughters. Finally, lower levels of harsh parenting practices mediated the association between fathers in the low negative emotions profile and lower levels of externalising behaviours in sons (Orri et al., 2018).

However, the extent to which parents' individual subscales of the ANPS relate to children's own reports of their internalising and externalising behaviours is unknown. Determining whether certain subscales might be particularly salient for children's behaviour, either directly or indirectly through parenting practices, is relevant for identifying prevention targets.

While previous research has demonstrated interesting links between parental personality and children's internalising and externalising behaviours, there are a number of gaps in the literature. First, studies to date have used more traditional, lexically-based personality measures such as the Five Factor Model, while very few have studied biologically-based conceptualisations of personality such as the ANPS (Knežević, 2020). Second, the only study testing the association between parental ANPS traits and child behaviour utilised latent ANPS profiles, thus it is unknown whether specific ANPS subscales or sex-specific interactions might be particularly salient for children's behaviour difficulties. Third, although fathers have been found to play an important and unique role in their children's internalising and externalising behaviours, over and above that of mothers' (Jeynes, 2016; Gerhardt et al., 2020), they still remain relatively unused in studies, and thus, knowledge is lacking on the associations between fathers' personality traits and child behaviour difficulties. Finally, in the majority of these studies, parents rated their own personality traits as well as their children's internalising and externalising behaviours. This could introduce bias due to shared method variance, such that part of the association is explained by the fact that the same person is assessing both variables. Further work is necessary to better understand associations between parental personality traits and independent

assessments of children's behaviour (e.g., such as the children's self-reports; Kerr, Lunkenheimer, & Olson, 2007). The current study contributes to the literature by addressing these important limitations.

2.1.3 Objectives

This study aimed to examine associations between parental personality traits, assessed separately for mothers and fathers, and children's self-reported internalising and externalising behaviours within a community sample of 326 families. We address previous limitations by examining associations between levels of mothers' and fathers' affective personality traits (assessed using the ANPS) and children's self-reported internalising and externalising behaviours, while also considering the role of positive (warm, involved) and harsh (coercive, punitive) parenting. More specifically, this study aimed to 1) probe whether certain parental affective personality traits are associated with children's self-reported internalising or externalising behaviours, and 2) whether these pathways are direct or operate indirectly through positive and or harsh parenting. 3) Within the context of each of these objectives, we tested whether child sex moderates these associations.

Given the dearth of literature studying associations between paternal ANPS and children's emotional and behaviour difficulties, we based our hypotheses on previous findings pertaining to associations between parental personality traits (not specifically the ANPS) and child behaviour difficulties.

The ANPS subscales of ANGER, SADNESS and FEAR have been found to be positively related to neuroticism and negatively associated with consciousnesseses (Panksepp, 2003). Previous work has reported that higher levels of maternal neuroticism are associated with increased externalising (Oliver et al., 2009; Puff & Renk, 2016) and internalising (Ellenbogen & Hodgins, 2004; Kochanska, Clark, et al., 1997; Kurdek, 2003) behaviours in children. Similarly, higher levels of consciousness are associated with decreased externalising behaviours (Prinzie et al., 2005; Puff & Renk, 2016). Thus, it was predicted that higher levels of maternal ANGER, FEAR and SADNESS on the ANPS would be associated with greater levels of self-reported externalising and internalising behaviours in children.

The ANPS dimension of PLAY has been shown to be associated with extraversion, while the subscale of SEEKING has been linked to openness to experience (Panksepp, 2003). Since maternal extraversion and openness to experience have been found to be positively correlated with children's externalising behaviours (Nigg & Hinshaw, 1998; Puff & Renk, 2016; Prinzie et al., 2004), we hypothesised that children of mothers with higher ANPS traits of PLAY and SEEKING would report greater externalising behaviours.

The ANPS dimension of CARE has been positively correlated with maternal agreeableness (Panksepp, 2003) and lower levels of internalising and externalising behaviours in school-aged children (Prinzie et al., 2004; Puff & Renk, 2016). Thus, it

was hypothesised that higher scores on maternal CARE would be associated with lower levels of child self-reported internalising and externalising behaviours.

Given that indirect associations between parental ANPS and children's internalising and externalising behaviours have been found through positive and harsh parenting practices (Orri et al., 2018), we hypothesised that higher levels of ANPS traits of FEAR, SADNESS, and ANGER in mothers will be indirectly linked to elevated levels of internalising and externalising behaviours through harsh parenting. Higher scores of maternal CARE will be indirectly associated with fewer internalising and externalising behaviours through higher scores on positive parenting.

Since less is known about the associations between fathers' specific affective personality traits and child internalising and externalising behaviours, hypotheses pertaining to fathers are exploratory.

While previous literature has found some evidence that child sex moderates both direct and indirect pathways, results to date are not consistent (Nigg & Hinshaw, 1998; Orri et al., 2018; Prinzie et al., 2004). Thus, our hypotheses pertaining to differential effects of sex are exploratory.

2.2 Method

2.2.1 Participants

Five hundred and fifteen families who had taken part in a larger perinatal study survey (for more information on initial recruitment, see Kramer et al., 2001) were invited to participate in the longitudinal community-based study 'Étude de Milieu de Garde' (EMIGARDE; translation: Study on Child Care Services). Children were born between June 2003 and April 2004. Families were re-contacted before their child's second birthday to participate in the EMIGARDE study. Exclusion criteria included children who had been hospitalised at birth and mothers who did not speak English or French or who were adolescents at the time of their child's birth. Participants, which included only one child per household, were assessed longitudinally. The first EMIGARDE data collection took place in 2005-2006 when children were 2 years of age (n = 497 families). Subsequent data collections took place in 2006-2007 (3 years, n = 440 families), 2007-2008 (4 years, n = 396 families), 2010-2011 (5 years months, n = 311 families), and finally in 2011-2012 (7-8 years, n = 326). This study focused solely on the 2011-2012 data collection, which comprised a home visit with mothers and their child. While fathers' participation was requested, 64 biological fathers were not present at the home visit and did not return the questionnaires by post. In addition, five children were excluded from analyses based on a diagnosis of Autism Spectrum Disorder. The final sample thus included 272 families (272 mothers, 208 fathers) with at least one parental assessment of ANPS and parenting practices, child self-reported emotional and behaviour difficulties and relevant covariates (described below). Ethics approval was obtained from the research centre of CHU Sainte-Justine in Montreal, Quebec. During the home visits, interviews took place with mothers and their child, and children's self-

report data were obtained using the Berkeley Puppet Interview (described below). Furthermore, mothers and fathers completed questionnaires separately, which included the ANPS measure and questions pertaining to parenting practices. See Table 1for information concerning demographic variables (e.g., child sex and socioeconomic status).

2.2.2 Measures and procedures

2.2.2.1 Independent variable

The Affective Neuroscience Personality Scales (ANPS; Davis & Panksepp, 2011) were used to assess parental affective personality at the child's age of seven to eight years. The ANPS is made up of six biologically-based systems, including ANGER ("I tend to get irritated if someone tries to stop me from doing what I want to do", SADNESS ("I often feel lonely"), FEAR ("I often worry about the future"), PLAY ("I like to joke around with other people."), CARE ("I feel sorry for the homeless") and SEEKING ("I often feel like I could accomplish almost anything"). There are 14 items per subscale and each item ranges from 0 (Disagree) to 3 (Strongly agree). Standardised sum scores were created for each of the six subscales although only subscales with at least 90% of the items endorsed by a participant were included in the analyses. ANPS subscales were found to be reliable, as computed by Cronbach's alphas, ranging from .69 to .88 for mothers and fathers. The ANPS was administered in French or English, depending on the language preference of the participants; both versions of the

ANPS were validated and found to be stable over time (Orri et al., 2017; Orri et al., 2016; Pahlavan, Mouchiroud, Zenasni, & Panksepp, 2008; Pingault, Pouga, Grezes, & Berthoz, 2012).

2.2.2.2. Dependent Variable

The Berkeley Puppet Interview (BPI; Ablow & Measelle, 1993) symptomatology module was used to assess children's self-reported internalising and externalising behaviours in their language of choice (French or English). The broadband scales of internalising (subscales: depression, anxiety, separation anxiety, emotional problems) and externalising behaviours (subscales: oppositional behaviour, hostility, conduct problems, relational aggression, inattention and impulsivity) were utilised. For each of the 59 items, children indicated the puppet with whom they most identified (e.g., Puppet 1: 'I am a sad kid' vs. Puppet 2: 'I am not a sad kid') and the degree to which they identified with the puppet from one ('Not like me at all') to seven ('Completely like me'), with higher scores indicating more behaviour difficulties. The approximately 20-minute interviews conducted by research assistants were videotaped and later scored by two doctoral students who were trained to code the measure and had not conducted those interviews. Inter-rater reliability was above 0.90 for the 20% of the sample that was double coded. Over half the items in each of the subscales that made up the broadband scales had to be completed by a participant for the data to be included in the analyses. Since the distributions of the subscales and broadband scales were slightly skewed, a log transformation was employed for all subscales. Broadband scales were then standardised. Broadband scales were found to be reliable, as computed by Cronbach's alphas, for internalising ($\alpha = 0.77$) and externalising ($\alpha = 0.85$) behaviours.

The BPI has been used in studies assessing internalising and externalising difficulties (Arseneault, Kim-Cohen, Taylor, Caspi, & Moffitt, 2005; Measelle, Ablow, Cowan, & Cowan, 1998) in middle childhood (Charrois et al., 2019; Stone et al., 2013). The psychometric properties of the BPI, including validity and reliability, are satisfactory (Charrois et al., 2019; Measelle et al., 1998; Ringoot et al., 2015).

2.2.2.3 Indirect pathway: parenting practices.

A modified version of the Parent Practices Scale (Strayhorn & Weidman, 1988) that evaluated the nature of daily parent-child interactions (see Orri et al., 2018 for details), was completed by both mothers and fathers to assess parenting practices. Parents were asked to rate the frequency of positive ("comforting your child when [they were] sad") and negative ("hitting your child when [they were] difficult") interactions with their child over the past 12 months on a 7-point Likert scale from never to many times each day. Separate mean scores for mothers and fathers on harsh (i.e., consisting of seven items that depict punitive disciplinary tactics, including yelling and spanking) and positive parenting practices (i.e., consisting of 10 items characterised by warmth, involvement and praise) were generated and found to be reliable ($\alpha \geq .75$).

2.2.2.4 Moderating variable

Child sex assigned at birth was tested as a potential moderator for the associations between parental ANPS subscales and child internalising and externalising behaviours.

2.2.2.5 Covariates.

Potential confounders were selected on the basis of previous literature as well as those variables that were significantly correlated with the BPI and ANPS.

Children's receptive vocabulary was assessed using the Peabody Picture Vocabulary Test (Dunn & Dunn, 1981) and was used to control for question comprehension on the BPI. The French equivalent of the measure (Échelle de vocabulaire en images Peabody) which has been validated for French-Canadian populations, was used for francophone participants (Dunn, Dunn, & Thériault-Whalen, 1993). A total score for verbal ability in the child's preferred language was used.

The language of testing (French or English) was significantly correlated with BPI scores such that children who completed the interviews in French had lower internalising and externalising scores on the BPI. Language of testing was thus Standardised and then included as a covariate in subsequent analyses to control for language difference linked to questionnaire versions.

Previous literature has reported associations between socioeconomic status and children's behaviour difficulties. More specifically, lower socioeconomic status has been linked to higher scores for externalising and internalising behaviours in children (Keiley, Bates, Dodge, & Pettit, 2000). We considered the following socioeconomic indicators in this study which were created using data collected from participants in 2011-2012.

Maternal education was defined by the highest level of completed education and classified as secondary (secondary education or less), college (college or intermediate vocational education), or higher education (university).

Single parenthood was defined as living in a single parent family at the most recent point of data collection.

Family income, defined as the total income before tax for all household members during the last 12 months, was dichotomised with a cut off of $40,000 CAD per year, based on a low-income variable generated by Statistics Canada in 2013 for a family of four in 2011 and 2012, when the data collection took place (Statistics Canada, 2013).

2.2.2 Statistical analysis approach

In a first step, multiple linear regression analyses were performed using the Statistical Package for the Social Sciences (SPSS 27.0) to examine links between the six standardised ANPS subscales and child internalising and externalising behaviours. Separate regression analyses were conducted for mothers and fathers, for child externalising and internalising behaviour, separately, for a total of four regression models. Each model contained the six parental ANPS subscales (mother or father) to examine the unique contribution of the subscales for child behaviour (internalising or externalising behaviour difficulties). These exploratory regressions analyses included moderation by child sex through backwards stepwise multiple regression in addition to all covariates (i.e., child verbal ability, child language of testing, maternal education, family income and single parenthood). While a limit of the backwards stepwise regression approach has been the use of an automated process to determine the best model for confirmatory purposes (Smith, 2018), it can offer an effective manner by which researchers can evaluate the suitability of multiple variables for future exploratory examination (Thayer, 2002; Ruengvirayudh & Brooks, 2016). As previously noted, given that our hypotheses pertaining to parent ANPS interactions with child sex were exploratory, this method was deemed a good approach to determine which relevant variables (i.e., interactions between parent ANPS subscale and child sex) should be further examined in future models.

Next, in the second step, significant interactions between parent ANPS subscales and children's behaviour through the moderating role of child sex were further probed using the macro add-on Process in SPSS which allows for regression path analyses (Hayes,

2017). Separate models were also run to test indirect pathways (Hayes, 2017; Hayes & Scharkow, 2013) through either negative or positive parenting. All previously mentioned covariates were included in the model.

The conditional process model was first fitted where both the indirect and direct paths were moderated by child sex (See Figure 1). Should parenting practices not emerge as a significant indirect path, a model whereby only a direct path is moderated by child sex will be retained, and positive and harsh parenting practices will be included as covariates (See Figure 2).

2.3 Results

2.3.1 Descriptive Statistics

Table 1 presents descriptive data for the families included in the analyses, with data for mothers and fathers presented separately given the different number of participants. Attrition analyses between the initial time point of the study (at age two years) and the current sample (at age seven to eight years) revealed that parents who were born outside Canada, were separated or divorced, did not attain their high school diploma or had an annual income under $40,000 were more likely to discontinue the study. Given that our current sample had more mothers than fathers, logistic regression analyses were run to

compare families for whom the father completed questionnaires (n = 208) compared to those where fathers did not complete questionnaires (n = 64). Results revealed that father participation was linked to higher income and being partnered with their child's mother. The six ANPS dimensions, as well as the parenting practices for mothers and fathers and child behaviour are presented in Table 2 and correlations among relevant variables are presented in Table 3.

2.3.2 Regression Analyses

2.3.2.1 Mothers

In Step 1, regression analyses revealed significant interactions between child sex and mothers' ANPS subscales of ANGER ($p = .040$) and SEEKING ($p = .047$) for child externalising behaviours, as well as between child sex and mother PLAY ($p = .012$) for child internalising behaviours. These models were thus probed further in Step 2. The confidence intervals of the indirect pathways of parenting practices (Model 1, see Figure 2.1) for maternal ANPS ANGER (harsh: $\beta = .03$, 95% CI [−.01, .09]; positive: $\beta = .003$, 95% CI [−.004, .03]), SEEKING (harsh: $\beta = .002$, 95% CI [−.004, .03]; positive: $\beta = -.004$, 95% CI [−.03, .003]), and PLAY (harsh: $\beta = .001$, 95% CI [−.01, .02]; positive: $\beta = .002$, 95% CI [−.01, .02]) included zero, indicating they were not statistically significant. A direct effects model (Model 2, see Figure 2.2) whereby child sex moderated maternal ANPS subscales and child behaviour outcomes was therefore retained. Here, we thus added harsh and positive parenting as covariates. Results indicated that mothers' ANGER traits were moderated by child sex; higher maternal ANGER scores were positively associated with greater scores for

externalising behaviours for boys (β = .30, 95% CI [.12, .48], p = .001); amongst girls, this association was not significant (β = .04, 95% CI [−.14, .21], p = .69). Higher SEEKING scores amongst mothers were negatively associated with externalising behaviours for boys (β=−.17, 95% CI [−.34, −.003], p = .046) whereas such an association was not present for girls (β = .09, 95% CI [−.08, .25], p = .324). Higher scores on maternal PLAY were negatively associated with self-reported internalising behaviours for boys (β=−.19, 95% CI [−.38, −.004], p = .046); this association was not found for girls (β = .11, 95% CI [−.07, .29], p = .22).

2.3.2.1 Fathers

In step 1, regression analyses revealed significant main effects of fathers' ANPS SADNESS (p = 0.041) and FEAR (p = 0.012) and child internalising behaviours. We thus moved forward to step 2 where the indirect effects of parenting practices (harsh and positive) were not found to be significant for associations between paternal ANPS SADNESS or FEAR in relation to child internalising behaviours (Model 1, see Figure 1). The direct model (Model 2, see Figure 2) was found to be significant and retained; child sex did not moderate associations. Results revealed that higher SADNESS traits in fathers were positively associated with child self-reported internalising behaviours (β = 0.20, SE β = 0.10, 95% CI [0.01, 0.39])). In addition, higher FEAR traits in fathers were negatively associated with child internalising behaviour (β = -0.23, SE β = 0.09, 95% CI [-0.41, -0.05]).

Results for these multiple regressions pertaining to associations between mother and father ANPS personality traits and child behaviour, as well as any significant interactions between parent ANPS and child sex, are presented in Table 4.

2.3.2.3 Supplementary analyses

We conducted supplementary analyses to further probe the combined contribution of mothers and fathers as well as to test the additive and interactive effects among parental ANPS subscales. In a first analysis, we included all parent subscales in the same model to examine the specific contribution of mother and father affective personality traits. In a second series of analyses, we tested all interactions between mother and father ANPS subscales to investigate possible buffering or exacerbating effects of affective traits in relation to child behaviour difficulties. We found no evidence for any additive effects or interactions between any maternal and any paternal ANPS score in the association with child externalising and internalising behaviours present in our sample.

2.4 Discussion

The primary objectives of this study were to examine associations between parental ANPS personality traits, assessed separately for mothers and fathers, and children's self-reported internalising and externalising behaviours at age seven to eight years; to study whether these pathways were direct or operated indirectly through positive and

harsh parenting; and whether associations (direct or indirect) were moderated by child sex.

The main findings indicated that sons of mothers with higher ANPS ANGER traits reported greater externalising behaviours. Sons of mothers with higher SEEKING traits reported lower externalising behaviour. Finally, mothers with higher ANPS PLAY scores had boys who reported lower scores on internalising behaviours.

Our findings that mothers' ANPS ANGER traits were positively associated with boys' self-reported externalising behaviours are consistent with previous research. Studies have shown maternal anger to be more strongly associated with boys' behaviour difficulties compared to girls (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997; Renk, Phares, & Epps, 1999). In contrast, Orri and colleagues (2018) found that mothers in the high emotional ANPS profile reported greater internalising behaviours in their sons. This difference may be explained by the fact that our study looked specifically at the ANPS ANGER subscale, rather than considering a combination of ANGER, FEAR and SADNESS as captured by the latent profile analysis. In fact, previous studies have linked maternal negative affect (i.e., elevated ANGER, SADNESS, FEAR) to internalising behaviours (Crawford et al., 2011). Furthermore, in the present study, child behaviour was self-reported (rather than parent-reported).

Although it was expected that mothers with elevated ANPS traits of PLAY would have children with greater externalising behaviours, our findings did not support this hypothesis. Rather, results for maternal PLAY pertained to child-reported internalising behaviours such that mothers with higher scores on PLAY had sons who reported lower scores on internalising behaviours. These findings are in line with previous research that examined the role of maternal PLAY on child internalising behaviours, whereby greater levels of maternal PLAY acted as a protective factor against child internalising behaviours (Cabrera, Karberg, Malin, & Aldoney, 2017; Shorer, Swissa, Levavi, & Swissa, 2019).

Finally, contrary to our initial hypothesis that children of mothers with elevated ANPS SEEKING would report more externalising behaviours, it was found that mothers with higher scores on the ANPS SEEKING subscale had sons who reported lower scores on externalising behaviours. While past research has linked openness to experience with sensation seeking (Zuckerman, 1994), which in turn has been linked to externalising behaviours in children (Frick, Juper, Silverthorn, & Cotter, 1995), our results may be interpreted in light of other aspects of openness to experience (i.e., creativity, inventiveness, perceptiveness) and its relationship to the ANPS SEEKING subscale (Panksepp, 2003). Mothers who have higher scores on openness to experience may thus be more likely to engage in nurturing behaviours (i.e., self-regulation, emotional expressiveness and encouragement of their child to use imaginative problem solving) which are linked to lower externalising behaviours (Karreman, van Tuijl, van Aken, & Deković, 2008; Metsäpelto & Pulkkinen, 2003).

Findings for fathers revealed that elevated ANPS SADNESS was linked to greater levels of children's self-reported internalising behaviour, which may be interpreted in light of previous literature. Specifically, neuroticism, which is linked to sadness, has been found to be related to increased internalising behaviours in children (Ellenbogen & Hodgins, 2004; Kochanska, Clark, et al., 1997; Kurdek, 2003). One mechanism through which paternal sadness could increase child internalising behaviours is through positivity suppression, whereby fathers with elevated levels of sadness are more likely to demonstrate decreased positivity following communications with the child (Jacob & Johnson, 2001).

An interesting and unexpected result pertained to the finding that fathers with higher ANPS FEAR scores had children with lower levels of self-reported internalising behaviour. One possible explanation for this finding could be related to past research linking paternal anxiety with overprotectiveness (Bögels & van Melick, 2004), which has been both negatively (Majdandžić, de Vente, Colonnesi, & Bögels, 2018) and positively (Van Der Bruggen, Stams, & Bögels, 2008) linked to child internalising behaviours. These inconsistent findings may be explained by the curvilinear association found between parental protectiveness and child anxiety. Specifically, low and high levels of paternal anxiety and overprotectiveness have been linked to increased anxiety in children, whereas moderate levels of paternal anxiety are associated with greater paternal sensitivity and attunement to the needs of their children (Bayer, Sanson, & Hemphill, 2006). It can thus be theorised that moderate, rather than low or high, levels of paternal anxiety and protectiveness act as protective factors against child internalising behaviours. Specifically, moderately anxious and protective fathers are more likely to notice any problems their child faces and help them to manage difficulties in a healthy manner, which may be associated with decreased child

internalising behaviours. Given the use of a community sample in the present study, fathers with elevated levels on the FEAR subscale may be more representative of moderate, rather than clinical levels of anxiety.

Although parenting practices were found to mediate association between parental personality and child behaviour in past research (Orri et al., 2018; Prinzie et al., 2005; Prinzie, Stams, Deković, Reijntjes, & Belsky, 2009), no indirect pathways of parenting practices, nor conditional indirect pathways (i.e., moderated by child sex), were found in the present study for mothers or fathers. However, in the present study, all key variables were measured concurrently and internalising and externalising behaviours were self-reported by the children. It is possible that such indirect pathways might have been more salient in previous studies that varied according to the nature of the design (e.g., cross-sectional, longitudinal; Trentacosta & Shaw, 2008) and/or type of informants employed for key variables (Mohamed Ali et al., 2021; Keiley et al., 2001; Leve, Kim and Pears, 2005). For example, some studies have found that parenting practices mediated the relationship between parent personality and child behaviour when parents reported on their personality and parenting practices as well as their child's behaviour (e.g., Keiley et al., 2001; Leve, Kim and Pears, 2005). In addition, Trentacosta and Shaw (2008) found that maternal aggressive personality predicted boys' self-reported externalising/antisocial behaviour – but within a longitudinal design across several years and with observed parenting as a mediator. In addition, informant-, but not self-, reported parent personality predicted inattention and hyperactivity in boys through observer-reported responsive parenting, thus highlighting the importance of multi-informant responses on key variables (Mohamed Ali et al., 2021).

Finally, it is noteworthy that our results highlighted the moderating role of child sex whereby direct associations between maternal ANPS traits and child behaviour were salient only boys. This finding may be explained by the differences in maternal socialisation of emotions and behaviours according to child sex (Eisenberg, 2020). For example, mothers converse more about fear and sadness with girls as compared to boys (Adams, Kuebli, Boyle, & Fivush, 1995; Fivush, Brotman, Buckner, & Goodman, 2000). It has also been theorised that when discussing family conflicts, mothers report experiencing more anger towards their sons than daughters due to an increased reactivity to boys' externalising behaviours (Fivush, 1989).

2.4.1 Strengths, limitations and future perspectives

This study demonstrated that certain parental affective personality traits such as mothers' ANGER, SEEKING and PLAY, and fathers' SADNESS and FEAR may be particularly relevant for externalising and internalising behaviours in middle childhood. Key strengths of the study include the large number of participants and the minimisation of shared method variance since parent-reported ANPS subscales were examined in relation to child-reported internalising and externalising behaviours. Including the children's own perspective of their emotional and behaviour difficulties adds valuable information. A further strength of this study pertained to the inclusion of data from fathers. We were, however, faced with the following limitations. Firstly, the sample was not randomly selected and there was participant attrition from the initial time point until the present data collection. Participants who remained in the study had a higher socioeconomic level than those representative of Quebec families (Côté et al., 2013). Thus, these results may not be applicable to the general population. Furthermore,

while much effort was made to recruit as many fathers as possible, they were somewhat less well represented than mothers, as they were often not present at the time of the home evaluation and had lower rates of questionnaire completion. Future work, including a larger number of participants could further probe potential interactions between mother and father affective personality, although our initial analyses did not indicate such effects. In addition, relying solely on self-reported child behaviour difficulties and parenting practices did not allow for the nuances that multi-informant responses provide (e.g., Mohamed Ali et al., 2021; Dwyer, Nicholson, & Battistutta, 2006). Finally, the data pertaining to parental personality, parenting and child behaviour difficulties were collected at the same time point, thus precluding the ability to look at true mediation.

Research evaluating parent's affective personalities and child behaviour difficulties could be used to optimise children's emotional development. For example, findings from our research could help to better identify targets such as parental levels of anger or sadness that could be evaluated in future interventions. Future studies could also examine the relevance of other mechanisms beyond parenting practices that have been previously linked to parental personality and child behaviour difficulties. These include both parent and child temperament (Puff & Renk, 2016), attachment style (Brown & Whiteside, 2008) and child personality (Van Leeuwen, Mervielde, Braet, & Bosmans, 2004). Certain study designs, such as twin designs, could also shed light on the contribution of genetics versus observational learning that could explain such direct pathways.

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References

The list of references is presented at the end of the thesis.

Tables

Table 2.1 Table 1

Descriptive Data for relevant participant characteristics

Variable	Mother N (%)	Father N (%)
Child Sex		
Male	124 (45.6)	96 (46.2)
Female	148 (54.4)	112 (53.8)
Maternal Education		
High school diploma or lower	15 (5.5)	7 (3.4)
Post high school diploma	99 (36.4)	71 (34.1)
University Diploma	158 (58.1)	130 (62.5)
Annual family income		
Below $40,000	36 (13.2)	16 (7.7)
Above $40,000	236 (86.8)	192 (92.3)
Child language of assessment		
English	47 (17.3)	42 (20.2)
French	225 (82.7)	166 (79.8)
Current Marital Status		
Single	38 (14.0)	10 (4.8)
Partnered	233 (86.0)	198 (95.2)

Table 2.2. Table 2

Means and standard deviations for parental ANPS scores and child internalising and externalising behaviours

	Mean (*SD*)	
Parent Variables	Mother	Father
ANPS[a]		
ANGER	15.82 *(5.89)*	15.12 *(6.31)*
FEAR	20.15 *(7.23)*	16.93 *(6.85)*
SADNESS	19.38 *(5.65)*	16.87 *(5.19)*
PLAY	25.98 *(5.55)*	27.20 *(5.66)*
CARE	28.70 *(4.89)*	24.99 *(5.39)*
SEEKING	27.74 *(4.87)*	27.55 *(4.79)*
Parenting Practices[b]		
Harsh	2.93 (*1.23*)	2.58 (*1.25*)
Positive	6.33 (*1.16*)	5.96 (*1.19*)
Child Variables		
Self-Reported Behaviour[c]		
Internalising	3.10 (*.71*)	3.06 (.68)
Externalising	2.63 (*.54*)	2.59 (*.50*)

Note: All reported means are non-transformed.

[a] ANPS subscales range from 0 to 3, with a maximum score of 42.

[b] Parenting practices are rescaled from 1 to 10.

[c] Child behaviours are rescaled from 1 to 7.

Table 2.3. Table 3

Pearson correlations for key variables

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Maternal ANPS																		
1. ANGER	-																	
2. FEAR	0.43**	-																
3. SADNESS	0.47**	0.68**	-															
4. PLAY	-0.07	-0.19**	-0.12*	-														
5. CARE	-0.08	0.07	0.14*	0.31**	-													
6. SEEKING	-0.11	-0.22**	-0.17**	0.38**	0.22**	-												
Paternal ANPS																		
7. ANGER	-0.02	0.03	-0.05	0.02	-0.15*	0.004	-											
8. FEAR	-0.14	-0.12	-0.09	-0.04	-0.07	0.06	0.42**	-										
9. SADNESS	-0.09	-0.05	-0.03	-0.08	-0.13	0.05	0.44**	0.66**	-									
10. PLAY	0.11	0.04	0.10	0.21**	0.06	0.04	-0.21**	-0.28**	-0.19**	-								
11. CARE	-0.03	0.02	0.03	0.001	0.18*	0.04	-0.14*	0.002	0.15*	0.25**	-							
12. SEEKING	-0.10	0.03	-0.03	0.05	-0.07	-0.03	-0.13	-0.06	-0.10	0.33**	0.22**	-						
Child behaviour																		
13. Externalising	0.21**	0.08	0.08	0.07	-0.03	-0.07	0.05	-0.02	0.07	0.16*	0.05	-0.09	-					
14. Internalising	0.12*	0.06	0.09	-0.03	-0.002	-0.07	0.07	-0.07	0.07	0.08	0.07	0.03	0.34**	-				
Maternal Parenting																		
15. Positive	-0.09	0.002	0.04	0.19**	0.26**	0.13*	0.07	0.14	0.06	-0.01	0.10	0.04	-0.06	0.02	-			
16. Harsh	0.38**	0.19**	0.14*	0.04	-0.03	-0.01	0.04	-0.06	0.04	0.09	0.01	-0.17*	0.18**	0.07	-0.15*	-		
Paternal Parenting																		
17. Positive	0.001	0.11	0.14*	0.04	0.16*	0.05	-0.03	0.06	0.13	0.27**	0.21**	0.22**	-0.02	-0.002	0.19**	-0.12	-	
18. Harsh	0.06	0.07	0.06	0.14*	0.03	0.02	0.25**	0.18**	0.16*	-0.04	-0.13	-0.19**	0.22**	-0.03	-0.10	0.32**	-0.09	-

Note. *p ≤ 0.05; **p ≤ 0.01

Table 2.4. Table 4

Final regressions assessing the link between parent ANPS subscales and child behaviours

	Mothers				Fathers			
Child behaviour	Externalising		Internalising		Externalising		Internalising	
ANPS subscale	*b*	*p*	*b*	*p*	*b*	*p*	*b*	*p*
ANGER	**0.27**	0.004*	0.08	0.283	-0.01	0.947	0.08	0.287
FEAR	0.02	0.847	-0.04	0.670	-0.12	0.167	**-0.23**	0.012*
SADNESS	0.03	0.761	0.04	0.619	0.14	0.131	**0.20**	0.041*
PLAY	0.08	0.214	**-0.19**	0.046*	0.14	0.074	0.01	0.951
CARE	-0.01	0.872	0.01	0.675	0.02	0.781	0.05	0.505
SEEKING	-0.16	0.062	-0.03	0.422	-0.04	0.538	0.06	0.426
ANPS subscale* child sex								
ANGER	**-0.24**	0.040*	-	-	-	-	-	-
PLAY	-	-	**0.30**	0.012*	-	-	-	-
SEEKING	**0.23**	0.047*	-	-	-	-	-	-

Note: *Refers to a significant p value ($p \leq 0.05$).
Models are adjusted for relevant covariates (i.e., child verbal ability, primary language of the child, maternal education, family income, single parenthood and parenting practices).
Interaction terms from only the final model obtained through backwards stepwise regression were included.
Boys were coded as 0, girls were coded as 1.
Betas are standardised.

Figures

Model 1

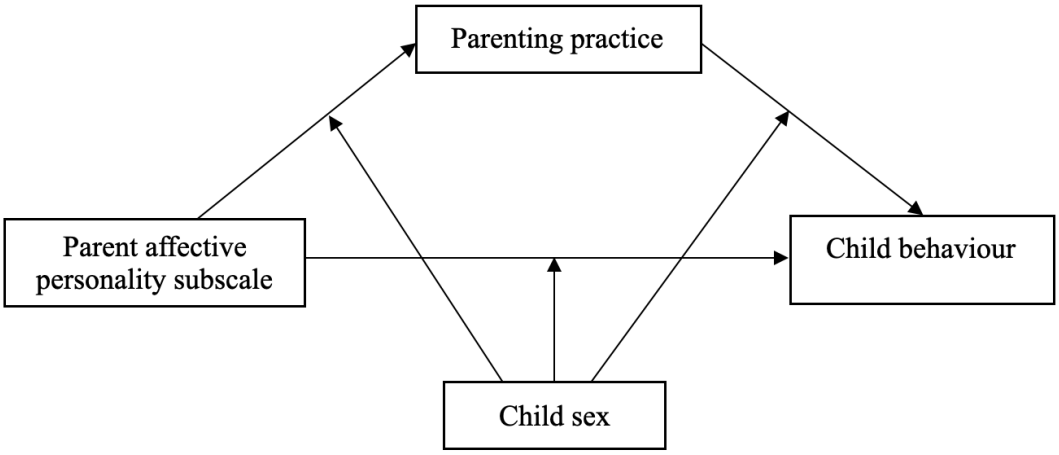

Figure 2.1. Exploratory model testing the associations between parent ANPS, parenting practices, and child behaviour and whether child sex moderated any of the pathways indicated in the figure above. Note that positive and harsh parenting practices were tested separately.

Model 2

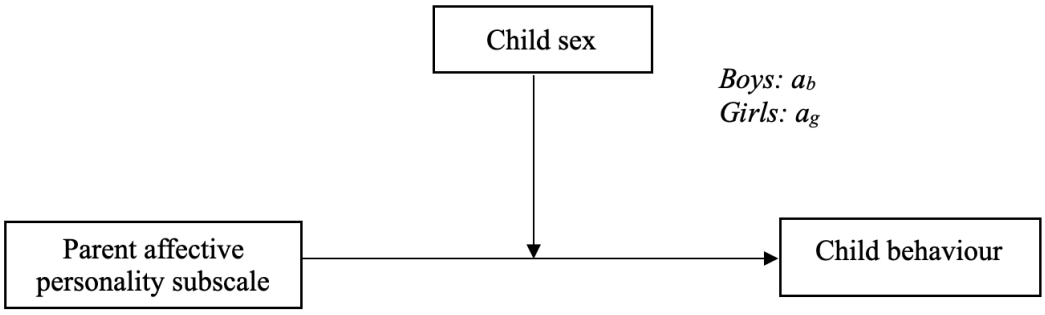

Figure 2.2. Final model testing the association between parent ANPS and child behaviour, and whether child sex moderates this association.

Note: a_b and a_g were computed by the PROCESS macro from the three parameters implied by the conditional direct path.

CHAPTER III

SECOND SCIENTIFIC ARTICLE : PARENTAL AFFECTIVE PERSONALITY AND EMOTIONAL FACIAL EXPRESSION RECOGNITION IN MIDDLE CHILDHOOD

Note. This article has been submitted to the *Journal of Experimental Child Psychology*.

Reference : Thaw, A., Orri, M., Paquin, S., Kim-Cohen, J., Tremblay, R., Côté, S. & Herba C. M. (2021). Article submitted for publication.

Abstract

Negative maternal affect associated with depression or anxiety has been linked to altered child emotional facial expression recognition (EFER). However, associations between individual variability in parental positive and negative emotionality, or affective personality, and child EFER remain unclear. This study examined parental affective personality, classified into low negative emotions, balanced or high emotional latent profiles, and EFER in 7- to 8-year-olds in a community sample of 288 families, within which there were 288 mother-child dyads and 222 father-child dyads. Child EFER for happiness, sadness, anger and fear was assessed using complementary explicit (matching an emotive face on the basis of the emotion category) and implicit (matching the identity of an emotive face while ignoring the emotion category) matching tasks at low and high expression intensities, and a sensitivity task (lowest expression intensity required to accurately identify emotions). Linear mixed models revealed children of mothers with high and balanced emotional profiles recognised fear at a lower intensity compared to those with mothers in the low negative emotions profile. Children of fathers in the high emotional profile were slower to recognise anger at a low intensity compared to those of fathers in the balanced profile. Profile-by-sex interactions revealed that boys of fathers in the high emotional profile, compared to boys of fathers with balanced emotional and low negative affective profiles, had slower implicit recognition of happiness, while their female counterparts had faster implicit recognition of happiness. Findings could inform parent-focused emotion coaching interventions to optimise children's emotional development.

Keywords: parents, affective personality, childhood, emotion processing, emotional facial expression recognition

3.1 Introduction

An important component of harmonious social interactions is emotional facial expression recognition (EFER; Tian et al., 2011). Facial expressions convey emotional information, and their accurate recognition allows for a better understanding of others' emotional states and appropriate responses in social situations (Lemerise & Arsenio, 2000). The development of EFER begins in infancy and continues through childhood into adolescence (Caron et al., 1985; Nelson & Dolgin, 1985; Thomas et al., 2007). By middle childhood, children can accurately identify basic emotions (happiness, sadness, anger, and fear) at different intensities of expression (low and high; Herba et al., 2006; de Sonneville et al., 2002; Vicari et al., 2000).

Given that parents are typically a primary source of social interaction during childhood, particularly over the first few years of life, their role in EFER development has been studied extensively (Belsky & de Haan, 2011). Past research has linked parental psychopathology with child EFER abilities given the altered emotional interactions between parent and child within the family context (Belsky & de Haan, 2011; Maliken, 2014; Suveg et al., 2005). Specifically, children of mothers diagnosed with depression and/or anxiety are exposed to more negative or flat affect and fewer positive emotions, in addition to harsher, less responsive parenting (Dawson et al., 2003; Field et al., 1990; Meiser et al., 2015; Wolford et al., 2019). Moreover, maternal depression and anxiety have been linked to a decreased ability in preschoolers to accurately identify basic emotions (happy, sad, anger, fear; Meiser et al., 2015; Székely et al., 2014). In fact, children of mothers with depression demonstrate a negative processing bias for sadness

(i.e., incorrectly interpreting other facial expressions as sad; Gibb et al., 2009; Kluczniok et al., 2016; Kujawa et al., 2011).

While parental psychopathology has previously been linked with child EFER abilities (Field et al., 2009; Joormann et al., 2007), it has been theorised that parental emotional well-being and day-to-day functioning may also be associated with child socio-emotional adjustment outcomes, such as EFER in community samples (Belsky & de Haan, 2011), through emotion socialisation behaviours (e.g., emotional expressiveness, reactions to children's emotions; Eisenberg, Cumberland, & Spinrad, 1998). Specifically, one proposed parent characteristic that influences their emotion socialisation behaviours and is purportedly associated with offspring EFER abilities is parent's positive and negative emotionality in everyday situations, also known as affective personality (Belsky & de Haan, 2011; Montag & Davis, 2018; Thompson et al., 2020). Affective personality is considered an individual's tendency to experience and express emotions in a relatively stable manner despite time-limited emotional fluctuations based on situational factors or events (de Haan et al., 2004; Panksepp, 2003; Panksepp et al., 1998; Zanon et al., 2013). Thus, an individual with typically elevated positive affect may respond negatively to a specific environmental trigger, but will then return to their baseline affective level once the situation passes (Diener et al., 1984; Lyubomirsky et al., 2005; Zanon et al., 2013). Although parental affective personality has previously been linked to child behaviour difficulties (Orri et al., 2018), its association with EFER abilities in middle childhood has yet to be examined. In fact, the few studies that assessed the link between parental positive or negative affective personality and offspring emotion processing employed infant populations and utilised lexically-based personality measures (e.g., Aktar et al., 2018; Aktar et al., 2016; de Haan et al., 2004). In these studies, a bias towards negative emotions was found for infants of mothers with greater levels of positive affect (de Haan et al., 2004), while maternal negative affect was associated with infants' decreased arousal to basic

emotional expressions (happiness, sadness, anger, fearfulness) compared to neutral faces (Aktar et al., 2018). Furthermore, despite a general lack of inclusion in the emotion processing literature, fathers' negative affect has been linked to infant interest (as measured by fixations; Aktar et al., 2016), but not arousal (as measured by pupillary dilation; Aktar et al., 2018) in response to emotional expressions. However, one challenge of studying emotion processing in infants is that their abilities are still developing and they lack the verbal skills to communicate their EFER perceptions. Thus, researchers must utilise physiological measures of EFER such as EEG readings or habituation paradigms (Herba & Phillips, 2004; McClure, 2000). In contrast, studies with children can employ EFER tasks that allow for the complementary assessment of different aspects of emotion processing (i.e., linguistic, visuo-spatial, facial expression intensity; Herba & Phillips, 2004; Herba et al., 2006).

Furthermore, no studies to our knowledge examined the moderating role of child sex when evaluating parent personality and child EFER. Eisenberg and colleagues (1998) theorised that child sex may moderate the link between parent characteristics (e.g., personality, psychological well-being; Deater-Deckard & Dodge, 1997) that influence their emotion socialisation behaviours and child socio-emotional adjustment. In fact, studies on maternal mental health have found that daughters of mothers with depression struggle to identify sad faces at lower intensities (Joormann et al., 2010), while boys, but not girls, with at least one parent with a history of depression identify sadness at significantly lower levels of emotional intensity (Lopez-Duran et al., 2013). Although it is beyond the scope of this study to test the theoretical framework outlined by Eisenberg and colleagues (1998), their model does suggest the importance of considering the role of child sex when examining links between parental affective personality and child EFER.

The characteristic of parent sex has also been proposed to be indirectly linked to child socio-emotional adjustment through emotion socialisation behaviours (Eisenberg et al., 1998). Although Eisenberg and colleagues' model does not explore the relationship between parent sex and personality, past research has found that personality varies according to sex (Schmitt, Realo, Voracek, & Allik, 2008). In addition, patterns in maternal and paternal affective personality, examined separately, were differentially associated with child behaviour difficulties, another measure of socio-emotional adjustment (Orri et al., 2018). However, no studies, to our knowledge, have examined such links with child EFER as the outcome. Thus, we believe that it will be important to examine the association between parent affective personality and child EFER, separately for mothers and fathers.

In addition, although parental affective personality has been primarily assessed through lexically-informed positive and negative affect (i.e., PANAS; Watson, Clark, & Tellegen, 1988) in relation to infant EFER abilities (Belsky & de Haan, 2011), over the past 20 years, biologically-informed alternatives to this traditional understanding of affective personality have been proposed (DeYoung & Gray, 2009). One such example is the Affective Neuroscience Theory (Panksepp, 1998) which purports that affective personality is anchored to six primary phylogenetic emotional systems found across humans and animals (Panksepp et al., 1998) that are both positive (CARE, PLAY, SEEKING) and negative (ANGER, FEAR, SADNESS; Davis & Panksepp, 2011; Davis et al., 2003). This biologically-based conceptualisation of personality is well-accepted (Montag et al., 2021) and has been previously used to assess the link between

parental affective personality and behaviour difficulties in middle childhood (Orri et al., 2018).

The main objective of this study was to investigate the associations between parents' affective personality and offspring EFER in middle childhood while addressing relevant gaps in knowledge. Specifically, current literature on parental affect and offspring emotion processing has largely excluded fathers, has focused mainly on infants, and lacks a biologically-based measure of affective personality. Given these gaps in the literature, the study was exploratory.

Thus, examining data from a community-based cohort, this study (1) explored both mothers' and fathers' affective personality in relation to their children's EFER, (2) investigated three different emotion processing tasks to assess EFER for happy, sad, angry and fearful expressions, and (3) tested the moderating role of child sex in the association between parents' affective personality and EFER.

3.2 Methodology

3.2.1 Participants

The present study was conducted within the context of the Étude de Milieu de Garde

(EMIGARDE; translation: Study on Child Care Services), a community-based prospective longitudinal family study, the details of which have been described elsewhere (Côté et al., 2009). Participating families were primarily francophone (82.7% French-speaking, 17.3% English-speaking) with children born between June 2003 and April 2004 (child mean age 8.06 years at the time of testing). At the age of 7-8 years, 326 children (54.6% females and 46.4% males) participated in the home assessments. After five children were excluded based on a diagnosis of autism spectrum disorder, the final sample consisted of 288 families (288 mothers, 222 fathers) with at least one parental assessment of affective personality, completion of the child EFER tasks and relevant covariates. The participation rate did not vary for boys and girls even once children with autism spectrum disorder were excluded. Given that the current sample had more mothers than fathers, logistic regression analyses were run to compare families for whom fathers completed questionnaires (n = 222) to those where they did not (n = 66). Families in which fathers participated were more likely to have higher family income and fathers living with their child's mother. Parents completed consent forms at each phase of data collection. Ethics approval was obtained at the research center of the CHU Sainte-Justine in Montreal, Quebec.

3.2.2 Procedure

Home visits were conducted whereby the emotion processing tasks were administered to the children along with other tasks not included in the current paper. The three emotion processing tasks and control task were presented to the children using a laptop computer and took a total of 15 minutes to complete. In addition, parents were interviewed and given questionnaires to complete. Most

interviews were conducted solely with mothers, as many fathers were absent at the time of the home visit. Fathers who were not home completed questionnaires online or on paper versions that were returned by post. Additional details on the home visit are available (Charrois et al., 2019).

3.2.3 Measures

3.2.3.1 Parental affective personality

The Affective Neuroscience Personality Scales (ANPS; Davis & Panksepp, 2011), developed according to Panksepp's (1998) biologically-based Affective Neuroscience Theory, was employed to assess self-reported parental affective personality when children were seven- to eight-years of age. Each of the six basic emotional systems, that have been honed through evolutionary processes as mechanisms for mammalian survival, comprised 14 items (Montag, Elhai, & Davis, 2021). The six dimensions of affective personality include three positive dimensions: PLAY (e.g., playing social games with physical contact, laughter, humour, and generally having fun), CARE (e.g., nurturing tendencies including liking to care for others, being drawn to young children and pets, and feeling soft-hearted towards animals and people in need; Davis & Panksepp, 2011), and SEEKING (e.g., anticipating new positive experiences including being curious, striving for solutions to problems and generally liking to explore), and three negative dimensions: ANGER (e.g., hot-headedness, rapid irritation and low frustration tolerance), FEAR (e.g., anxiety, worrying, difficulty making decisions, feeling tense, and losing sleep), and SADNESS (e.g., social separation distress, loneliness, crying and thinking about loved ones and past relationships). The ANPS also includes a dimension of spirituality that was not assessed in the present study given

that we focused on those subscales that may be seen across species (Davis & Panksepp, 2011).

When analysing the ANPS in the context of this study, a person-centered analysis was employed to explore variability in patterns of affective personality traits according to subgroups within our sample (Hicks, Clark & Durbin, 2017). Specifically, latent class analyses were used to calculate profiles of parental affective personality based on the six basic emotional systems, as described by Orri and colleagues (2017). For both mothers and fathers, three relevant affective profiles emerged in relation to this study's overall sample mean: 1) *Low negative emotions*, characterised by the lowest levels of negative emotions and slightly elevated levels of positive emotions (22.9% of mothers, 24.3% of fathers), 2) *balanced*, characterised by positive and negative emotionality levels (64.2% of mothers, 61.3% of fathers) and 3) *high emotional*, characterised by the highest levels of negative emotionality for both parents, and elevated levels of care for mothers but not fathers (12.8% of mothers, 14.4% of fathers). Good reliability and validity have been previously established for the ANPS subscales (for review see Montag et al., 2021) and its three latent profiles (Orri et al., 2017; 2018). See Figure 1 for more details on affective personality profile dimensions for mothers and fathers.

INSERT FIGURE 1

3.2.3.2 Child EFER

To assess children's emotion processing abilities, computerised tasks of implicit and explicit emotion matching, and morphing were administered (for additional details about these tasks see Porter-Vignola et al., 2021). The EFER tasks were developed to be age-appropriate for the participants in this study and to target specific skills (i.e., verbal, visuo-spatial) upon which emotion processing is dependent (Herba et al., 2006). The facial stimuli used for the tasks were obtained from a widely used set (Ekman & Friesen, 1976) available from the Facial Expression of Emotion: Stimuli and Tests (FEEST) database (Young et al., 2002). Note that no task-specific attrition (i.e., refusal to take part in a given emotion task but not the others) was present.

EFER matching tasks that required the ability to match emotions on both an implicit and explicit level were utilised. Employing both explicit and implicit matching tasks allowed for a more nuanced understanding of child emotion processing. To assess explicit emotion processing, children completing the emotion matching task were required to match a target stimulus with one of two choices on the basis of emotion category (for details, see Porter-Vignola et al., 2021). During the identity matching task, which assessed implicit emotion processing, children matched the target stimulus with one of two choice stimuli based on the identity of the emotive face while ignoring the emotion category. Each task relies on different neural substrates, whereby explicit EFER tends to elicit prefrontal cortex activation whereas implicit EFER elicits limbic system activation to a greater extent (Habel et al., 2007; Herba et al., 2006; Scheuerecker et al., 2007). The main outcome variables for both tasks were accuracy and reaction time (RT) for correct responses (DVs). Each matching task included 32 trials presenting four emotions (happy, sad, angry and fearful) at four intensities of expression (25%, 50%, 75%, and 100%) for two male and female models. Presentation of faces were counterbalanced according to matching task (explicit, implicit), model

identity as well as emotion category and intensity. It is of note that a large majority of the children in the present sample had difficulty correctly identifying the four emotion categories at 25% intensity of expression, resulting in missing data (particularly for correct RT). Thus, the lower facial expression recognition intensities (25% and 50%) were combined to create the low intensity group, while higher intensities (75% and 100%) were combined to create the high intensity group. The variable of correct RT was log-transformed.

For the shape matching task, children were asked to match a target shape to one of two choice shapes in order to ensure that the concept of matching was understood. Twenty trials were administered using five different target shapes where total scores were derived for RT as controls on the matching tasks (Herba et al., 2006; Porter-Vignola et al., 2021).

For the morphing task, children viewed eight trials per emotion category (happy, sad, angry, fearful) counterbalanced across 32 trials. Each trial consisted of 11 presentations of faces beginning with a neutral face (0%) that was sequentially morphed for each emotion at increasing increments of 10%, ending with a full expression (100%) of the particular emotion (see Porter-Vignola et al., 2021). Emotion morphing scores were defined as sensitivity, the lowest intensity at which the child verbally identified the correct emotion for three consecutive presentations. A similar task has been previously used with children as young as four years of age (Herba et al., 2008) and into mid-childhood (Gold, Kim-Cohen, & Herba, 2009).

3.2.3.3 Moderating variables

Child sex assigned at birth was utilised as a moderating variable between parental affective personality and child EFER.

3.2.3.4 Covariates

Child age was utilised as a covariate given that emotion processing abilities can be influenced by subtle age differences (Lawrence et al., 2015).

Children's receptive vocabulary was assessed using the Peabody Picture Vocabulary Test (Dunn & Dunn, 1981) or the French equivalent (Échelle de vocabulaire en images Peabody; Dunn et al., 1993) for francophone participants. A total score for child verbal ability was used to control for the verbal component of the morphing task.

Given that altered parenting practices have been linked to both parental personality (Belsky & Jaffee, 2015; Prinzie et al., 2009) and psychopathology (Kelley et al., 2015; Wolford et al., 2019), a modified version of the Parent Practices Scale (Stattin & Kerr,

2000; Strayhorn & Weidman, 1988) was employed in the current study. Mothers and fathers each completed 17 items pertaining to their parenting style within the context of daily parent-child interactions. Mean scores were generated for both harsh (consisting of seven items that depict punitive disciplinary tactics such as yelling and spanking) and positive parenting practices (consisting of 10 items characterised by warmth, involvement and praise), and were found to be reliable ($\alpha \geq .75$). Reliability and validity of this scales have been previously established and found to have adequate six-month stability (see Orri et al., 2018 for details).

Previous literature has reported associations between lower socioeconomic status in childhood and altered patterns of EFER abilities (Herzberg & Gunnar, 2020). Thus, two indicators of socioeconomic status, single parenthood and family income, (Flouri, Midouhas, & Ruddy, 2016; McMunn et al., 2001; Reiss, 2013), were used as controls in the present study. Single parenthood was defined as living in a single parent family during the most recent timepoint of data collection (2011-2012). Family income, dichotomised with a cut-off of $40,000 CAD before tax, was based on a low-income variable generated by Statistics Canada in 2013 for a family of four in 2011 and 2012 (Statistics Canada, 2013).

3.2.4 Statistical analyses

To address our objectives, analyses were conducted within SPSS Version 27 using linear mixed models (Heck et al., 2013) with restricted maximum likelihood, which

provide robust results in the presence of skewed variable distributions (Banks et al., 1985). A similar approach was previously employed to analyse similar EFER tasks in the context of a different study (Porter-Vignola et al., 2021).

Models pertaining to the three emotion processing tasks (i.e., morphing and emotion and identity matching) were run individually for each emotion category, conducted separately for mothers and fathers. For all three tasks, we estimated the associations between the parental affective profiles and EFER outcomes, whereby affective profile was considered a between-level factor. Additionally, the repeated trials and expression intensity (low versus high) in the matching tasks were considered within subject effects. For the morphing task, we examined the association between parental affective personality profiles and child sensitivity (i.e., the lowest intensity at correct recognition of emotion). Finally, for all models, we examined the moderating role of child sex. In addition, three-way interactions between parental affective personality profile, emotion intensity and child sex were examined for the matching tasks and non-significant interactions were removed from the models. For the matching tasks, we presented unstandardised betas in order to represent mean differences in EFER accuracy, reported as the proportion of correct trials attained, and mean differences in RT on successful trials, reported in milliseconds. For the morphing task, unstandardised betas were employed to represent mean differences in percentage of intensity at correct recognition.

The Benjamini-Hochberg (1995) method was employed to address multiple testing whereby tests were run for each of the four emotions, controlling for false-discovery rate (set at .05; Bogdan et al., 2008). Only results above this threshold were considered

significant and presented in the results section. Effect sizes were calculated using Hedges' g (Hedges & Olkin, 2014) and interpreted as small (0.20), medium (0.50), and large effects (0.80; Ellis, 2010).

3.3 Results

3.3.1 Descriptive results

Table 1 presents descriptive data and group comparisons for the parents included in the analyses, with data for mothers and fathers presented separately.

INSERT TABLE 1

3.3.2 Mothers

Descriptive statistics pertaining to child EFER for all tasks and maternal affective personality profiles are presented in Table 2.

INSERT LINK FOR TABLE 2

3.3.2.1 Matching tasks

For the emotion matching task, no significant effect of maternal affective profile or its interaction with child sex and/or emotion intensity was found for children's emotion-matching accuracy or speed for each of the four emotions.

For the identity matching task, no significant effect of maternal affective profile nor its interaction with child sex and/or emotion intensity, was found for children's accuracy or speed when matching identity.

3.3.2.2 Morphing task

Maternal affective profile was associated with children's sensitivity for recognition of fear ($F = 5.10$, $df = 270$, $p = .007$). Children of mothers in the high emotional profile required a lower intensity of expression to correctly recognise fear compared to those

with mothers in the low negative emotions profile (b = -11.62, g = -0.58, df = 270, p = .006, CI 95% [-19.94, -3.29]). Children of mothers in the low negative emotions profile required a greater intensity of expression to recognise fear compared to those with mothers in the balanced profile (b = 8.16, g = 0.42, df = 270, p = .005, CI 95% [2.49, 13.82]). No significant difference was found between children with mothers in the high emotional and balanced profiles (b = -3.46, g = 0.18, df = 270, p = .344, CI 95% [-3.72, 10.64]).

3.3.3 Fathers

Descriptive statistics pertaining to child EFER for all tasks and paternal affective personality profiles are presented in supplementary Table 3.

INSERT TABLE 3

3.3.3.1 Matching tasks

For the emotion matching task, no significant effect of paternal affective profile, nor its interaction with child sex and/or intensity of emotion, was found for children's accuracy for any of the four emotion categories.

A significant main effect of paternal affective profile was found for children's speed in correctly recognising happiness ($F = 7.66$, $df = 210$, $p = .001$). Children with fathers in the high emotional profile were faster at accurately matching happy expressions compared to children with fathers in the low negative emotions profile ($b = -483.72$, $g = -0.73$, $df = 210$, $p = .001$, CI 95% [-774.70, -192.73]). Children with fathers in the low negative emotions profile were slower at matching happiness compared to those with fathers in the balanced profile ($b = 369.40$, $g = 0.57$, $df = 210$, $p = .001$, CI 95% [162.30, 576.50]). No significant difference was found between children with fathers in the high emotional and balanced profiles for RT when matching happiness ($b = 114.32$, $g = 0.18$, $df = 210$, $p = .381$, CI 95% [-142.14, 370.78]). Child sex and/or emotion intensity did not moderate associations. The three-way interaction between paternal affective profile, child sex and emotion intensity was not significant.

For the identity matching task, no significant effect of paternal affective profile, nor its interaction with child sex and/or intensity of emotion, was found for children's accuracy.

In addition, no significant main effect of paternal affective profile was found for children's RT on the identity matching task. However, an interaction between child sex

and paternal affective profiles was found for happiness (F = 7.10, df = 209, p = .001). Specifically, boys of fathers in the high emotional profile were slower to match identity when viewing happy expressions compared to those with fathers in the low negative emotions (b = 531.47, g = 0.97, df = 211, p = .004, CI 95% [176.73, 886.21]) and balanced profiles (b = 439.24, g = 0.81, df = 209, p = .006, CI 95% [128.28, 750.21]). No difference in RT was found between sons with fathers in the low negative emotions and balanced profiles (b = -92.23, g = -0.17, df = 212, p = .464, CI 95% [-340.02,155.57]). Conversely, it was found that girls of fathers in the high emotional profile were faster to accurately match identity when viewing happy expressions compared to those with fathers in the low negative emotions profile (b = -350.02, g = -0.65, df = 208, p = .029, CI 95% [-664.16, -35.89]). No difference in RT to match identity when viewing happy faces was found between daughters with fathers in the balanced profile compared to those with fathers in the high emotional (b = 220.21, g = 0.41, df = 210, p = .121, CI 95% [-58.27, 498.70]) or low negative emotions profiles (b = -129.81, g = -0.24, df = 206, p = .269, CI 95% [-360.88,101.26]).

A significant interaction between emotion intensity and paternal affective profiles was found for anger (F = 6.49, df = 647, p = .002). Specifically, children of fathers in the high emotional profile were slower at matching identity when presented with anger at a lower intensity of emotion expression compared to those with fathers in the balanced profile (b = 295.70, g = 0.62, df = 403, p = .028, CI 95% [32.55, 558.83]). No difference in RT to match identity when presented with a low intensity angry face was found between children with fathers in the low negative emotions profile compared to those with fathers in the high emotional (b = -160.66, g = -0.33, df = 402, p = .290, CI 95% [-458.87, 137.55]) or balanced profiles (b = 135.04, g = 0.28, df = 404, p = .212, CI 95% [-77.47, 347.54]).

3.3.3.2 Morphing task

No significant main effect of paternal affective profile was found for child's accuracy on the morphing task for any of the four emotions.

3.4 Discussion

The primary objective of this exploratory study was to examine the association between parental affective personality profiles and children's EFER abilities, while considering the moderating role of child sex.

In terms of results pertaining to maternal affective personality and child EFER, although we did not find evidence that child performance on the emotion or identity matching tasks differed according to their mothers' affective personality profiles, significant results did emerge for the morphing task. Specifically, it was found that children of mothers in the high emotional profile were more sensitive to fearful, but not angry, happy or sad expressions compared to children with mothers in the low negative emotions profile. In addition, children with mothers in the low negative emotions profile were found to be less sensitive to fear compared to those with mothers in the balanced profile. It is of note that child sex did not moderate any of these

associations. Together, these findings may be interpreted in light of the differences in negative affect for the three maternal personality profiles. While mothers in the high emotional profile demonstrated higher scores on the positive dimension of CARE, this profile is primarily characterised by greater levels of FEAR, ANGER and SADNESS compared to the balanced and low negative emotions profiles. Thus, our findings may indicate that the greater a child's exposure to maternal negative affect, the more they demonstrate a sensitivity to facial expressions depicting fear. In addition, children exposed to lower levels of maternal negative affect (i.e., those with mothers in the low negative emotions profile) required a greater intensity of expression to correctly recognise fear compared to those with mothers in the balanced and high emotional profiles. This can be another indicator that the less children are exposed to maternal negative affect, as found in the low negative emotions profile, the less they are sensitive to facial expressions of fear. Our findings in a community sample are in line with findings from clinical samples whereby frequent exposure to elevated maternal negative emotions during parent-child social interactions have been linked to child hypervigilance when processing emotions associated with threat such as anger and fear in the context of maltreatment (Pollak et al., 2000; Shackman et al., 2007). According to Masten and colleagues (2008), children who are maltreated may have more exposure to negative parental emotions and thus require less sensory information in order to recognise facial expressions of these negative emotions. This heightened sensitivity might refine the ability to identify threatening situations and allow children to adapt their behaviour, potentially shielding them from the consequences of high levels of negative parental emotional responses. For example, the heightened ability to identify fear on a parent's face, which may indicate a threat in the immediate environment, can be adaptive in such contexts (Masten et al., 2008). It is important to stress that the present study did not assess child maltreatment, nor do we consider parental affective personality profiles to be indices of maltreatment. However, our findings do suggest that high emotional affective personality is associated with altered patterns of child

EFER, similar to those found in studies on maltreatment, despite controlling our analyses for harsh parenting practices, which have previously been linked with child maltreatment (Wolford, Cooper, & McWey, 2019). This interpretation is further strengthened by the fact that when comparing parental affective profiles according to parenting practices, harsh, but not positive, parenting differed significantly across all groups. Specifically, similar patterns emerged for mothers and fathers whereby those in the high emotional profile reported the highest scores for harsh parenting, followed by the balanced profile, with those in the low negative emotions profile reporting the lowest harsh parenting scores. Given that we adjusted analyses for both harsh and positive parenting practices, this may indicate parental affective tendencies, particularly in the high emotional profile, have a unique contribution to child EFER, over and above such parenting strategies.

In terms of paternal affective personality and child EFER, a number of interesting results emerged. Firstly, relevant findings pertained to implicit and explicit emotion processing abilities for happiness on the matching tasks. Children of fathers in the high emotional profile were faster at matching happiness on the explicit EFER task compared to those with fathers in the low negative emotions profile. Results pertaining to implicit EFER on the identity matching task emerged according to the moderating role of child sex. Specifically, daughters with fathers in the high emotional profile were significantly faster at correctly matching identity when presented with happiness than girls with fathers in the low negative emotions profile. Conversely, boys with fathers in the high emotional profile were significantly slower at ignoring happiness compared to boys with fathers in the low negative emotions and balanced profiles, which may be attributed to the distracting influence of happiness. It has been found that children often selectively attend to happiness (Boseovski, 2010; Mezulis et al., 2004), which is

intuitive given the importance of identifying happiness in order to engage in positive social interactions (Hay et al., 2004; Rubin et al., 2009). Since daughters with fathers in the high emotional profile are exposed to both more positive and negative affect than those with fathers in the low negative emotions profile (Orri et al., 2018), our finding may suggest that happiness would yield less interference in the identity matching task and thus be associated with a faster recognition of the correct identity. The different patterns seen for boys and girls may be interpreted in light of previously established sex differences in EFER abilities. Specifically, girls have been found to be slightly more adept than boys when it comes to their EFER abilities (McClure, 2000). Boys, on the other hand, may tend to be more uncertain about their emotion perception, and often get distracted by extraneous emotions (Fischer et al., 2018). Given that boys purportedly are less accurate at EFER when faced with extraneous emotions (i.e., the task of ignoring happiness in order to match actors; Fischer et al., 2018), those with fathers in the high emotional profile may be even more distracted by happiness given that they are more exposed to it, as well as to negative emotions, compared to boys with fathers in the low negative emotions and balanced profiles.

When examining results according to emotion intensity, it was found that children of fathers in the high emotional profile were slower at matching on identity when presented with anger at a lower intensity of emotion expression compared to those with fathers in the balanced profile. However, no differences were found between children with fathers in the low negative emotions and balanced profiles. Past research has revealed that children of fathers in the high emotional profile are exposed to more displays of negative emotions compared to children with fathers in the low negative emotions profile (Orri et al., 2017; Orri et al., 2018). However, men often express greater levels of anger and lower levels of anxiety and sadness, compared to women

(Chaplin et al., 2008; Archer, 2004). Given that children of fathers in the high emotional profile may thus see more angry, rather than fearful or sad faces during social interactions with their fathers, they may develop a bias towards anger (Pollak et al., 2000; Shackman et al., 2007) and become distracted by subtle expressions of this emotion when trying to match identities. Children of fathers in the low negative emotions profile may be less exposed to angry faces, so it is plausible that they are less distracted by the angry expression on the identity matching task, thereby increasing their RT. This is in line with previously proposed theories that hypersensitivities might be associated with learning that occurs during the emotional experiences to which children are exposed in the family environment, including the repeated presence of specific facial expressions (da Silva Ferreira et al., 2014; Dunn et al., 1991). Furthermore, the above-mentioned sex differences in the expression of negative emotions for mothers and fathers (i.e., Chaplin et al., 2008; Archer, 2004) may explain different patterns of results according to parent sex, whereby maternal and paternal high emotional profiles were associated with child bias to fearful and angry faces, respectively.

3.4.1 Strengths, limitations and future perspectives

A strength of this study included examining associations between both fathers' and mothers' personality affect profiles in relation to child EFER in a large community sample. To date, fathers have largely been excluded from research on child EFER and affective personality (Aktar et al., 2018). In addition, the use of a person-centered approach to assess affective personality allowed for more of an individualised approach to identify subgroups of parental affective personality based on their patterns of

responses on individual ANPS subscales (Pyburn, 2015). Further strengths of this study pertained to the use of complementary measures of EFER, the focus on a community sample and studying children as opposed to infants, all of which increase the generalisability of the findings. We were, however, faced with the following limitations. Firstly, while we used well-validated stimuli which enabled us to study the role of expression intensity, the use of static, rather than dynamic stimuli for the EFER tasks may limit the generalisability of EFER in everyday social interactions (Pollak et al., 2019). In addition, there was some participant attrition from the initial time point until the present data collection. Participants who remained in the study were relatively more advantaged than a representative sample of Quebec families (Côté et al., 2009). Thus, these results may not be generalisable to the general Quebec population.

Future studies should examine mechanisms that underlie associations between parental affective personality and child EFER abilities. These mechanisms might include both parent and child temperament (Puff & Renk, 2016), attachment style (Brown & Whiteside, 2008), and child personality (Van Leeuwen et al., 2004). Such studies may help clarify the means through which parental affective personality is associated with offspring EFER. Furthermore, past research has found that parent affect (e.g., sadness, anger, happiness) influences parent socialisation behaviours such as altered emotional displays while interacting with their children (Hajal & Paley, 2019). The nature of such social interactions has, in turn, been associated with altered child EFER such as a bias towards facial displays of negative emotions (e.g., anger and fear; Jacob & Johnson, 2001; Pollak et al., 2000; Shackman et al., 2007). Therefore, further research would need to more specifically examine the extent to which affective personality is associated with a parent's display of emotions, and how this in turn is associated with child EFER.

3.4.2 Conclusion, relevance and implications

Overall, our findings suggest associations between parental affective personality and child EFER abilities in a community sample. Such associations are relevant since much research to date has focused on parental psychopathology rather than affective personality (Belsky & de Haan, 2011). Differences in child EFER abilities were found not only in high emotional parental profiles compared to those in the low negative emotions and balanced profiles, but between the low negative emotions and balanced parental profiles as well. The use of latent profiles allowed for a comprehensive examination of the relational patterns among positive and negative affect. Given the exploratory nature of this study, replication is needed, particularly for fathers' findings. Additional research is also needed to better understand the mechanisms of associations between parental affective personality and child EFER; this could help to identify potential targets for parent-focused interventions, such as coaching parents on both their children's and their own emotional literacy (Bozkurt Yükçü & Demircioğlu, 2020; Park, 1999), as well as on emotion regulation (Morris et al., 2017) strategies that can optimise children's emotional development.

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References

The list of references is presented at the end of the thesis.

Tables

Table 3.1. Table 1 Parental characteristics and group comparisons on key variables

	Mothers								Fathers							
Affective Profile	Low negative emotions		Balanced		High emotional		Total		Low negative emotions		Balanced		High emotional		Total	
Variable	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Marital Status																
Single	**14**	21.2	**23**	12.4	**4**	10.8	41	14.2	3	5.6	6	4.4	2	6.3	11	5
Partnered	52	78.8	162	87.6	33	89.2	247	85.8	51	94.4	130	95.6	30	93.8	211	95
Family income																
>$40,000	9	13.6	25	13.5	6	16.2	40	13.9	5	9.3	10	7.4	3	9.4	18	8.1
<$40,000	57	86.4	160	86.5	31	83.8	248	86.1	49	90.7	126	92.6	29	90.6	204	91.9
Parenting Practices	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Harsh	**2.50**	1.15	**2.92**	1.07	**3.70**	1.16	2.92	1.15	**2.35**	1.13	**2.67**	1.30	**2.91**	1.33	2.63	1.28
Positive	6.15	1.17	5.98	1.09	6.14	1.28	6.04	1.14	5.65	0.93	5.57	1.02	6.13	1.54	5.67	1.11

Parenting practices are rescaled from 1 to 10 and means are non-transformed. Outcomes that differ significantly ($p < .001$) between groups are printed in bold.

Table 3.2. Table 2 Means and standard deviations for children's performance on EFER tasks according to mothers' ANPS profile

Affective Profile	**Low negative emotions**				**Balanced**				**High emotional**			
	Girls		Boys		Girls		Boys		Girls		Boys	
Intensity	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Emotion matching task : Accuracy												
Happy	0.82 (0.15)	0.94 (0.15)	0.81 (0.15)	0.93 (0.15)	0.87 (0.15)	0.98 (0.15)	0.83 (0.15)	0.95 (0.15)	0.87 (0.15)	0.97 (0.15)	0.87 (0.15)	0.92 (0.15)
Sad	0.64 (0.26)	0.68 (0.26)	0.69 (0.26)	0.78 (0.26)	0.66 (0.26)	0.76 (0.26)	0.63 (0.25)	0.68 (0.25)	0.58 (0.25)	0.75 (0.25)	0.69 (0.26)	0.77 (0.26)
Anger	0.56 (0.27)	0.72 (0.27)	0.56 (0.27)	0.65 (0.27)	0.53 (0.27)	0.74 (0.27)	0.55 (0.27)	0.73 (0.27)	0.59 (0.27)	0.72 (0.27)	0.50 (0.27)	0.87 (0.27)
Fear	0.81 (0.18)	0.89 (0.18)	0.78 (0.18)	0.90 (0.18)	0.84 (0.18)	0.93 (0.18)	0.83 (0.18)	0.91 (0.18)	0.81 (0.18)	0.91 (0.18)	0.94 (0.18)	0.92 (0.18)
Emotion matching task : RT												
Happy	2837.80 (874.53)	2387.55 (878.84)	2669.27 (880.04)	2263.50 (880.04)	2695.56 (874.53)	2269.59 (874.53)	3216.01 (879.61)	2394.14 (876.25)	2879.13 (874.53)	2390.01 (874.53)	2813.77 (887.00)	2584.14 (874.53)
Sad	3380.03 (1154.13)	3038.80 (1195.26)	3009.98 (1140.55)	2963.47 (1155.46)	3360.16 (1158.74)	2862.02 (1150.36)	3810.44 (1173.01)	3103.65 (1192.54)	3435.67 (1165.33)	3160.82 (1146.91)	3985.62 (1160.71)	2898.06 (1160.88)
Anger	3497.72 (1125.57)	3022.99 (1068.24)	3033.39 (1132.36)	2688.30 (1105.12)	3349.50 (1140.09)	2859.40 (1067.37)	3465.11 (1130.72)	3166.29 (1073.94)	3054.97 (1099.97)	2920.53 (1077.45)	2850.09 (1168.19)	3214.48 (1030.22)
Fear	2849.71 (929.48)	2548.49 (905.44)	2709.81 (911.61)	2678.83 (911.61)	2748.41 (913.01)	2583.84 (906.08)	2979.22 (914.10)	2832.10 (905.81)	2881.91 (913.88)	2732.48 (901.01)	2852.17 (901.01)	2524.94 (901.01)
Identity matching task: Accuracy												
Happy	0.95 (0.19)	0.82 (0.19)	0.97 (0.19)	0.85 (0.19)	0.94 (0.19)	0.87 (0.19)	0.88 (0.19)	0.77 (0.19)	0.97 (0.20)	0.87 (0.20)	0.89 (0.19)	0.90 (0.19)
Sad	0.93 (0.17)	0.93 (0.17)	0.93 (0.17)	0.93 (0.17)	0.93 (0.17)	0.89 (0.17)	0.90 (0.18)	0.84 (0.18)	0.92 (0.17)	0.91 (0.17)	0.94 (0.17)	0.96 (0.17)
Anger	0.93 (0.18)	0.81 (0.18)	0.94 (0.18)	0.81 (0.18)	0.95 (0.18)	0.80 (0.18)	0.91 (0.18)	0.76 (0.18)	0.96 (0.18)	0.76 (0.18)	1.00 (0.18)	0.81 (0.18)
Fear	0.92 (0.19)	0.88 (0.19)	0.95 (0.19)	0.85 (0.19)	0.93 (0.19)	0.86 (0.19)	0.91 (0.19)	0.84 (0.19)	0.94 (0.19)	0.85 (0.19)	0.94 (0.19)	0.90 (0.19)
Identity matching task: RT												
Happy	2040.54 (699.57)	2114.42 (715.96)	1964.92 (699.57)	2099.10 (710.84)	1895.76 (700.74)	2091.94 (711.04)	2029.77 (706.51)	2157.67 (718.64)	1755.50 (699.56)	2338.54 (710.88)	1926.29 (699.57)	1955.06 (699.57)
Sad	2040.35 (793.19)	2092.85 (793.19)	2031.52 (790.19)	2112.97 (790.19)	1903.91 (792.65)	2136.27 (798.39)	2043.40 (790.18)	2241.00 (806.76)	2016.92 (800.19)	2408.92 (803.77)	1983.90 (798.89)	2521.98 (790.19)
Anger	2047.54 (727.94)	2198.17 (731.08)	1901.92 (727.94)	1901.84 (742.26)	1941.01 (727.94)	2226.06 (731.82)	2003.70 (731.77)	2233.59 (742.73)	2053.95 (727.94)	2040.35 (737.80)	2055.83 (727.94)	2143.50 (737.03)
Fear	2030.71 (795.42)	2287.14 (795.42)	1822.92 (796.97)	2202.11 (793.50)	1934.97 (796.69)	2082.46 (797.35)	2183.30 (800.75)	2133.83 (801.84)	2208.05 (794.67)	2194.06 (806.95)	2250.94 (789.92)	2213.72 (797.60)
	Girls		Boys		Girls		Boys		Girls		Boys	
	M (SD)		*M (SD)*		*M (SD)*		*M (SD)*		*M (SD)*		*M (SD)*	
Morphing task												
Happy	24.87 (11.86)		23.15 (11.86)		20.82 (11.86)		23.41 (11.86)		22.50 (11.86)		20.19 (11.86)	
Sad	41.89 (23.85)		43.61 (23.85)		46.17 (23.86)		47.91 (23.85)		41.88 (23.85)		33.27 (23.85)	
Anger	47.50 (19.90)		42.04 (19.90)		44.72 (19.90)		46.21 (19.90)		42.92 (19.90)		40.00 (19.90)	
Fear	55.41 (19.91)		61.76 (19.91)		50.03 (19.92)		56.46 (19.91)		51.04 (19.91)		50.96 (19.91)	

Means and standard deviations are unadjusted. Accuracy is the proportion of correct answers for each condition (*max* = 1). RT is presented in milliseconds. Sensitivity is the lowest percentage before correct identification (thus a lower score indicates increased sensitivity).

Table 3.3 Table 3 Means and standard deviations for children's performance on EFER tasks according to fathers' ANPS profile

Affective Profile	**Low negative emotions**				**Balanced**				**High emotional**			
	Girls		Boys		Girls		Boys		Girls		Boys	
Intensity	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Emotion matching task : Accuracy												
Happy	0.87 (0.15)	0.98 (0.15)	0.81 (0.15)	0.94 (0.15)	0.86 (0.15)	0.96 (0.15)	0.84 (0.15)	0.96 (0.15)	0.83 (0.15)	0.96 (0.15)	0.84 (0.15)	0.95 (0.15)
Sad	0.66 (0.25)	0.77 (0.25)	0.67 (0.26)	0.75 (0.26)	0.64 (0.26)	0.72 (0.26)	0.62 (0.26)	0.69 (0.26)	0.60 (0.25)	0.75 (0.25)	0.64 (0.25)	0.80 (0.25)
Anger	0.60 (0.26)	0.78 (0.26)	0.59 (0.26)	0.81 (0.26)	0.55 (0.26)	0.75 (0.26)	0.53 (0.26)	0.68 (0.26)	0.53 (0.26)	0.74 (0.26)	0.52 (0.26)	0.71 (0.26)
Fear	0.87 (0.17)	0.91 (0.17)	0.84 (0.17)	0.93 (0.17)	0.81 (0.16)	0.93 (0.16)	0.84 (0.16)	0.91 (0.16)	0.85 (0.17)	0.92 (0.17)	0.89 (0.17)	0.95 (0.17)
Emotion matching task : RT												
Happy	3205.96 (840.33)	2710.81 (840.33)	3344.44 (853.02)	2500.33 (840.34)	2707.68 (840.34)	2265.37 (842.61)	2980.33 (844.97)	2333.23 (842.66)	2457.07 (849.06)	2220.86 (840.34)	2896.18 (840.34)	2255.00 (840.34)
Sad	3852.34 (1149.45)	3343.60 (1149.31)	3839.31 (1154.40)	3304.80 (1200.24)	3294.67 (1167.58)	2845.04 (1186.97)	3697.20 (1182.81)	3008.73 (1193.44)	3253.82 (1188.87)	3209.19 (1156.51)	3373.50 (1183.67)	2825.94 (1150.47)
Anger	3413.94 (1094.55)	2901.72 (1053.28)	3690.44 (1104.24)	3372.61 (1020.10)	3165.77 (1111.45)	2883.51 (1048.19)	3205.41 (1127.36)	2985.01 (1085.37)	3513.82 (1128.45)	2963.44 (1052.20)	3447.05 (1175.01)	2884.78 (1069.77)
Fear	3225.35 (877.28)	2842.72 (882.39)	2989.54 (883.22)	2805.94 (883.22)	2721.79 (903.89)	2537.64 (881.80)	2775.90 (886.10)	2713.30 (881.64)	2697.45 (894.20)	2522.17 (877.28)	3184.75 (888.00)	2662.32 (877.28)
Identity matching task: Accuracy												
Happy	0.97 (0.19)	0.89 (0.19)	0.88 (0.20)	0.78 (0.20)	0.93 (0.20)	0.85 (0.20)	0.92 (0.20)	0.81 (0.20)	0.96 (0.20)	0.76 (0.20)	0.86 (0.19)	0.79 (0.19)
Sad	0.93 (0.18)	0.89 (0.18)	0.89 (0.18)	0.85 (0.18)	0.92 (0.18)	0.90 (0.18)	0.92 (0.18)	0.85 (0.18)	0.92 (0.18)	0.83 (0.18)	0.91 (0.18)	0.91 (0.18)
Anger	0.96 (0.17)	0.84 (0.17)	0.92 (0.18)	0.78 (0.18)	0.95 (0.17)	0.78 (0.17)	0.94 (0.17)	0.79 (0.17)	0.86 (0.17)	0.74 (0.17)	0.91 (0.18)	0.75 (0.18)
Fear	0.95 (0.20)	0.88 (0.20)	0.95 (0.20)	0.84 (0.20)	0.94 (0.20)	0.87 (0.20)	0.89 (0.20)	0.85 (0.20)	0.88 (0.20)	0.79 (0.20)	0.89 (0.20)	0.88 (0.20)
Identity matching task: RT												
Happy	2012.27 (676.74)	2320.53 (680.38)	1922.17 (681.13)	1971.47 (699.23)	1943.20 (678.28)	2119.08 (692.81)	1904.98 (679.84)	2070.53 (691.99)	1742.39 (676.74)	2030.48 (695.19)	2660.47 (684.37)	2293.96 (684.37)
Sad	1982.19 (786.02)	2398.29 (789.98)	2153.33 (782.17)	2143.72 (803.45)	1913.57 (787.31)	2123.52 (786.85)	1997.72 (782.17)	2134.74 (794.04)	2242.50 (782.17)	1985.18 (794.94)	2136.76 (790.26)	2233.30 (790.26)
Anger	2016.47 (719.26)	2209.65 (723.24)	2104.41 (719.27)	2066.17 (728.61)	1976.55 (719.27)	2240.03 (726.09)	1828.26 (720.95)	2123.24 (729.60)	2186.13 (719.26)	1879.81 (719.26)	2351.61 (728.37)	2206.74 (742.50)
Fear	2069.47 (828.63)	2248.92 (832.13)	2224.97 (828.63)	2327.79 (841.20)	2080.09 (835.06)	2252.78 (839.46)	1908.71 (842.82)	2102.08 (841.13)	1960.53 (840.52)	2034.88 (867.83)	2480.43 (843.98)	2379.66 (836.35)
	Girls		Boys		Girls		Boys		Girls		Boys	
	M (SD)		*M (SD)*		*M (SD)*		*M (SD)*		*M (SD)*		*M (SD)*	
Morphing task												
Happy	19.64 (11.34)		22.40 (11.34)		22.84 (11.34)		22.50 (11.34)		23.33 (11.34)		25.77 (11.34)	
Sad	51.43 (24.33)		46.15 (24.33)		46.38 (24.33)		44.45 (24.33)		34.31 (24.33)		59.42 (24.33)	
Anger	41.96 (20.67)		45.21 (20.67)		46.31 (20.68)		46.21 (20.67)		50.97 (20.67)		45.39 (20.67)	
Fear	51.43 (19.80)		56.46 (19.80)		52.02 (19.80)		55.47 (19.80)		54.17 (19.80)		61.54 (19.80)	

Means and standard deviations are unadjusted. Accuracy is the proportion of correct answers for each condition (*max* = 1). RT is presented in milliseconds. Sensitivity is the lowest percentage before correct identification (thus a lower score indicates increased sensitivity).

Figures

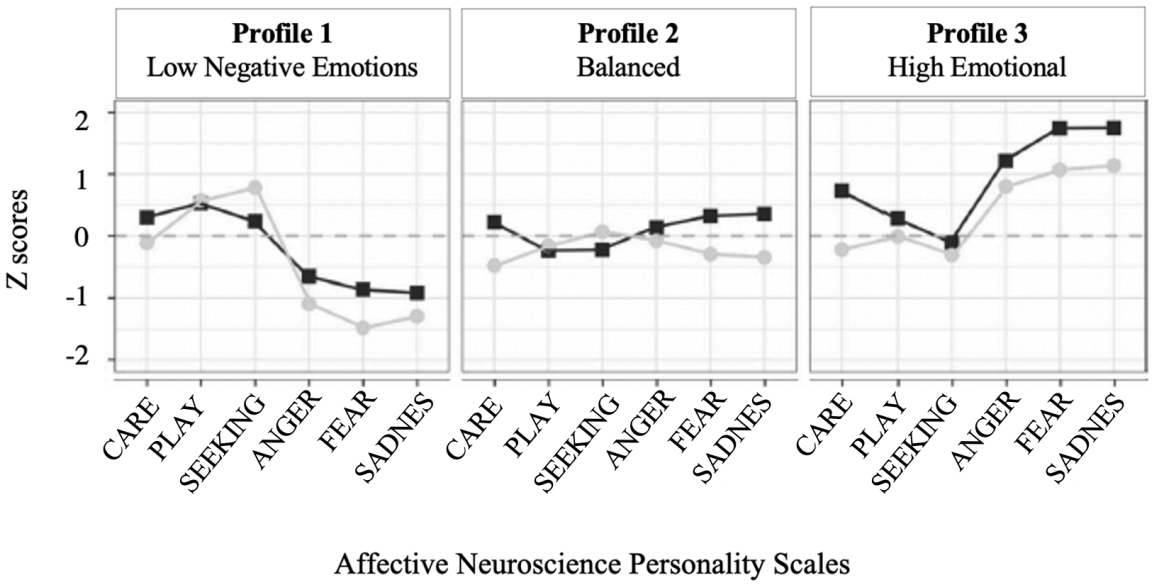

Figure 3.1. Affective profiles for mothers (black line; n = 288) and fathers (grey line; n = 222). Note that the figure was obtained from Orri and colleagues (2017) and modified to represent the current sample. Access to this figure is freely available through Creative Commons (https://creativecommons.org/licenses/by/4.0/legalcode).

CHAPTER IV

GENERAL DISCUSSION

This thesis sought to examine the relationship between a biologically-based system of affective personality in parents and socio-emotional adjustment in middle childhood. The link between biologically-based parent affective personality, as measured by the ANPS, and child socio-emotional adjustment has not previously been addressed with the exception of one study (e.g., Orri et al., 2018). This thesis contributed to the knowledge base by examining potential associations between mothers' and fathers' affective personality in relation to (a) child-reported internalising and externalising behaviour difficulties (article 1) as well as (b) child EFER abilities (article 2).

This thesis also aimed to address relevant gaps in the current literature on the association between parent affective personality and child socio-emotional adjustment. Specifically, although parent emotions and child socio-emotional adjustment have been previously found to be associated, the relationship between fathers' affective personality and children's socio-emotional adjustment in middle childhood has yet to be fully elucidated and was thus explored in this thesis. Furthermore, most data on child

behaviour difficulties have been collected using parents as informants, which may lead to an increased risk of shared-methods variance (Kerr et al., 2007). To address this, children reported on their own behaviour difficulties using an age-appropriate interview (article 1) and completed EFER tasks that were not parent-informed (article 2). Finally, much of what is known to date about parental personality and offspring emotion recognition has been based on studies focusing on emotion processing in infants. Given the different developmental stages in addition to the methodological differences in EFER tools, we extended the knowledge by studying parent affective personality and EFER in middle childhood (article 2).

In addition to addressing certain gaps in the scientific literature, the research project at the origin of this thesis stemmed from the desire to better understand the links between parent affective personality and child socio-emotional adjustment. The objectives pursued in this thesis were therefore to 1) examine any relevant associations between mother and father affective personality and children's socio-emotional adjustment (i.e., self-reported internalising and externalising behaviours, EFER abilities) in middle childhood, and 2) explore whether pathways of relevant associations operated directly or indirectly through parenting style (article 1), or were moderated by child sex (articles 1 and 2). Two complementary articles pertaining to parent affective personality and child socio-emotional adjustment were produced on the basis of these objectives; the first examined child behaviour difficulties and the second assessed child EFER abilities.

This chapter aims to deepen the interpretation of the results obtained and to synthesise the findings of the two articles. We will thus come back to the objectives of the study (sections 4.1 and 4.2), synthesise the results of the two articles (section 4.3), and then present the strengths and limitations (section 4.4) of this thesis. Finally, we will suggest future avenues for research (section 4.5) and highlight the contributions and clinical implications of the study (section 4.6).

4.1 Article 1 review

The first objective of this article was to examine the links between dimensions of parent affective personality (i.e., CARE, PLAY, SEEKING, ANGER, FEAR, and SADNESS) and child self-reported internalising and externalising behaviour difficulties at seven to eight years of age. Hypotheses, in line with the above-mentioned objective, were based on previous findings pertaining to associations between parental personality traits (though not specifically measured by the ANPS) and child behaviour difficulties.

Higher levels of maternal ANGER, FEAR and SADNESS on the ANPS were hypothesised to be associated with greater levels of self-reported internalising and externalising behaviours in children. Children of mothers with higher ANPS traits of PLAY and SEEKING were expected to report greater externalising behaviours. Findings provided partial support for these hypotheses whereby sons of mothers with higher ANPS ANGER traits reported greater externalising behaviour compared to

those whose mothers scored lower on ANPS subscales of ANGER. The hypothesis that children of mothers with higher ANPS traits of SEEKING and PLAY would report greater externalising behaviours was supported in part; sons of mothers with higher SEEKING traits reported lower externalising behaviour compared to sons of mothers with lower SEEKING traits. Furthermore, mothers with higher ANPS PLAY scores had sons who reported lower scores on internalising behaviours. Our final hypothesis pertaining to mothers, whereby higher scores on maternal CARE would be associated with lower levels of child self-reported internalising and externalising behaviours, was not supported. Finally, given the dearth of research on the roles of fathers, hypotheses pertaining to fathers were exploratory, and our results revealed that paternal ANPS SADNESS was linked to greater levels of children's self-reported internalising behaviour compared to those with fathers lower on the ANPS SADNESS subscale. In addition, an unexpected result pertained to the finding that fathers with higher ANPS FEAR scores had children with lower levels of self-reported internalising behaviour.

A second objective of the first article was to examine whether significant associations between parental ANPS traits and child internalising or externalising behaviours were direct or operated indirectly through the pathways of positive or harsh parenting. Our hypotheses that maternal and paternal affective personality subscales would be indirectly linked to child internalising and externalising behaviours through both harsh and/or positive parenting practices were not supported. Although parenting practices are considered an indirect pathway that impacts children's socio-emotional adjustment in Eisenberg and colleagues (1998, 2020) and Hajal and Paley's (2020) models of emotion socialisation, no indirect pathways of parenting practices were found in the present study when examining the link between parental affective personality and child behaviour difficulties.

The final objective of the first paper was to explore, within the context of each of the previous objectives, whether child sex moderated associations between parent affective personality traits and child behaviour difficulties. Hypotheses pertaining to the differential effects of child sex were exploratory. Results highlighted the moderating role of child sex whereby direct associations between maternal ANPS traits and child behaviour were salient only for boys. Furthermore, no effect of child sex was found in relation to paternal ANPS. This finding may be explained by the differences in maternal socialisation of emotions and behaviours according to child sex. For example, mothers have reported experiencing more anger towards sons than daughters due to their increased reactivity to boys' externalising behaviours (Fivush, 1989).

Overall, the findings from this article offer some insight into the nature of the relationship between biologically-based parental affective personality traits including ANGER, SEEKING, PLAY, SADNESS and FEAR and child internalising and externalising behaviours. Much of the past research has identified the role of parenting practices as a main predictor of child behaviour difficulties. However, the fact that this study controlled for the role of positive and harsh parenting practices (following the lack of indirect associations through parenting) suggests that other factors, such as parent affective personality, were also relevant in understanding child internalising and externalising behaviours.

4.2 Article 2 review

The primary objective of this exploratory study, complementary to the first article, was to examine the relationship between a person-centered approach to parent affective personality (i.e., affective profiles rather than trait-specific) and another facet of child socio-emotional adjustment, namely EFER abilities. Specifically, this study aimed to separately explore the role of mothers' and fathers' affective personality profiles (low negative emotions, balanced, and high emotional) in relation to children's emotion processing abilities on three different tasks designed to capture their EFER abilities for happy, sad, angry and fearful expressions. Results revealed that children of mothers in the high emotional profile were more sensitive to fearful expressions compared to children with mothers in the low negative emotions profile, while children with mothers in the low negative emotions profile were found to be less sensitive to fear compared to those with mothers in the balanced profile. In terms of paternal affective personality and child EFER, children of fathers in the high emotional profile were faster at matching happiness on the explicit EFER matching task compared to those with fathers in the low negative emotions profile.

The second objective of the second article was to explore, within the context of the previous objective, whether child sex moderated associations between parent affective personality profile and child EFER on the three tasks. While child sex was not found to moderate any of the associations between maternal affective personality and child EFER abilities, significant results did emerge for fathers. Specifically, profile-by-sex interactions revealed that boys of fathers in the high emotional profile, compared to the

low negative emotions and balanced affective profiles, were slower to match identity when presented with happy faces (implicit task), while their female counterparts were significantly faster at correctly matching identity when presented with happiness than girls with fathers in the low negative emotions profile.

Overall, the findings from this second article indicated the presence of a relationship between biologically-based parental affective personality profiles and child EFER. Much of the past research has focused on lexically-based measures of parent personality, and largely involved infants. Given that EFER abilities and their measurements vary greatly from infancy to middle childhood, this second article extended past work by demonstrating that parent affective personality continues to be associated with child socio-emotional adjustment, and in particular EFER abilities, in middle childhood.

4.3 Synthesis of the two articles

Taken together, these two articles provide a more comprehensive and nuanced picture of the links between parent affective personality, as measured by the ANPS, and two complementary components of child socio-emotional adjustment in middle childhood in a community sample.

4.3.1 Measures of parent affective personality

Although the two articles that comprised this thesis both examined parent affective personality in relation to child socio-emotional adjustment, each study utilised the ANPS in different, yet complementary ways. Variable-centered analyses in article 1 allowed for the examination of the association between specific ANPS subscales and child socio-emotional adjustment in our sample population (Morris et al., 2017; Howard & Hoffman, 2017). The person-centered conceptualisation of parent personality in article 2 allowed for the comparison of subgroups within the sample population that were characterised by similar patterns of affective personality traits and their relationship with child socio-emotional adjustment (Bauer & Curran, 2004; Pyburn, 2015). Thus, compared to the use of a single approach, employing both variable-centred and person-centered analyses offered a complementary, though not directly comparable, understanding of the relationship between parent affective personality and child socio-emotional adjustment (Hicks, Clark & Durbin, 2017). For example, in the first article, it was found that on average, in our sample population as a whole, elevated paternal FEAR was associated with lower levels of internalising behaviours in children. On the other hand, the second article revealed that fathers in the high emotional profile (characterised by elevated ANGER, FEAR, and SEEKING) were more likely to have children who were faster at matching identity when presented with happy faces, compared to fathers with low negative emotions or balanced affective profiles. Though these results are not directly comparable, they do provide a more robust understanding of the relationship between negative paternal affective personality (elevated mean of FEAR in article 1 and the subgroup of fathers with elevated FEAR, ANGER and SADNESS in article 2) and different measures of child socio-emotional adjustment.

In addition, Orri and colleagues (2017, 2018) had previously identified the three latent ANPS profiles and examined them in relation to parent-reported child behaviour difficulties. Thus, one of the aims of the first article was to unravel the unique contribution of each of the six affective personality subscales in relation to child-reported behaviour difficulties by controlling for the other subscales. This goal was best attained with a variable-centered measurement of the ANPS. Whereas, in the second article, the goal to extend the knowledge from the first article by examining the relationship between previously established latent ANPS profiles and child EFER, a different measure of child socio-emotional adjustment, was better accomplished utilising person-centered analyses. This was particularly relevant given that past research examining links between parent personality and infant emotion processing primarily utilised dichotomised measures of positive and negative affect (e.g., de Haan et al., 2004), rather than examining their relationship to each other, which was possible with the use of the latent affective profiles. Thus, the two ways of operationalising parent affective personality (variable-centered in article 1 and person-centered in article 2) enabled the achievement of different objectives for each of the two articles.

4.3.2 Measures of child socio-emotional adjustment

As previously mentioned, although socio-emotional adjustment comprises many factors including child temperament, emotion regulation, socialisation behaviours, and the processing of emotions, the present thesis focused solely on two complementary measures of child socio-emotional adjustment, namely internalising and externalising

behaviour difficulties and emotion processing abilities. Although not the focus of the present thesis, previous work has indicated that these two aspects of child socio-emotional adjustment are often found to be related. Specifically, altered patterns of EFER have been linked to internalising and externalising behaviours in preschool, middle childhood and adolescence (Fine, Izard, Mostow, Trentacosta, & Ackerman, 2003; Schultz, Izard, Ackerman, & Youngstrom, 2001). In fact, it was found that preschoolers with internalising behaviours were more likely to exhibit alterations in their EFER abilities, particularly in terms of decreased accuracy when labeling happiness and anger (Székely et al., 2014). In addition, difficulties in recognising negative emotions have been repeatedly linked to children's externalising behaviours, including conduct disorder and oppositional defiant disorder (Marsh & Blair, 2008). Although the relationship between these two aspects of socio-emotional adjustment was not examined in the present thesis, and results from the first and second articles are not directly comparable, both increased externalising behaviours in boys (article 1) and a greater sensitivity in children to fearful faces (article 2) were separately associated with elevated levels of negative maternal affective personality (i.e., increased scores on the ANPS subscale of ANGER (article 1) and higher scores on ANGER, SADNESS and FEAR found in the high emotional profile (article 2). In addition, both child internalising behaviours (article 1) and matching identity when presented with angry expressions (article 2) were separately associated with negative paternal affective personality. Specifically, elevated scores on the paternal affective personality trait of SADNESS were linked to increased internalising behaviours in children, whereas in the second article, elevated levels of negative paternal affect (i.e., the high emotional profile characterised by elevated ANGER, FEAR and SADNESS) were associated with slower RT on the identity task for anger. Thus, although this thesis employed different aspects of child socio-emotional adjustment as the focus of each of the articles, a link between the two processes have been established according to

previous literature, and offer a more robust assessment of socio-emotional adjustment in relation to parent affective personality in middle childhood.

4.3.3 The role of parents in child socio-emotional adjustment

A number of theories posit that parents play a key role in emotion socialisation, which in turn, impacts child socio-emotional adjustment (Eisenberg, 2020; Hajal & Paley, 2020; Mirabile, Oertwig, & Halberstadt, 2018). Specifically, parent socialisation behaviours (e.g., parent emotional expressiveness, discussion of emotions) allow for the development of socio-emotional adjustment as children learn to regulate their emotions and behaviours partly through observations of parent expressions of emotions (Eisenberg et al., 1998; Morris et al., 2007; Eisenberg, 2020; Hajal & Paley, 2020). Despite this well-established link, the current project did not examine direct mechanisms of emotion socialisation (i.e., parent emotion socialisation behaviours) but rather, characteristics that are associated with such socialisation behaviours (e.g., affective personality or parenting). Past research has found that parent characteristics (e.g., negative affect) influence parent socialisation behaviours such as altered emotional displays while interacting with their children (Hajal & Paley, 2019). Specifically, maternal negative affect (i.e., experience of sadness, anger, and fearfulness) has been associated with decreased positive, and increased negative, displays of emotions in social interactions between mothers and their children (Jacob & Johnson, 2001; Pollak et al., 2000; Shackman et al., 2007). The nature of such social interactions have, in turn, been associated with increased behaviour difficulties as well as a bias towards facial displays of negative emotions, such as anger and fear (Jacob &

Johnson, 2001; Pollak et al., 2000; Shackman et al., 2007). This is in line with our findings that maternal ANGER affective personality was positively associated with externalising behaviours in boys (article 1), and that the maternal high emotional profile was associated with children's increased sensitivity to fearful facial expressions (article 2). It can thus be theorised that the relationship between maternal negative systems of the ANPS (i.e., ANGER, FEAR and SADNESS) and child socio-emotional adjustment may be linked through the emotion socialisation behaviour of increased negative emotional expressivity found in mothers with elevated levels of negative affective personality (as measured by traits or profiles). For example, a mother who is high on ANGER or other negative affective personality traits may be more likely to display negative emotion socialisation behaviours when interacting with their child, which may then be associated with altered child socio-emotional adjustment. However, due to lack of a direct measure of parent emotion socialisation behaviours in this thesis, such operating mechanisms are speculative in the current project. This will be addressed in the limitations (section 4.4).

Furthermore, although Eisenberg's model also ascribed a particularly important role to parenting style (e.g., warmth, hostility) as both predictors (i.e., general parenting style) and moderators (i.e., variability and consistency of parenting behaviours) of the relationship between parents' emotion socialisation behaviours and child emotion socialisation (Eisenberg et al., 1998; Eisenberg, 2020), the model separates parent personality and parenting practices as different characteristics that contribute to child socio-emotional adjustment. However, past research has found a link between parent personality, parenting practices and child socio-emotional adjustment. For example, higher levels of maternal conscientiousness have been

linked with more positive parenting practices, which in turn were associated with fewer adolescent behaviour difficulties (Oliver et al., 2009). Orri and colleagues (2018) analysed the mediating role of parenting practices for the association between parent affective personality profiles and child internalising and externalising behaviours. Less harsh parenting mediated the association between mothers in the low negative emotions affective personality latent profile and fewer parent-reported internalising and externalising behaviours in their daughters. In addition, harsh parenting practices (e.g., harsh and coercive behaviours) have previously been shown to be adversely related to children's EFER skills and associated with a bias towards negative emotions such as anger and fear (Pollak, Cicchetti, Hornung and Reed, 2000). One aim of the current thesis was to examine the specific contribution of parent affective personality, over and above parenting practices, to child socio-emotional adjustment. Thus, to highlight the unique contribution or association of parent personality and child socio-emotional adjustment, we controlled for parenting practices. Results from the two articles revealed the unique contribution of parent affective personality in relation to child socio-emotional adjustment given that both controlled for harsh and positive parenting practices. Specifically, elevated maternal ANPS PLAY and SEEKING were associated with lower internalising and externalising behaviours in boys, respectively in article 1, while children of mothers in the low negative emotions profile did not demonstrate a bias to fearful faces, as seen in those with mothers in the high emotional profile (article 2). While personality and parenting practices are included as relevant parent characteristics that are associated with child socio-emotional adjustment in Eisenberg's model (2020), findings from this thesis probing the role of parenting practices may offer better understanding of the unique relationship between affective personality and child socio-emotional adjustment.

4.3.4 Parent sex and child socio-emotional adjustment

Eisenberg and colleagues' (1998, 2020) model also ascribed a particularly important role to the characteristic of parent sex in the examination of the relationship between parents' emotion socialisation behaviours and child socio-emotional adjustment (Eisenberg et al., 1998; Eisenberg, 2020). Previous research has considered both mothers and fathers as socialising agents of socio-emotional adjustment (e.g., Di Giunta et al., 2020; Godleski, Eiden, Shisler, & Livingston, 2020; Lunkenheimer, Hamby, Lobo, Cole, & Olson, 2020). Overall, in the current thesis, for both mothers and fathers, associations were found between parental affective personality and child socio-emotional adjustment. Specifically, ANPS traits of ANGER, PLAY and SEEKING in mothers and SADNESS and FEAR in fathers in the first article, and both mother and father high emotional affective personality profiles in the second article, were associated with children's self-reported behaviour difficulties and altered EFER abilities, respectively. These findings are in line with previous investigations whereby parental patterns in the socialisation of children's socio-emotional adjustment, were similar, though not identical, for mothers and fathers, despite a lack of a direct comparison between the two (Boldt, Goffin, & Kochanska, 2020; Di Giunta et al., 2020; Godleski, Eiden, Shisler, & Livingston, 2020; Lunkenheimer, Hamby, Lobo, Cole, & Olson, 2020; Neppl, Jeon, Diggs, & Donnellan, 2020).

4.3.5 Child sex as a moderator

The results in this thesis pertaining to the moderation of child sex allowed for a richer and more nuanced understanding of the relationship between parent affective personality and socio-emotional adjustment in middle childhood. In particular, overall findings appear to indicate that while important, the moderating role of child sex was dependent upon whether maternal or paternal affective personality was being examined and the nature of the measurement (i.e., subscales versus profiles). Results from the first article were only significant for behaviour difficulties in boys when evaluated in association with maternal ANPS traits of ANGER, PLAY and SEEKING. However, no sex differences were found when examining the link between paternal traits of FEAR and SADNESS and child behaviour difficulties. Findings from the second article did not reveal a moderating effect of child sex for mothers, but the majority of the associations between paternal affective personality profiles and child EFER abilities varied according to child sex. In fact, the relationship between the high emotional profile for fathers and child EFER speed when matching identity while viewing happy faces were inversely related for boys and girls. Overall, results from the current thesis suggested that associations between parent affective personality and child socio-emotional outcomes differed depending on the sex of the child. In fact, these findings were somewhat in line with previous research. Specifically, while some studies have not found child sex to moderate the relationship between parent personality and child behaviour difficulties (e.g., Prinzie et al., 2004), others did find evidence of such moderation (Nigg & Hinshaw, 1998; Orri et al., 2018). For example, Orri and colleagues (2018) found that the direct effect of parent affective personality profiles on child behaviour difficulties was dependent on the sex of the child. Specifically, while internalising behaviours in boys were positively and negatively

associated with mothers' high emotional and low negative emotions profiles, respectively, no such relationship was found for girls. Conversely, the high emotional maternal affective profile was positively associated with externalising behaviours in girls (Orri et al., 2018). It can therefore be concluded that different studies do highlight the relevance of child sex differences in relation to parent personality and child socio-emotional adjustment, and are thus an important consideration that must continue to be explored in the literature.

4.4 Strengths and limitations of the studies

The present studies have many strengths, the first of which was the inclusion of data from fathers. To date, fathers have largely been excluded from research on child socio-emotional adjustment and affective personality (de Haan et al., 2004).

One strength of this thesis was the use of a biologically-informed measurement of personality, which has been found to be consistent across cultures (Montag et al., 2021). Aside from one study by Orri (2018) which employed affective personality profiles, most of the research on child socio-emotional adjustment in relation to the role of parents examined the latter in terms of their mental health (e.g., depression, anxiety) or lexically-informed personality (e.g., as measured by the Five Factor Model; McCrae & John, 1992). Specifically, parental depression, anxiety and certain dimensions on the Five Factor Model of personality were previously found to be related to child

internalising and externalising behaviours (Briggs-Gowan et al., 2000; Ellenbogen & Hodgins, 2004; Kochanska, Clark, & Goldman, 1997; Kurdek, 2003; Prinzie et al., 2004, 2005). In addition, both parental mental health and negative emotionality have previously been associated with altered infant emotion processing (Aktar et al., 2016, 2018; de Haan et al., 2004; Joormann et al., 2010; Lopez-Duran et al., 2013). The relationship between a biologically-based conceptualisation of parent affective personality and child socio-emotional adjustment identified in this thesis may even suggest a generalisability of findings across cultures, although future research is needed to examine such links.

In addition to the use of a biologically-informed approach to personality, was the inclusion of complementary conceptualisations of the ANPS, including both a variable-centered approach to examine the role of the six ANPS subscales in relation to child behaviour difficulties (article 1) and a person-centered approach involving latent class profiles (article 2) to assess affective personality. The use of such complementary analyses has recently been recommended for a better understanding of personality (Hicks, Clark & Durbin, 2017).

An additional strength of this study stemmed from the inclusion of two complementary components of socio-emotional adjustment (i.e., child internalising and externalising behaviours as well as EFER abilities) within the same sample. The task used in the first article to measure child behaviour difficulties, the BPI (Measelle, Ablow, Cowan, & Cowan, 1998), elicited children's first-hand perspective on their behaviour, rather than having parents report on this as well as their own affective personality. This methodology minimised shared method variance (Kerr et al., 2007) and provided

valuable insight into the children's own views of their emotional and behaviour difficulties. In another vein, the set of tasks used to measure child EFER in the second article made it possible to assess various aspects of this ability, including the implicit and explicit identification and discrimination of facial expressions, while minimising shared methods variance (Kerr et al., 2007).

Finally, since most studies examining the relationship between parental affect and their offspring's socio-emotional adjustment have typically focused on clinical populations (e.g., mothers with depression; Joorman & Gotleib, 2009), another strength of the current studies was the focus on a well-documented community sample (e.g., Côté et al., 2013).

There were also limitations to this study. Firstly, the sample was not randomly selected and there was participant attrition from the initial time point until the present data collection in 2011-2012. Participants who remained in the study had a higher socioeconomic level than those representative of Quebec families (Côté et al., 2013). Furthermore, while much effort was made to recruit as many fathers as possible, they were somewhat less well represented than mothers, as they were often not present at the time of the home evaluation and had lower rates of questionnaire completion. Thus, the results obtained may not be applicable to the general population.

Moreover, despite the longitudinal nature of the EMIGARDE data set, our research questions were addressed in one specific age group (seven- and eight-year-olds),

reflecting a more cross-sectional approach. Thus, the current studies did not allow us to comment on the direction or the mechanisms underlying associations between parent affective personality and child socio-emotional adjustment. While the potential indirect effect of parenting practices was assessed (article 1), it was not possible to examine true mediation since this would have required three separate time points of data collection for the variables of interest. Finally, the moderating roles of parent and child sex were studied, but the role of gender, as well as the impact of genetics, were not examined in this thesis.

4.5 Avenues for future research

The associations revealed in this study between different components of parent affective personality and child socio-emotional adjustment open the way to future studies that could examine the directionality or underlying mechanisms of these interactions. Below are suggestions for addressing some of the limitations and questions encountered throughout this study. First, in order to better understand the mechanisms underlying the relationship between parent affective personality and children's socio-emotional adjustment, it would be important to include direct measures of parent emotion socialisation behaviours (e.g., parent coaching, discussion of emotions; Hajal & Paley, 2020). Additional socio-emotional outcomes in middle childhood such as social relationships, academic performance and psychopathology could also be assessed. Furthermore, measuring key variables using multiple methods (e.g., observational, experience sampling, rater-informed) and informants (e.g., teacher, parent, child) at different time points (e.g., parent affective personality or emotion

socialisation behaviours prior to child socio-emotional adjustment) would provide a better idea of the direction of associations between the different variables. Alternatively, certain methodological designs, such as twin studies, could shed light on the contribution of genetics versus observational learning that could explain such direct pathways. For example, recent research has indicated a genetic heritability of the primary emotional systems assessed with the ANPS in twins (Montag & Panksepp, 2016). In addition, there is a growing collection of papers linking the ANPS to genetic markers, although molecular genetics studies have been largely investigating the negative primary affective systems and associations with the positive primary affective systems are lacking. Some studies indicated that at least part of the individual differences in these measures is associated with shared environmental factors (Schapira et al., 2019), while others have found support for genetic influences by examining non-shared environmental factors (Lau et al., 2009). Finally, findings from another study implicate common genetic factors in deficits regarding the recognition of happiness associated with irritability and neuroticism in childhood and adolescence (Rappaport et al., 2018). Thus, future directions could consider studying the genetic contribution in the relationship between parent affective personality and child socio-emotional adjustment, which could help to shed further light on underlying mechanisms.

Additional avenues for research include comparing the unique contributions of mothers and fathers' affective personalities and whether parental partners are more likely to have similar or different affective profiles, as well as any associated link with their child's socio-emotional adjustment. Approaches based on the dyadic (or at least joint mother-father) analysis of these data would potentially provide a more sophisticated test in line with current family-based models of child mental health. Although

preliminary examinations of correlations between parental ANPS profiles in article 1 did not provide significant findings, future work with larger sample sizes and different methodologies could study this in more detail. Options might include formal dyadic (actor-partner) analyses, or even simply tests of the interactions between mother-father personality traits. For example, children whose parents both exhibit a personality-based risk factor would presumably be at an increased risk, whereas having only one parent with a high-risk personality trait might offer a buffering effect. In addition, future work can study affective personality and child socio-emotional adjustment in the context of different types of family configurations as well as including a more detailed focus on the role of gender, as opposed to only parent and child sex.

Furthermore, while we used well-validated facial expression stimuli in the second article, which enabled us to study the role of expression intensity, the use of static rather than dynamic stimuli for the EFER tasks may limit the generalisability of EFER in everyday social interactions, where facial expressions are constantly moving (Pollak et al., 2019). Thus, future directions may include the use of both static and dynamic EFER tasks, and may even include mood-induction tasks such as those employed by Joorman and Gotleib (2009) in order to examine the effects of altering affect states on EFER abilities.

4.6 Clinical implications

The research project behind this thesis was born from questions regarding the potential link between parent affective personality and child socio-emotional adjustment. Although the nature of this relationship has been explored in the current thesis, further studies can contribute increasing knowledge in this area. The implications for clinical understanding will first be presented; this will be followed by some lines of thought and suggestions at the level of evaluation and intervention.

Difficulties in socio-emotional adjustment have negative repercussions in multiple respects, including quality of life (Morris et al., 2007). In childhood and beyond, these difficulties can hinder personal, academic and social development (Breslau et al., 2009; Chan, Dennis, & Funk, 2008; Guttmannova, Szanyi, & Cali, 2007). Childhood is also an important period for intervention (e.g., Cervin, Pozza, Barcaccia, & Dèttore, 2020; Charlesworth, Wood, & Viggiani, 2011), and socio-emotional adjustment is a primary focus of such interventions (Findlay, Coplan, & Bowker, 2009). In this vein, some clinician-scientists attribute a central place to the role of parents vis-à-vis the evaluation of and intervention for child socio-emotional adjustment.

As a first step, measures of parent affective personality might be incorporated into the screening and clinical assessments of families with child behaviour difficulties. For example, parents in the high emotional profile, as well as those who score high on

ANGER, SADNESS and FEAR may benefit from being identified to receive coaching interventions which may then help improve their children's socio-emotional adjustment. At the intervention level, child socio-emotional adjustment may be aided by providing parent-focused emotion regulation and emotional literacy coaching. For example, a recent study by Katz and colleagues (2020) on maternal victims of domestic violence found that when these mothers received an emotion regulation and coaching intervention helping them develop greater emotion awareness and the technique of validation, their children exhibited fewer internalising behaviours. Such an intervention might be applied to parents in the general community with specific affective personality traits or profiles, which in turn may optimise their children's socio-emotional adjustment and well-being. In fact, Spinrad, Sheffield Morris and Luthar (2020) recently summarised a guideline of suggestions for parents that can optimise child socio-emotional adjustment, several of which may be particularly relevant to parents with elevated levels of certain negative affective personality traits, in addition to those who are classified in the high emotional profile. A specific goal might be to target non-supportive emotion socialisation behaviours in parents (e.g., general irritability, strong expressions of anger and hostility, unregulated or excessive negative expressivity such as anger and sadness/depression). In addition, the authors recommend increasing positive and supportive emotion-related parenting behaviours including the general use of positive emotional tone and mood during interactions with children, helping children learn to discuss emotions (e.g., labeling feelings, acknowledging contexts and causes of emotions) and teaching strategies for coping with emotions (Spinrad, Sheffield Morris & Luthar, 2020). Finally, parents' own ability to regulate their emotions is a key factor in child emotion socialisation and socio-emotional adjustment. For example, it was found that targeting parent emotion socialisation behaviours improved child behaviour difficulties over the course of two years (Zhang et al., 2020). Thus, efforts to help parents manage their own emotions are important (Hajal & Paley, 2020; Katz et al., 2020) and relating these to altered affective personalities may streamline those

who could benefit most from such interventions in both clinical and community samples.

CONCLUSION

Child socio-emotional adjustment is very important to overall well-being. Although this is a larger umbrella term that incorporates many components, two aspects of socio-emotional adjustment that have been well studied are child internalising and externalising behaviours, and the ability to process and recognise emotional facial expressions. Difficulties with either of these components have been associated with outcomes such as poorer social relationships, lower academic performance and greater risk for psychopathology. Given the importance of healthy child socio-emotional adjustment, a large body of research has focused on the role of parents on its development, since they are a primary source of socialisation from infancy through middle childhood. In particular, parent personality has been identified as a key factor that is associated with child socio-emotional adjustment. This thesis addressed previous gaps in the literature by studying both mothers and fathers' biologically-based affective personality, rather than traditional lexically-informed measures of personality, in relation to two indices of socio-emotional adjustment. These two complementary objectives indicated that affective personality traits of maternal ANGER, PLAY and SEEKING and paternal SADNESS and FEAR for fathers were linked to children's self-reported externalising and internalising behaviours, while low negative emotions, balanced and high emotional parent affective personality profiles were associated with child EFER. Taken together, these findings contribute to the literature on parent affective personality and child socio-emotional adjustment. A greater understanding of the factors that are linked with child socio-emotional adjustment can lead to more tailored, effective treatments that target both children and their parents.

APPENDIX A

SUPPLEMENTARY MATERIAL

A.1 Ethics forms (2019, 2020, 2021)

UQÀM CIEREH
Université du Québec à Montréal Comité institutionnel d'éthique de la recherche avec des êtres humains

Le 20 février 2019
Madame Catherine Herba
Professeure
Département de psychologie

Objet : Modification apportées au projet
Titre du projet : L'utilisation des médias sociaux et le fonctionnement social, émotionnel et sociocognitif chez les adolescents.
No : 1876_e_2021 rapport 655
Source de financement : CRSH

Madame,

La présente vise à confirmer l'approbation, au plan de l'éthique de la recherche avec de êtres humains, de l'ensemble des modifications apportées au projet mentionné en objet. Le rapport porte sur :

- Autre

Le présent rapport de modification implique également l'ajout de la personne suivante au sein de l'équipe de recherche universitaire : Amanda Thaw (UQAM).

L'approbation de ces modifications est valide jusqu'au **31 mars 2019**.

Le comité vous remercie d'avoir porté à son attention ces modifications et vous prie de recevoir l'expression de ses sentiments les meilleurs.

Le président,

Yanick Farmer, Ph. D.
Professeur

UQÀM CIEREH
Université du Québec à Montréal — Comité institutionnel d'éthique de la recherche avec des êtres humains

Le 28 juillet 2020

Madame Catherine Herba
Professeure
Département de psychologie

Objet : Rapport de suivi éthique
Titre du projet : *L'utilisation des médias sociaux et le fonctionnement social, émotionnel et sociocognitif chez les adolescents. (Social media use and social, emotional and socio-cognitive functioning during the transition from preadolescence to adolescence.)*
No : 1876_2020, rapport 1769
Statut : En cours
Financement : CRSH

Madame,

En référence au projet de recherche susmentionné ayant reçu l'approbation initiale au plan de l'éthique de la recherche, le 12 mai 2017, le Comité institutionnel juge votre rapport d'avancement conforme aux normes établies par la Politique no 54 sur l'éthique de la recherche avec des êtres humains (2015) et délivre le renouvellement de votre certificat d'éthique, valide jusqu'au **1 juillet 2021**.

Le présent rapport de suivi annuel implique l'ajout de la personne suivante au sein de l'équipe de recherche : Qian Xu (CHU Sainte-Justine)

En terminant, je vous rappelle qu'il est de votre responsabilité de communiquer au Comité institutionnel les **modifications importantes**[1] qui pourraient être apportées è votre projet en cours de réalisation. Concernant le prochain rapport de suivi éthique (renouvellement ou fin de projet), vous recevrez automatiquement un premier courriel de rappel trois mois avant la date d'échéance du certificat. Selon les normes de l'Université en vigueur, un suivi annuel est minimalement exigé pour maintenir la validité de la présente approbation éthique, à défaut de quoi, le certificat pourra être révoqué.

Le Comité institutionnel vous souhaite le plus grand succès dans la réalisation de cette recherche et vous prie de recevoir ses salutations les meilleurs.

Le président,

Yanick Farmer, Ph. D.
Professeur

[1] Modifications apportées aux objectifs du projet et à ses étapes de réalisation, au choix des groupes de participants et à la façon de les recruter et aux formulaires de consentement. Les modifications incluent les risques de préjudices non-prévus pour les participants, les précautions mises en place pour les minimiser, les changements au niveau de la protection accordée aux participants en termes d'anonymat et de confidentialité ainsi que les changements au niveau de l'équipe (ajout ou retrait de membres). Les **demandes d'approbation de modifications** afférentes à ce projet seront dorénavant traitées via le système eReviews.

UQÀM Université du Québec à Montréal
CIEREH Comité institutionnel d'éthique de la recherche avec des êtres humains

Le 8 juin 2021

Madame Catherine Herba
Professeure
Département de psychologie

Objet : Rapport de suivi éthique
Titre : L'utilisation des médias sociaux et le fonctionnement social, émotionnel et sociocognitif chez les adolescents. (titre en anglais: Social media use and social, emotional and socio-cognitive functioning during the transition from preadolescence to adolescence.)
Statut : En cours
No : 1876_2021, rapport 2272
Financement : CRSH

Madame,

En référence au projet de recherche susmentionné ayant reçu une reconnaissance au plan de l'éthique de la recherche le 12 mai 2017, le Comité institutionnel juge votre rapport d'avancement conforme aux normes établies par la Politique no 54 sur l'éthique de la recherche avec des êtres humains (2015) et délivre le renouvellement de votre certificat d'éthique, valide jusqu'au **1 juin 2022**.

Le présent rapport annuel d'avancement du projet ne rapporte aucun changement au sein de l'équipe de recherche universitaire.

En terminant, je vous rappelle qu'il est de votre responsabilité de communiquer au Comité institutionnel les modifications importantes qui pourraient être apportées à votre projet en cours de réalisation. Selon les normes de l'Université en vigueur, un suivi annuel est minimalement exigé pour maintenir la validité de la présente approbation éthique, à défaut de quoi, le certificat pourra être révoqué.

Le Comité institutionnel vous souhaite le plus grand succès dans la réalisation de cette recherche et vous prie de recevoir ses salutations les meilleurs.

Le président,

Yanick Farmer, Ph. D.
Professeur

A.1.2 Consent form for primary caregiver, 7-8 years

Formulaire d'information et de consentement du parent
(visite à domicile)
Projet ÉMIGARDE 2011-2012

1. Titre de l'étude et nom des chercheurs
Étude sur le développement émotionnel des enfants.
Chercheure responsable : Catherine Herba, Ph.D., Université de Montréal
Co-chercheurs : Sylvana Côté, Ph.D., Université de Montréal ; Jean R Séguin, Ph.D., Université de Montréal ;
Collaborateurs : Frank Vitaro, Ph.D., Université de Montréal ; Julia Kim-Cohen, Ph. D., Yale University

2. Source de financement
Instituts de recherche en santé du Canada (IRSC)

3. Objectifs de l'étude et invitation à y participer
L'objectif général de cette étude est de mieux comprendre le rôle des premières expériences de vie dans le développement des enfants. Cette année nous nous intéressons plus particulièrement au développement émotionnel des enfants. Pour ce faire, nous désirons examiner certaines caractéristiques individuelles des enfants, leur environnement familial et leurs expériences en dehors du milieu familial. Depuis cinq ans déjà, nous suivons la progression de votre enfant au sein de votre famille et dans son milieu de garde par l'entremise de visites et de questionnaires que vous avez remplis pour nous à chaque année.

Nous sollicitons aujourd'hui votre collaboration afin de pouvoir effectuer une visite à domicile avec vous et votre enfant. Nous désirons également contacter l'enseignant(e) de votre enfant pour qu'il ou elle remplisse un bref questionnaire.

Nous vous invitons à lire ce formulaire d'information afin de décider si vous êtes intéressés à participer à l'étude cette année.

4. Déroulement : visite à domicile
L'équipe de recherche vous contactera dans les prochaines semaines pour vous informer des étapes à suivre concernant la visite à domicile. Avec votre consentement, nous prendrons rendez-vous avec vous et votre enfant afin que nous puissions venir à votre domicile. La durée totale de l'entrevue avec votre famille sera d'environ 1h30 minutes au cours de laquelle différentes activités seront effectuées :

- Un questionnaire papier à la mère d'une durée d'environ 45 minutes.
- Un questionnaire papier au père (ou conjoint) d'une durée d'environ 45 minutes.
- Une entrevue avec la mère d'une durée d'environ 20 minutes portant sur ses émotions et son humeur. Il y aura un enregistrement vocal de cette entrevue pour s'assurer qu'aucune information n'est perdue au cours de l'entretien.
- Trois courtes tâches informatisées présentées sous la forme de jeux (environ 20 minutes) avec votre enfant.
- Une activité avec l'enfant (environ 20 minutes) présentée sous forme de jeu qui fait intervenir des marionnettes et de courtes mises en situation. Cette activité est enregistrée sur vidéo afin de nous permettre de suivre la qualité du déroulement de l'activité, d'apporter des corrections à nos données, et à des fins de formation du personnel.

Dès l'arrivée de l'assistante, elle vous remettra le questionnaire à la mère et le questionnaire au père (ou conjoint) afin que vous puissiez les remplir durant la visite et les remettre à l'assistante avant son départ. Pendant ce temps, elle complétera les activités prévues avec votre enfant. Elle terminera ensuite la rencontre en compagnie de la mère.

5. Avantages et bénéfices
Votre collaboration à cette étude longitudinale ne vous procurera pas d'avantage particulier, sinon que de savoir que votre participation aura contribué au progrès des connaissances sur le développement des enfants.

6. Inconvénients et risques

Votre participation à cette étude ne comporte pas de risque autre que le fait d'avoir à répondre à des questions personnelles ou de rencontrer des difficultés à répondre à certaines questions. Vous pouvez choisir de ne pas répondre à une ou des questions en tout temps. Le seul désagrément lié à votre participation est le temps que vous consacrerez à cette étude plutôt qu'à vos activités personnelles.

7. Confidentialité

Toutes les données recueillies dans le cadre de cette étude seront traitées de manière **strictement confidentielle** à moins d'une autorisation de votre part ou d'une exception prévue par la loi. Toutes les réponses données dans un questionnaire ou résultats obtenus seront codifiés et seules les personnes autorisées auront accès à la liste établissant la correspondance entre le numéro assigné à votre famille, votre nom et le nom de votre enfant. Vous ne serez identifié par votre nom en aucune circonstance. Les données seront conservées sous clé dans les locaux de l'équipe de recherche à l'Université de Montréal et au Centre de recherche du CHU Sainte-Justine aussi longtemps que les chercheurs principaux pourront en assurer la bonne gestion.

À des fins de vérification de la saine gestion de la recherche, il est possible qu'un délégué du comité d'éthique de la recherche ou de l'organisme subventionnaire consulte les données recueillies.

Finalement, les résultats de cette étude pourront faire l'objet de publications scientifiques ou être communiqués dans un congrès scientifique, mais aucune information pouvant identifier votre enfant et vous-même ne sera alors dévoilée.

8. Banque de données

Les données recueillies lors de ce présent volet de la recherche seront incluses dans la banque de données ÉMIGARDE, étude longitudinale sur les expériences de vie en milieu de garde et le développement psychosocial de l'enfant à laquelle vous participez depuis cinq ans. Cette banque de données, codées et informatisées, est conservée sur le serveur sécurisé de l'Université de Montréal et sera gérée par une seule personne à partir du CHU Sainte-Justine. Les données de la banque pourront être utilisées pour d'autres recherches dans le domaine psychosocial et pourront être utilisées par d'autres chercheurs qui acceptent de collaborer avec notre équipe. Chaque demande concernant l'utilisation des données doit être approuvée par les chercheurs principaux de l'étude et par le comité d'éthique du CHU Sainte-Justine. Dans aucun cas, sans exception, des données permettant l'identification des participants ne sera transmise.

9. Responsabilité des chercheurs

En signant ce formulaire de consentement, vous ne renoncez pas à vos droits prévus par la loi ni à ceux de votre enfant. De plus, vous ne libérez pas les investigateurs de leur responsabilité légale et professionnelle advenant une situation qui causerait préjudice à votre enfant.

10. Compensation

En guise de compensation pour le temps consacré à l'étude, la famille recevra une somme forfaitaire de 25 $ après la réception des questionnaires complétés. Un jouet/livre sera également remis à votre enfant pour le remercier de sa participation au projet.

11. Liberté de participation

Votre participation à cette étude est tout à fait volontaire. Vous êtes donc entièrement libre d'accepter ou de refuser de participer à ce projet sans que votre refus ne vous nuise d'une quelconque façon. Vous pourrez retirer votre consentement et mettre un terme à votre participation à l'étude en tout temps sans aucun préjudice à votre endroit. Advenant cette éventualité, vous n'aurez pas à expliquer ni à justifier votre décision. En cas de retrait de l'étude, les vidéos et données non encore analysées seront détruites.

12. Information complémentaire

Pour plus d'information concernant cette recherche, veuillez contacter Katja Valois, coordonnatrice de cette étude au CHU Sainte-Justine au (514) 345-2182.
Pour tout renseignement sur les droits de votre enfant à titre de participant à ce projet de recherche, vous pouvez contacter le Commissaire local aux plaintes et à la qualité des services du CHU Sainte-Justine au (514) 345-4749.

13. Questionnaire destiné à l'autre parent.
Veuillez cocher l'option qui vous convient le mieux. Ne cochez qu'une seule option.

a) Le second parent biologique ou votre conjoint(e), selon le cas, habite avec vous. Dans ce cas, il suffit qu'il (elle) complète le formulaire de consentement et le questionnaire à son intention. Ce questionnaire lui sera remis lors de la visite	( )
b) L'autre parent n'habite pas avec vous. Vous pouvez lui remettre le formulaire de consentement et le questionnaire à son intention et lui demander de nous le retourner dans l'enveloppe préaffranchie.	( )
c) L'autre parent n'habite pas avec vous. Avec votre consentement, nous contacterons l'autre parent aux coordonnées que vous nous fournirez, et nous lui ferons parvenir un formulaire de consentement et un questionnaire. Coordonnées de l'autre parent : _____ _____	( )
d) Si ces options ne répondent pas bien à votre situation, veuillez contacter la coordonnatrice du projet, Katja Valois, au (514) 345-2182.	( )

14. Consentement et assentiment pour la visite à domicile et le contact avec le professeur (enfant de 7 ou 8 ans)

J'ai pris attentivement connaissance du présent formulaire d'information et de consentement et j'en ai reçu un exemplaire. On m'a donné l'occasion de poser des questions et s'il y a lieu, on a répondu de façon satisfaisante à ces dernières. Je comprends que le présent volet de cette étude a été approuvé par le comité d'éthique à la recherche du CHU Sainte-Justine. Je comprends aussi que je peux refuser de répondre à n'importe quelle question et que je peux me retirer de l'étude en tout temps.

Après réflexion, *j'accepte* de participer à ce projet de recherche :

Contact scolaire :

J'autorise les chercheurs ou un membre de l'équipe de recherche à contacter l'enseignant de mon enfant afin qu'il ou elle soit invité(e) à répondre à un bref questionnaire sur mon enfant (entourez la réponse voulue et apposez vos initiales) :

oui_____ (initiales) non_____ (initiales)

Visite à domicile :

En signant ce document, je consens à ce qu'une assistante de recherche communique avec moi pour céduler une visite à domicile. Je consens également à remplir certains questionnaires à mon sujet et au sujet de mon enfant. Finalement, je consens à ce qu'une assistante de recherche effectue des petits jeux avec des marionnettes et des tâches à l'ordinateur avec mon enfant lors de cette visite à domicile. J'autorise également l'enregistrement vidéo de la séance.

Nom de l'enfant (en lettres moulées) : _____

_____ _____

Assentiment de l'enfant (signature) : Date

Je comprends le projet et je veux y participer

oui ____ non ____

Nom du parent ou du tuteur ou de la tutrice : _____
(en lettres moulées)

_____

Consentement du parent ou du tuteur ou de la tutrice pour lui-même ou elle-même et pour l'enfant (signature)

_____
Date

15. Formule d'engagement du chercheur ou de la personne qu'il a déléguée

J'ai expliqué au participant et à son parent/tuteur tous les aspects pertinents de la recherche et j'ai répondu aux questions qu'ils m'ont posées. Je leur ai indiqué que la participation au projet de recherche est libre et volontaire et que cette dernière peut être cessée en tout temps.

Nom de la personne qui a obtenu le consentement (en lettres moulées)	**Signature**	Date

APPROUVÉ PAR LE COMITÉ D'ÉTHIQUE CSSS SAINTE-JUSTINE
24 FEV 2012
Signé

A.1.3 Consent form for secondary caregiver, 7-8 years

Formulaire d'information et de consentement du second parent biologique ou du conjoint
Projet ÉMIGARDE 2011-2012

IRSC CIHR

Université de Montréal

1. Titre de l'étude et nom des chercheurs
Étude sur le développement émotionnel des enfants.
Chercheure responsable : Catherine Herba, Ph.D., Université de Montréal
Co-chercheurs : Sylvana Côté, Ph.D., Université de Montréal ; Jean R Séguin, Ph.D., Université de Montréal ;
Collaborateurs : Frank Vitaro, Ph.D., Université de Montréal ; Julia Kim-Cohen, Ph. D., Yale University

2. Objectifs de l'étude et invitation à y participer
L'objectif général de cette étude est de mieux comprendre le rôle des premières expériences de vie dans le développement des enfants. Cette année nous nous intéressons plus particulièrement au développement émotionnel des enfants. Pour ce faire, nous désirons examiner certaines caractéristiques individuelles des enfants, leur environnement familial et leurs expériences en dehors du milieu familial. Depuis cinq ans déjà, nous suivons la progression de votre enfant au sein de votre famille et dans son milieu de garde par l'entremise de visites et de questionnaires que vous avez remplis pour nous à chaque année.

Nous sollicitons aujourd'hui votre collaboration afin de participer au volet visite à domicile en remplissant un questionnaire sur votre enfant. Nous vous invitons à lire ce formulaire d'information afin de décider si vous êtes intéressé(e) à participer à l'étude cette année.

3. Déroulement du projet
L'équipe de recherche a déjà rencontré, rencontre aujourd'hui ou rencontrera sous peu votre enfant et sa mère. Votre participation au projet consiste à compléter un questionnaire et à le remettre à l'assistante de recherche si vous êtes présent lors de la visite à domicile ou à nous le retourner par la poste le plus tôt possible si vous êtes absent lors de cette rencontre. La durée moyenne pour remplir ce questionnaire est de 45 minutes.

4. Avantages et bénéfices
Votre collaboration à cette étude longitudinale ne vous procurera pas d'avantage particulier, sinon que de savoir que votre participation aura contribué au progrès des connaissances sur le développement des enfants.

5. Inconvénients et risques
Votre participation à cette étude ne comporte pas de risque autre que le fait d'avoir à répondre à des questions personnelles ou de rencontrer des difficultés à répondre à certaines questions. Vous pouvez choisir de ne pas répondre à une ou des questions en tout temps. Le seul désagrément lié à votre participation est le temps que vous consacrerez à cette étude plutôt qu'à vos activités personnelles.

6. Confidentialité
Toutes les données recueillies dans le cadre de cette étude seront traitées de manière **strictement confidentielle** à moins d'une autorisation de votre part ou d'une exception prévue par la loi. Toutes les réponses données dans un questionnaire ou résultats obtenus seront codifiés et seules les personnes autorisées auront accès à la liste établissant la correspondance entre le numéro assigné à votre famille, votre nom et le nom de votre enfant. Vous ne serez identifié par votre nom en aucune circonstance. Les données seront conservées sous clé dans les locaux de l'équipe de recherche à l'Université de Montréal et au Centre de recherche du CHU Sainte-Justine aussi longtemps que les chercheurs principaux pourront en assurer la bonne gestion.

À des fins de vérification de la saine gestion de la recherche, il est possible qu'un délégué du comité d'éthique de la recherche ou de l'organisme subventionnaire consulte les données recueillies.

Finalement, les résultats de cette étude pourront faire l'objet de publications scientifiques ou être communiqués dans un congrès scientifique, mais aucune information pouvant identifier votre enfant et vous-même ne sera alors dévoilée.

7. Banque de données

Les données recueillies lors de ce présent volet de la recherche seront incluses dans la banque de données ÉMIGARDE, étude longitudinale sur les expériences de vie en milieu de garde et le développement psychosocial de l'enfant à laquelle vous participez depuis cinq ans. Cette banque de données, codées et informatisées, est conservée sur le serveur sécurisé de l'Université de Montréal et sera gérée par une seule personne à partir du CHU Sainte-Justine. Les données de la banque pourront être utilisées pour d'autres recherches dans le domaine psychosocial et pourront être utilisées par d'autres chercheurs qui acceptent de collaborer avec notre équipe. Chaque demande concernant l'utilisation des données doit être approuvée par les chercheurs principaux de l'étude et par le comité d'éthique du CHU Sainte-Justine. Dans aucun cas, sans exception, des données permettant l'identification des participants ne seront transmises.

8. Responsabilité des chercheurs

En signant ce formulaire de consentement, vous ne renoncez pas à vos droits prévus par la loi ni à ceux de votre enfant. De plus, vous ne libérez pas les investigateurs de leur responsabilité légale et professionnelle advenant une situation qui causerait préjudice à votre enfant.

9. Liberté de participation

Votre participation à cette étude est tout à fait volontaire. Vous êtes donc entièrement libre d'accepter ou de refuser de participer à ce projet sans que votre refus ne vous nuise d'une quelconque façon. Vous pourrez retirer votre consentement et mettre un terme à votre participation à l'étude en tout temps sans aucun préjudice à votre endroit. Advenant cette éventualité, vous n'aurez pas à expliquer ni à justifier votre décision. En cas de retrait de l'étude, les vidéos et données non encore analysées seront détruites.

10. Information complémentaire

Pour plus d'information concernant cette recherche, veuillez contacter Katja Valois, coordonnatrice de cette étude au CHU Sainte-Justine au (514) 345-2182.
Pour tout renseignement sur les droits de votre enfant à titre de participant à ce projet de recherche, vous pouvez contacter le Commissaire local aux plaintes et à la qualité des services du CHU Sainte-Justine au (514) 345-4749.

11. Consentement

On m'a expliqué la nature et le déroulement du projet de recherche. J'ai pris connaissance du formulaire de consentement et on m'en a remis un exemplaire. J'ai eu l'occasion de poser des questions auxquelles on a répondu. Je comprends que le présent volet de cette étude a été approuvé par le comité d'éthique de la recherche du CHU Sainte-Justine. Après réflexion, j'accepte de participer à ce projet de recherche.

Je consens en toute liberté et de façon volontaire à remplir le questionnaire auto-administré du second parent biologique ou du ou de la conjoint(e).

APPROUVÉ PAR LE COMITÉ D'ÉTHIQUE CHU SAINTE-JUSTINE
24 FEV 2012

Nom de l'enfant faisant partie de l'étude
(en lettres moulées)

Nom du second parent biologique ou du ou de la conjoint(e)
(en lettres moulées)

Consentement du second parent biologique ou du ou de la conjoint(e)
(Signature)

Date

12. Formule d'engagement du chercheur ou de la personne qu'il a déléguée

J'ai expliqué au participant tous les aspects pertinents de la recherche et j'ai répondu aux questions qu'il m'a posées. Je lui ai indiqué que la participation au projet de recherche est libre et volontaire et que cette dernière peut être cessée en tout temps.

Nom de la personne qui a obtenu le consentement (en lettres moulées)

Signature

Date

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