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**A Systematic Review of Longitudinal Studies Examining the Effect of Parenting Behaviours on  
Adolescents' Rumination and Potential Moderators**

Trabalho realizado sob orientação do

**Professor Doutor Diogo Lamela**

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Dissertação de Mestrado em Psicologia Clínica e da Saúde

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### **Epígrafe**

“Was ich besitze seh ich wie im Weiten, Und was verschwand wird mir zu Wirklichkeiten”

Johann Wolfgang von Goethe, Faust

“Man sollte alle Tage wenigstens ein kleines Lied hören, ein gutes Gedicht lesen, ein treffliches Gemälde sehen und, wenn es möglich zu machen wäre, einige vernünftige Worte sprechen.”

Johann Wolfgang von Goethe

## Dedicatória

Dedico este trabalho ao meu futuro Self, para que ele nunca se esqueça do esforço aqui envolvido e do sucesso aqui conseguido. Para lembrar-lhe de que como todos os problemas passados, este não foi diferente. Todos eles são como o monstro da Hidra, resolve-se um e nascem mais três. Mas que isto não o deixe desanimado, mas sim esperançoso, porque os problemas passados também servem de evidencia que os futuros se resolverão. E assim continuará ele a resolver problemas, e que eles sejam cada vez melhores e mais significativos. E neste processo temos de imaginá-lo como imaginamos Sísifo a carregar a pedra, feliz.

## Agradecimentos

Primeiramente, gostaria de exprimir a minha gratidão pelo contexto cultural em que me insiro, pois este deu origem à epistemologia científica – seja ela positivista ou construtivista - que nos permite ver a natureza com método e dela extrair dados extraordinários. De seguida, quero agradecer ao trabalho extensivo (por vezes com a durabilidade de uma vida inteira) dos/as autores/as citados nesta tese. Eles/as trabalharam para que nós não começássemos do zero, mas sim que construíssemos por cima do que até agora foi conseguido.

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## **A Systematic Review of Longitudinal Studies Examining the Effect of Parenting Behaviours on Adolescents' Rumination and Potential Moderators**

### **Abstract**

Rumination is an emotional regulation mechanism which has been strongly associated with the development and maintenance of internalizing psychopathology. The Response Style Theory suggests that parenting behaviours (PBs) are a crucial factor involved in the emergence of this self-regulatory mechanism in children. However, it is not well understood which PBs are protective or risk factors for the development of rumination. Therefore, this study aims to systematically explore the longitudinal effect PBs have on adolescents' rumination and potential moderators.

We searched Web of Science, Scopus, PubMed, Academic Search Complete, and Eric databases for studies exploring this effect. PRISMA reporting guidelines were followed. Of 1,868 abstracts screened, 182 articles were considered for full-text reading, and 11 studies were included for qualitative synthesis. Overall, studies suggest that PBs characterized by criticism, rejection, and control have a positive association with the development of rumination, whereas the ones that potentiate the exploration of various self-regulation mechanisms have a negative association with the construct. Intrapersonal factors such as gender and temperament were found to be significant moderators between PBs and rumination. For example, girls, individuals low on effortful control and high on environmental sensitivity seem to be more susceptible to developing rumination when exposed to certain PBs. Conclusions were limited due to the studies' methodological heterogeneity. Future studies of PBs and rumination may assess various forms of PBs and address different moderators to identify factors that weaken or strengthen the development of rumination across development. Promoting emotion regulation skills, parenting awareness, and bringing special attention to girls that display ruminative thoughts may be important intervention targets.

**Keywords:** Rumination, Parenting, Adolescents, Children, Parenting Behaviours

## **Revisão Sistemática do Efeito dos Comportamentos Parentais na Ruminação dos/as Adolescentes e Potenciais Moderadores**

### **Resumo**

A ruminação é um mecanismo de regulação emocional associado ao desenvolvimento e manutenção de problemas de internalização. A *Response Style Theory* defende que os comportamentos parentais são um fator nuclear para a emergência da ruminação nas crianças. No entanto, não existe uma compreensão de quais os comportamentos parentais que podem funcionar como fatores de risco ou proteção do desenvolvimento da ruminação. Por isso, o objetivo deste estudo centra-se na revisão sistemática do efeito longitudinal dos comportamentos parentais na ruminação dos/as adolescentes e potenciais moderadores.

Utilizamos as bases de dados Web of Science, Scopus, PubMed, Academic Search Complete e Eric, e seguimos as diretrizes do PRISMA. De 1,868 resumos rastreados, 182 artigos foram considerados para uma leitura integral do texto. Desses 182, 11 foram incluídos para a síntese qualitativa. De um modo geral, os estudos sugerem que comportamentos parentais caracterizados pela crítica, rejeição e controlo têm uma associação positiva com o aumento da ruminação nos/as adolescentes, enquanto comportamentos que potenciem a exploração de diferentes estilos de regulação emocional na criança têm uma associação negativa com o construto. Fatores intrapessoais, como o gênero e o temperamento, foram moderadores significativos entre comportamentos parentais e a ruminação. Por exemplo, raparigas, indivíduos com baixos níveis de controlo com esforço e com altos níveis de sensibilidade ambiental parecem ser mais suscetíveis ao desenvolvimento da ruminação quando expostos a certos comportamentos parentais. As conclusões foram limitadas devido à heterogeneidade da metodologia dos estudos. Estudos futuros sobre comportamentos parentais e ruminação devem considerar várias formas de comportamentos parentais e diferentes moderadores para identificar diversos fatores que enfraqueçam ou fortaleçam o desenvolvimento da ruminação na/o criança/adolescente. Melhorar estratégias de regulação emocional, aumentar a consciência parental em relação aos seus comportamentos e ter em atenção crianças e adolescentes do sexo feminino que demonstram sinais de pensamentos ruminativos, poderão ser importantes fatores a considerar para o desenvolvimento de estratégias de intervenção eficazes.

**Palavras-Chave:** Ruminação, Parentalidade, Adolescentes, Crianças, Comportamentos Parentais

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**Lista de Abreviaturas/Acrónimos**

**EPI** – Event-Planning Interaction

**PB** – Parenting Behaviour

**PSI** – Problem-Solving Interaction

## Introduction

The Response Styles Theory (Nolen-Hoeksema, 1991, 2000) defines rumination as a response to negative affect through a systematic reflection upon the symptoms, causes, and consequences of the emotional state. Individuals who ruminate are less invested in actively solving their problems, leading them to behavioural inaction (Nolen-Hoeksema, 1991). Several attempts have been made to explain why humans engage in such thinking styles. Behaviourists claim that ruminative thinking works as a tool for individuals to stay away from aversive situations (Martell et al., 2001) and it seems to usually appear in those who are subject to environments characterised by punishment (Ferster, 1973). This self-regulatory function helps them create a rationale that repeatedly communicates the uselessness of trying to actively solve the problem, inducing subsequent inactivity (Nolen-Hoeksema et al., 2008). On the other hand, evolutionary theories claim that withdrawal symptoms, such as social disengagement, work towards preserving resources that would otherwise be threatened if one was actively involved in the situation (e.g., Nesse, 2000).

Rumination has been consistently linked with internalizing symptomatology and is thought of as a transdiagnostic factor for depression and anxiety (e.g., Butler & Nolen-Hoeksema, 1994; O'Connor, O'Connor & Marshall, 2007; McLaughlin & Nolen-Hoeksema, 2011; Nolen-Hoeksema et al., 1999). In a meta-analysis focused on the effect of emotion-regulation mechanisms on psychopathology symptoms, rumination was found to have the most significant positive effect size (Aldao et al., 2010). Other studies also found a positive association between rumination and anxiety (e.g., Segerstrom et al., 2000). These data suggest that rumination is a robust risk factor for developing psychopathology. This form of rumination is usually known as depressive or negative rumination, for its focus on negative affect (Papageorgiou & Wells, 2004). Yet, there are other forms of this self-regulatory mechanism, such as anger and positive rumination (Feldman et al., 2008; Sukhodolsky et al., 2001). Anger rumination is also characterised by repetitive thoughts, but, in this case, they are concerned with anger-related experiences (Sukhodolsky et al., 2001). As for positive rumination, Feldman et al. (2008) defined the construct as a response to positive affect with thoughts revolving around positive aspects about oneself. However, this systematic review focused only on negative rumination due to its well-documented association with psychopathology (e.g., O'Connor, O'Connor & Marshall, 2007; Nolen-Hoeksema, 1994) and the lack of understanding of the underlying mechanisms.

Theoretical reviews have hypothesised that parenting behaviours (PBs) are potential predictors of a child's failure to develop effective self-regulation strategies to cope with negative emotions (Bandura, 1962; Bridgett et al., 2015; Nolen-Hoeksema et al., 2008). Bandura (1962) suggested that caregivers serve as models for their children. Therefore, parents that often engage in criticism can

promote practices of self-criticism in the child. This can lead to low levels of self-efficacy and, thereafter, a marked disengagement in problem-solving practices. Due to hopelessness when faced with a problem, the child resorts to passive cognitive strategies such as rumination (Abramson et al., 1989). The Response Styles Theory (Noen-Hoeksema, 1998) adds to this theory by explaining that not allowing the child to autonomously engage with the world might lead to the adoption of passive approaches, which impair active problem-solving skills. This passivity may encourage the child to engage in internal regulation methods such as rumination since actively solving the problem is not being reinforced by the parents (Nolen-Hoeksema, et al., 1995). In agreement with the theories put forward, an empirical study conducted by Watkins and Nolen-Hoeksema (2014) found that overcontrolling and negative parenting have a positive effect on a child's tendency to develop trait rumination. Another study showed that children experiencing overcontrolling parenting reported greater levels of rumination in adolescence than those that did not (Hilt et al., 2012).

According to the attachment theory (Bowlby, 1982), PBs marked by rejection do not fulfil the innate children's needs for carrying and safety. This makes them vulnerable to developing an insecure attachment characterized by negative representations of the self and others. These children are more prone to search for cues of negative affect in their surroundings and ruminate about them (Cooke et al., 2019). Rumination, among other strategies, ends up being an attempt to preserve proximity to one's caregivers (Cassidy, 1994). These strategies tend to be applied in other life contexts for their utility within the family context (Mikulincer & Shaver, 2019). Hostile PBs, such as rejecting parenting, were shown to be highly associated with decreased emotion regulation capacity in children (e.g., see Morris et al., 2007, for a review). Mothers that tended to use withdrawal coping mechanisms, characteristic of rejecting parenting, predicted adolescents' increased levels of rumination (Stroud & Fitts, 2017).

In addition, maltreating practices perpetrated by caregivers usually set an environment characterised by punishment (Erickson et al., 1989), preventing the child from actively solving a problem. Previous research investigated the role of maltreating practices as a potential inflictor of maladaptive self-regulatory mechanisms (e.g., Heleniak et al., 2016; Kim et al., 2017; Weissman et al., 2019). Heleniak et al. (2016) found that maltreatment was highly associated with increased use of rumination to deal with triggering situations.

With theoretical and empirical prepositions pointing to the existence of an association between PBs and the development of rumination, this review aimed to systematically explore it and bring about a better understanding of it. It also attempts to find out if certain children that are exposed to negative PBs are more susceptible to developing rumination than others. For example, studies that used questionnaires and observational assessment methods have shown that the use of

rumination to deal with depression is more prominent in female than male participants (e.g., Butler & Nolen-Hoeksema, 1994; Nolen-Hoeksema et al., 1993). This might be due to parents usually granting less autonomy to girls than boys, leading to an increased engagement in passive regulatory styles in girls, as Nolen-Hoeksema (1998) points out.

Additionally, this review looked exclusively into longitudinal studies to explore the potential causal effect between exposure to specific PBs and rumination. Recently, Cortés-García et al. (2020) published a meta-analysis accounting for the mechanisms underlying the relationship between attachment insecurity and depressive symptoms. Their findings suggested that the brooding dimension of rumination significantly mediated this relationship. Since an insecure attachment is mostly developed through parenting practices such as rejecting, overcontrolling and criticising (Mikulincer & Shaver, 2012; Peach et al., 2016), and broader data suggest an existing relationship between PBs and children's emotional regulation (e.g., Heleniak et al., 2016; Hilt et al., 2012; Nolen-Hoeksema, 1996; Stroud & Fitts, 2017), we ended up systematically exploring the effect the parenting dimension has on the development of adolescent rumination.

The relationship between rumination and child internalizing symptoms has already been systematically reviewed (e.g., Cortés-García et al., 2020; Kovács et al., 2020). However, the mechanisms through which rumination develops are not fully explained. Due to sufficient empirical evidence demonstrating the significance of the impact different PBs have on the development of rumination in adolescents (e.g., Gaté et al., 2013; Hilt et al., 2012; Lionetti et al., 2021; Weissman et al., 2019), this systematic review sought to identify the empirical studies covering the relationship between these variables and potential moderators.

This review aimed to conduct a systematic search and to synthesise the data gathered from empirical research exploring the longitudinal effect PBs have on child rumination, and potential moderators. The following questions were addressed:

1. Which PBs are associated with increased levels of adolescent rumination?
2. Is the effect of PBs on adolescent rumination in most cases significant?
3. Which variables potentially moderate this effect?

## **Methods**

For this review, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher et al., 2009) guidelines were used.

### **Data sources**

The scientific search engines used to identify articles exploring the variables PBs, child/adolescent rumination, and potential moderators were Web of Science, Scopus, PubMed, Academic Search Complete, and Eric. There were no limits to publishing dates.

### **Search terms**

The grouped terms used in the search bar were the following: (“rumination”) AND (“parenting” OR “parental behaviour” OR “parents” OR “mother” OR “father” OR “maternal” OR “paternal” OR “parental” OR “transmission”).

### **Eligibility criteria**

The review included longitudinal and quantitative studies that met the following inclusion criteria:

1. The study used at least one measure of rumination.
2. The study had a sample of children and adolescents till 20 years of age and at least one of their caregivers.
3. The study reported on PBs.
4. The study explored the effects of PBs on children’s/adolescents’ rumination.

Studies were excluded if they:

1. Considered emotion regulation instead of rumination specifically.
2. Were not written in English, Spanish, Portuguese, or German language
3. Were unpublished.
4. Were book chapters, dissertations summaries, or conferences.
5. Were systematic reviews or meta-analyses.

### **Screening procedure**

The titles and abstracts from the initial search were independently read by T.C. and D.L. to screen for articles subject to full-text retrieval. Whenever a title seemed relevant, but no abstract was available, the full text was retrieved. The review’s final inclusion resulted from an independent screen of all full-text articles by T.C. and D.L.

### **Data extraction**

A data extraction form grounded on PRISMA guidelines (Moher et al., 2009) was created. This extraction resulted in the gathering of information concerning the first author’s name, the date and

country of study, the characteristics of the sample (i.e., age mean and the population it represents), the PB and/or maltreating practices assessment tools used, the child/adolescent rumination assessment tools used, the main aim of the study and the study design.

### **Data synthesis**

The reviewed studies were qualitatively synthesised. To address the aims of this review, the relevant findings of the included studies were codified into two major sections: 1) PBs (e.g., overcontrolling parenting, parenting styles, parental affective expression) and maltreating practices (i.e., exposure and severity); 2) rumination (i.e., adolescent rumination, child rumination, and sadness rumination); and 3) moderators of the effect PBs have on child/adolescent rumination (i.e., gender and child temperament).

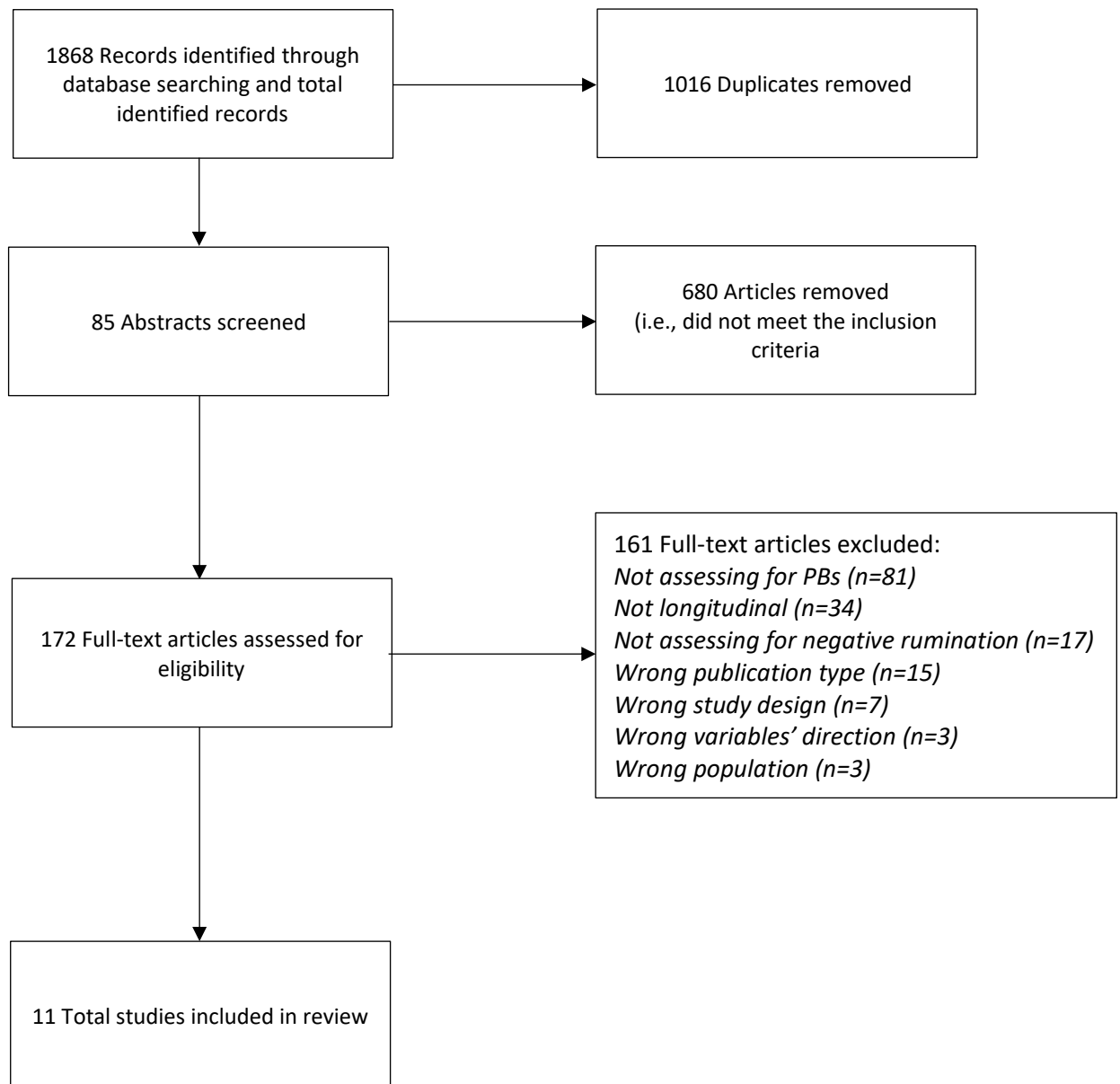
## **Results**

### **Included articles**

The database search resulted in the retrieval of 1,868 records (Figure 1). After the abstract screening, 182 articles were considered for full-text reading. From this full-text screening, 11 studies were included. Every disagreement was discussed and talked through between the researchers to the point of resolution. The major exclusion reasons were the usage of the wrong variables, the non-longitudinal design of the study, the assessment of the wrong kind of rumination (e.g., positive rumination and anger rumination), and the wrong type of publication. All of them explore the effect PBs (including maltreating practices) have on adolescents' rumination.

### **Study characteristics**

Children/adolescents samples' age range from 3 to 19 years old. Due to their longitudinal design, some studies cover the whole age range to explore the causing effect between PBs and adolescents' rumination. One study didn't rely on any caregiver for the assessment of the parenting dimension (Padilla Paredes et al., 2014). As for the number of different design studies, there were five three-wave (Gate et al., 2013; Li et al., 2021; Lionetti et al., 2021; Padilla Paredes et al., 2014; Tammilehto et al., 2021), five two-wave (Hilt et al., 2012; Lo et al., 2021; Schweizer et al., 2018; Spasojevic et al., 2002; Weissman et al., 2019), and only one four-wave (Dunning et al., 2022). Additional to these variables, most studies explore the effect the parenting dimension and/or the adolescents' rumination have on the development of internalizing symptoms (e.g., Gaté et al., 2013).



**Fig. 1.** Flowchart of the article search and selection process.  
(Source: PRISMA, Moher et al., 2009)

The USA was the country where most studies were conducted, being represented by six studies (Dunning et al., 2022; Hilt et al., 2012; Lionetti et al., 2021; Schweizer et al., 2018; Spasojevic et al., 2002; Weissman et al., 2019). Eight studies came from English-speaking countries, such as Australia (Gate et al., 2013), Honk Kong (Lo et al., 2021), and the US (Dunning et al., 2022; Hilt et al., 2012; Lionetti et al., 2021; Schweizer et al., 2018; Spasojevic et al., 2002; Weissman et al., 2019). Apart from that, there was one study from China (Li et al., 2021), one from Spain (Padilla Paredes et al., 2014), and one from Finland (Tammilehto et al. (2021). Yet, all studies are written in English.

There were no significant cultural differences apart from the study conducted in China (Li et al., 2021). This study found a negative association between parental solicitation and rumination,

whereas western studies found a positive association between a similar parenting construct and rumination (Hilt et al., 2012; Lo et al., 2020; Spasojevic et al., 2002).

## **Findings**

### ***Parenting behaviours***

As shown in Table 1, the studies included in this review measured several PBs (i.e., psychological control, communication, affective expression, involvement, aggressive and positive maternal behaviours, negative-submissive expressivity, overcontrol, positive and negative affectivity, permissive, authoritarian and authoritative parenting styles, solicitation, demandingness, emotional abuse, rejection, autonomy and intimacy, maltreatment exposure and severity) and moderators involved in the relationship between the parenting dimension and rumination (i.e., inhibitory control, negative affect, effortful control, gender, pubertal timing, environmental sensitivity). Both the definitions and operationalisations of the parenting variables varied across studies (Table 1), but we gathered them in clusters according to their remembrance in the definition.

### ***Parenting control***

Five studies reported on parenting control (i.e., psychological and behavioural control). Dunning et al. (2022) concluded that the mother's psychological control was not associated with adolescent rumination, even when it was mediating the relationship between mother and adolescent rumination. Tammilehto et al. (2021) designed four models to account for differences between parent self-reported and partner-reported data. The only outcome that stood out was the association of fathers' high autonomy and high intimacy parenting style (i.e., low parenting behavioural control) with low levels of rumination. However, this may fall under the category of a false positive since this effect was only found in one out of six modelling situations.

However, the other three studies found a significant and positive relation between parenting control and rumination (Hilt et al., 2012; Lo et al., 2020; Spasojevic et al., 2002). Lo et al. (2020) reported that parenting overcontrol at an average age of twelve significantly predicted rumination one year after. Spasojevic et al. (2002) assessed psychological control and compared it between mothers and fathers. The study found that both parents' reports were positively associated with child rumination. Hilt et al. (2012) concluded that children experiencing high levels of overcontrolling parenting were the ones ending up with the highest levels of adolescent rumination.

Additionally, children who reported high levels of parenting control were more likely to ruminate when experiencing a depressed mood (Spasojevic et al., 2002). Two studies concluded that rumination significantly mediated the effect parenting control has on depressive symptomatology (Lo et al., 2020; Spasojevic et al., 2002). Lo et al. (2020) added that the dimension *direct commands* of parenting control had a significant indirect effect on depression via rumination, whereas “indirect commands” did not.

### ***Negative-submissive family expressivity and parental affective expression***

Hilt et al. (2012) found that children faced with negative-submissive family expressivity presented significantly higher levels of adolescent rumination. Additionally, Schweizer et al. (2017) concluded that both positive and negative affectivity dimensions of parenting had a significant effect on rumination. Positive affectivity was negatively associated with rumination, whereas negative affectivity interacted with it positively. On the other hand, Dunning et al. (2022) suggested that mother affective expression effect on adolescent rumination was not significant. In the same way, the indirect path between mother and adolescent rumination via family affective expression was also non-significant.

### ***Rejecting parenting and parental solicitation***

Rejecting parenting was not significantly related to rumination (Spasojevic et al., 2002). Yet, Li et al. (2021) found that high parental solicitation was associated with low levels of rumination.

### ***Parental communication and involvement***

According to Dunning et al. (2022), family communication reported by the mother was not associated with adolescent rumination. The mediating effect of the family communication variable between mother and adolescent rumination was equally non-significant. As for mother-reported involvement, it was also not associated with adolescent rumination.

### ***Maternal behaviours***

Gaté et al. (2013) indicated that the indirect effects of the maternal behaviour variables (i.e., aggressive and positive maternal behaviours in the event-planning interaction (EPI) and the problem-solving interaction (PSI)) on adolescent depressive symptoms through rumination were non-significant.

**Table 1.****Summary of studies of PBs and children rumination.**

| First author (year)   | Country   | Child/Adolescent sample & age at baseline    | Parenting dimension                                                                             | Methodology of parenting assessment                                                                                      | Child/Adolescent rumination assessment | Sample setting   | Design                                                                                                           | Main aim                                                                                                                                                             |
|-----------------------|-----------|----------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dunning et al. (2022) | USA       | 629 Adolescents ( $M = 13.05$ , $SD = .90$ ) | 1. Autonomy vs. Psychological<br>2. Family Communication, Affective Expression, and Involvement | 1. The subscale autonomy vs psychological control of the CRPBI (Parent Self-report)<br>2. FAM-III-G (Parent Self-report) | CRSQ (Self-report)                     | Community sample | 4-wave longitudinal study (1.68, 1.16, and 0.37 years between T1 and T2, T2 and T3, and T3 and T4, respectively) | To explore the development of rumination and its relationship with internalizing psychopathology                                                                     |
| Gaté et al. (2013)    | Australia | 163 adolescents ( $M = 12.46$ , $SD = .43$ ) | 1. Aggressive and Positive Interpersonal Behaviour                                              | 1. LFE (Observation)                                                                                                     | RRS of the RSQ (Self-report)           | At risk sample   | 3-wave longitudinal study (T1-T2: mean 30.96 months; T2-T3: mean 19.32 months)                                   | To examine whether rumination mediates the relationship between a negative family environment and adolescent depressive symptoms                                     |
| Hilt et al. (2012)    | USA       | 337 adolescents (13 years old)               | 1. Overcontrolling Parenting<br>2. Negative-submissive Family Expressivity                      | 1. CRPR (Self-report)<br>2. FEQ (Self-report)                                                                            | RRS (Self-report)                      | Clinical sample  | 2-wave longitudinal study (between 13.5 and 15.5 years till follow-up)                                           | To examine the moderation effect of effortful cognitive control on the relationship between early family environment and the development of adolescent rumination    |
| Li et al. (2021)      | China     | 950 adolescents ( $M = 13.18$ , $SD = .66$ ) | 1. Parental Solicitation                                                                        | 1. 5 items of the PKS (Self-report)                                                                                      | SRI (Self-report)                      | Community sample | 3-wave longitudinal study (1 year follow-up)                                                                     | To examine the moderation effect of both sadness rumination and parental solicitation on the relationship between pubertal timing and adolescent depressive symptoms |

| First author (year)           | Country   | Child/Adolescent sample & age at baseline      | Parenting dimension                                               | Methodology of parenting assessment                                   | Child/Adolescent rumination assessment                  | Sample setting   | Design                                                                             | Main aim                                                                                                                                                                                |
|-------------------------------|-----------|------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------|------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lionetti et al. (2021)        | USA       | 292 children (aged 3)                          | 1. Parenting Styles: Permissive, Authoritarian, and Authoritative | 1. PSDQ (Self-report)                                                 | RRS (Self-report)                                       | Community sample | 3-wave longitudinal study (6 years till the first follow-up and 3 till the second) | To explore the effect parenting styles, emotional sensitivity, and both combined have on the development of depression in the child with child rumination mediating these relationships |
| Lo et al. (2021)              | Hong Kong | 125 adolescents ( $M = 12.21$ , $SD = 1.39$ )  | 1. Parental Demandingness                                         | 1. PCIT (Observational)                                               | CRSQ (Self-report)                                      | Community Sample | 2-wave longitudinal study (1 year till follow-up)                                  | To examine the association between parental demandingness and adolescent depression by looking into the mediating effect rumination might have on this relationship                     |
| Padilla Paredes et al. (2014) | Spain     | 1,316 adolescents ( $M = 13.42$ , $SD = 1.3$ ) | 1. Emotional abuse by parents                                     | 1. CTS-PC Spanish Version (Self-report by the adolescents)            | Ruminative Responses Subscale of the CRSS (Self-report) | Community sample | 3-wave longitudinal study                                                          | To examine the involvement of cognitive mechanisms in the relationship between parental and peer abuse, and adolescent depression                                                       |
| Schweizer et al. (2018)       | USA       | 425 children ( $M = 3.5$ , $SD = .3$ )         | 1. PB                                                             | 1. TTB (Observational)                                                | Ruminative Response subscale of the CRSQ (Self-report)  | Community sample | 2-wave longitudinal study (6 years till follow-up)                                 | To examine the effect of early childhood temperament and PBs on the development of children's ruminative thinking style                                                                 |
| Spasojevic et al. (2002)      | USA       | 137 adolescents ( $M = 19$ )                   | 1. Parenting<br>2. Maltreating practices                          | 1. CRPBI (Self-report)<br>2. LEQ (Self-report from parents and child) | RRS (Self-report)                                       | At risk sample   | 2-wave longitudinal study (2.5 years interval)                                     | To examine if paternal psychological overcontrol and emotional and sexual maltreatment contribute to the development of rumination                                                      |

| First author<br>(year)   | Country | Child/Adolescent<br>sample & age at<br>baseline | Parenting<br>dimension   | Methodology of<br>parenting assessment                                                                                                                                                                                                                   | Child/Adolescent<br>rumination<br>assessment  | Sample<br>setting            | Design                                                                                                    | Main aim                                                                                                                             |
|--------------------------|---------|-------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Tammilehto et al. (2021) | Finland | 885 children (M = 1)                            | 1. Parenting quality     | 1. Parental autonomy and intimacy subscales of the SFPT (Self-report)                                                                                                                                                                                    | Rumination subscale of the CERQ (Self-report) | Community sample             | 3-wave longitudinal study (6.5 years till first follow-up and approximately 11 till the second follow-up) | To examine the stage-specific effects of parenting on adolescents' emotion regulation                                                |
| Weissman et al. 2019     | USA     | 262 children (M = 12.78, SD = 2.57)             | 1. Maltreating practices | 1. CECA (Interview to children); VEX-R (Interview to children); CTQ (Self-report for children); PTSD-RI (Self-report for children); CTS-PC (Self-report for parents); PTSD-RI caregiver version (Self-report for parents); JVQ (Self-report for parents) | CRSQ (Self-report)                            | At-risk and community sample | 2-wave longitudinal study (2 years till follow-up)                                                        | To examine the association between childhood maltreatment and psychopathology through the mediating effect of emotion dysregulation. |

**Note:** CECA = Childhood Experiences of Care and Abuse; CERQ = Cognitive Emotion Regulation Questionnaire; CRPBI = Children's Report of Parenting Behaviour Inventory; CRPR = Child-Rearing Practices Report; CRSQ = Child Responses Style Questionnaire; CRSS = Children's Responses Style Scale; CTQ = Childhood Trauma Questionnaire; CTS-PC = Conflict Tactics Scale-Parent Child Version; CTS-PC = Conflict Tactics Scales-Parent to Child; FAM-II-G = Family Assessment Measure III – General; FEQ = Family Expressiveness Questionnaire; JVQ = Juvenile Victimization Questionnaire; LEQ = Lifetime Experiences Questionnaire; LFE = Living in Familial Environments; M = Mean; PCIT = Parents-Child Interaction Task; PKS = Parent Knowledge Scale; PSDQ = Parenting Styles and Dimensions Questionnaire; PTSD-RI = Posttraumatic Stress Disorder Reaction Index; RRS = Ruminative Responses Scale; RSQ = Responses Style Questionnaire; SD = Standard Deviation; SFPT = Subjective Family Picture Test; SRI = Sadness Rumination Inventory; TTB = Teaching Tasks Battery; VEX-R = Violence Exposure Scale for Children Revised

### ***Parenting styles***

Lionetti et al. (2021) did not observe a direct effect of permissive parenting at age 3 on rumination at age 9. As for authoritarian parenting, it interacted positively with rumination at age 9 but the effect was small. Authoritative parenting, on the other hand, was negatively associated with rumination, suggesting that this parenting style decreases the risk of rumination.

### ***Maltreating practices***

Exposure and severity to maltreating practices were both positively and significantly associated with rumination in a study conducted by Weissman et al. (2019). The experience of maltreatment during childhood increased the likability to ruminate later in life, and the greater the severity of the maltreatment, the greater the use of rumination as a self-regulatory mechanism. The indirect effect of exposure to maltreating practices on psychopathology levels at follow-up via baseline rumination and emotional reactivity, in parallel, was significant. The direct effect was non-significant, reinforcing the hypothesis that this process happens through the mechanisms of rumination and emotion reactivity. The maltreatment severity's direct effect on psychopathology levels was significant, and when accounting for its indirect effect through paralleled emotion reactivity and rumination it was also significant.

Padilla Paredes et al. (2014) found that the indirect path between time 1 parental emotional abuse and time 3 depressive symptoms through time 2 brooding rumination was significant. However, the direct path was also significant, suggesting that the mediation was partial and that there might be other mechanisms present in the process. As for reflection rumination, it was not significantly predicted by parental emotional abuse and, therefore, did not mediate the effect the abuse has on depressive symptoms.

### **Moderators**

#### ***Child's temperament***

Hilt et al. (2012) concluded that high levels of negative affect significantly moderated the relationship between overcontrolling parenting and child rumination, contrary to low levels of the same temperamental construct. Reversely, only low levels of negative affect significantly moderated the effect between negative-submissive family expressivity and increased rumination.

Hilt et al. (2012) also found that high levels of effortful control significantly moderated the effect between overcontrolling parenting and rumination. Yet, low levels of effortful control predicted high levels of rumination on both PBs. Schweizer et al. (2017) found no relationship between PB and rumination among children with high levels of effortful control. However, participants with low levels of effortful control scored lower on rumination when they were exposed to positive parenting at baseline, and participants low on effortful control had higher levels of rumination when negative parenting was high.

Comparing both studies, Hilt et al. (2012) found that low effortful control levels maintained high levels of rumination regardless of the PB, whereas high effortful control levels significantly moderated the

relationship between negative parenting and rumination. On the other hand, Schweizer et al. (2017) found that low effortful control levels paired with positive and negative parenting predicted lower and higher levels of rumination, respectively. As for children with high effortful control levels, these reported mild rumination levels regardless of the parenting style.

### ***Gender***

According to Schweizer et al. (2017) and Spasojevic et al. (2002), gender did not significantly moderate the relationship between the parenting dimension and rumination. However, Hilt et al. (2012) found that high levels of rumination were significantly more reported by female than male participants. Also, Gaté et al. (2013) found that the relationship between positive maternal behaviours in the EPI and rumination became significant when moderated by gender. Lower levels of positive maternal behaviours in the EPI were associated with the report of increased levels of rumination from time 1 to time 2 in female adolescents. These results are aligned with the hypothesis that adolescent gender moderates the effect of positive maternal behaviours in EPI on changes in rumination levels.

Li et al. (2021) showed that parental solicitation significantly moderated the relationship between pubertal timing and rumination. However, this was only the case for girls. After accounting for the differences between low and high levels of parental solicitation, the conditional indirect effect of pubertal timing on sadness rumination was only significant among girls with low levels of parental solicitation. This supports that early pubertal timing increases the risk of developing sadness rumination, and, thereafter, depression, for girls with lower parental solicitation.

### ***Environmental sensitivity***

In Lionetti et al. (2021) rumination conditional on environmental sensitivity significantly moderated the effect between permissive parenting and depression at ages 9 and 12. More specifically, high levels of environmental sensitivity predicted higher levels of rumination at age 9 when the child was exposed to permissive parenting at age 3. In both authoritarian and authoritative parenting styles, the interactions with rumination and subsequently with depression were not meaningfully moderated by environmental sensitivity.

### ***Parental involvement***

Dunning et al. (2022) found that parental involvement did not moderate the effect of the mother's rumination on the adolescent's rumination. Additionally, the effects of mother rumination on adolescent internalizing symptoms via parental involvement and adolescent rumination were also shown to be non-significant.

## Discussion

The focus of this study was to systematically review the longitudinal associations between PBs and adolescents' rumination. It also investigated potential moderators involved in this relationship. Our systematic review included empirical studies that focused on multiple domains of parenting, different assessment methods (i.e., self-report, observational, and interview), and diverse models testing the association between the two variables.

The studies have found negative, positive, and non-existent associations between PBs and rumination depending on the parenting construct. Parenting-related variables such as parental involvement, family communication, mother affective expression, rejecting parenting, maternal behaviours, and permissive parenting showed no direct association with rumination (Dunning et al., 2022; Gaté et al., 2013; Lionetti et al., 2021; Spasojevic et al., 2002). Three of those variables were from the same study (i.e., parental involvement, family communication, and mother affective expression) (Dunning et al., 2022), which, in this case, leads to suggest that the absence of an association might have been due to the way the variables were modelled and the study was designed.

We found that four PBs, all from four different studies, showed a negative association with adolescents' rumination. These were positive affectivity (Schweizer et al., 2017), authoritative parenting (Lionetti et al., 2021), low PB control (Tammilehto et al., 2021), and parental solicitation (a dimension of parental monitoring) (Li et al., 2021). Even though these constructs do not predict the development of rumination, they cannot be conceptualized as protective factors against rumination since the studies did not account for the effect of other alternative and perhaps more adaptive emotion regulation strategies. Interestingly, parental solicitation is conceptualized as a parental behaviour where parents are actively invested in obtaining information about the adolescents and their friends (Kerr et al., 2010). In western culture, this might be deemed as something negative for constituting a form of parenting control (Kiesner et al., 2009). However, this study (Li et al., 2021) was conducted in Chinese culture where parental solicitation is normally perceived as a supportive form of parenting (Hawk, 2017). This might explain its negative association with rumination, contrary to other studies conducted in western culture and assessing other forms of parenting control (Hilt et al., 2012; Lo et al., 2020; Spasojevic et al., 2002).

We found that six PBs, five from five different studies and one common to three, showed a positive association with rumination. These were parenting control (Hilt et al., 2012; Lo et al., 2020; Spasojevic et al., 2002), negative-submissive family expression (Hilt et al., 2012), negative affectivity (Schweizer et al., 2017), authoritarian parenting (Lionetti et al., 2021), maltreatment severity and exposure (Weissman et al., 2019), and emotional abuse (Padilla Paredes et al., 2014). The presence of positive relationships with adolescents' rumination suggests that these constructs constitute a risk factor for the development of this regulatory mechanism. In general, the results were dominated by positive relations. Yet, this might be due to the aims of the studies, since most of them intended to explore how rumination develops and, therefore, intentionally searched in the literature for PBs that potentially predict adolescent rumination.

Among the parenting dimensions with a negative association with adolescents' rumination, one is affective (i.e., positive affectivity), one behavioural (i.e., low PB control), and one affective-behavioural (i.e., authoritative parenting) (Li et al., 2021; Lionetti et al., 2021; Schweizer et al., 2017; Tammilehto et al., 2021). As for the ones positively associated with adolescents' rumination, three are behavioural (i.e., parenting control, maltreatment severity and exposure, and emotional abuse), two affective (negative-submissive family expression and negative affectivity) and one mixed (authoritarian parenting) (Hilt et al., 2012; Lo et al., 2020; Padilla Paredes et al., 2014; Schweizer et al., 2017; Spasojevic et al., 2002; Weissman et al., 2019). The behavioural dimension seems to reflect parenting practices that are both restrictive for and critical of the adolescent, and the affective dimension is mostly reflective of practices that are critical and rejecting of the adolescent.

The Ruminative Response Style Theory, put forward by Nolen-Hoeksema (1991, 1998, 2004), suggests that highly critical, restrictive, and intrusive parenting styles lead to the adolescent's failure to learn active coping mechanisms and to the experience of hopelessness in controlling one's environment. Because individuals do not have the chance to actively solve their problems, due to restrictions on behaviour and emotional expressivity, they end up having to resort to passive cognitive strategies such as rumination. This study's results seem to support this theory by suggesting that parenting practices of overcontrol and emotional expression restriction, which is marked by criticism, intrusiveness, and restriction, are strong predictors of rumination (Hilt et al., 2012; Lo et al., 2020; Padilla Paredes et al., 2014; Schweizer et al., 2017; Spasojevic et al., 2002; Weissman et al., 2019). The theory (Nolen-Hoeksema, 1991, 1998, 2004) also suggests that rejecting PBs may be involved in the development of rumination, because of the lack of positive involvement and orientation. Children that are left on their own to deal with their problems and emotions may feel helpless when facing distress and, therefore, rely on inward thinking. Our results support this theoretical claim by suggesting that rejecting PBs, such as negative-submissive family expression (Hilt et al., 2012) and permissive parenting (Lionetti et al., 2021), directly and indirectly, predict high levels of rumination, respectively

In line with the theory (Nolen-Hoeksema, 2004), the opposite of critical, restrictive, and intrusive parenting styles should set an environment that encourages the engagement in a wide range of behaviours and emotions that lead to the development of problem-solving mechanisms. This review seems to corroborate this assumption by finding that low parenting control, high positive parental emotional expression, and the exercise of authoritative parenting styles are predictors of low rumination levels (Li et al., 2021; Lionetti et al., 2021; Schweizer et al., 2017; Tammilehto et al., 2021).

The Ruminative Response Style Theory (Nolen-Hoeksema, 1991, 1998, 2004) also hypothesises that some temperamental factors can make a person more vulnerable to the development of rumination. It suggests that reactive individuals may consider states of negative affect more enthralling and, therefore, be more prone to direct their attention towards them. When comparing themselves to less reactive individuals, who do not seem as often triggered, they may start questioning their emotional reactions. By constantly directing

their attention to their negative emotions and questioning their affective states, these individuals may develop rumination as a recurrent reaction to negative affect. Our results seem to support this theory by finding that high and low effortful control, high negative affect, and high environmental sensitivity moderate the relationship between PBs and increased rumination (i.e., Hilt et al., 2012; Lionetti et al., 2021; Schweizer et al., 2017). Individuals with high levels of effortful control can change their emotional and behavioural responses by directing their attention away from negative emotional states (Rothbart & Bates, 1998). Even reactive individuals might be able to distract themselves away from the engagement in rumination when high on effortful control.

Surprisingly, Hilt et al. (2012) did not support this theory when concluding that high effortful control moderates the relationship between high parenting control levels and increased rumination. However, this can be explained by Alloy and Abramson (2007) when they suggest that emotional regulation develops through parenting encouragement. In a high parenting control context, adolescents with high levels of effortful control miss out on this encouragement and tend to orient their ability to sustain their attention on inwards-directed regulatory strategies, such as rumination, because they may be the only ones readily available to them.

Regarding negative affect and environmental sensitivity, Hilt et al. (2012) and Lionetti et al. (2021) found that they moderate the positive effect overcontrolling and permissive parenting has on rumination, respectively. This corroborates the theory (Nolen-Hoeksema, 1991, 1998, 2004) because individuals more prone to respond to negative emotions (high negative affect) and to engage in and emotionally react to deep processing of environmental input (environmental sensitivity) seem to be more likely to focus their attention on negative emotional states and to try to make sense of them. Additionally, people high on environmental sensitivity tend to avoid direct and instant engagement with new environments so that they can process the information in their own time (Aron et al., 2012). This points out behavioural inactivity, which is characteristic of the concept of rumination laid out by the Ruminative Response Style Theory (Nolen-Hoeksema, 1991, 1998, 2004).

Contrary to the male gender, the female is shown to significantly moderate the positive effect PBs have on the development of rumination. This comes to further support the Ruminative Response Style Theory (Nolen-Hoeksema, 1998), which argues that parents' gender expectations might punish boys' engagement in emotional expression and, therefore, lead them to engage in distracting responses when faced with a negative mood. This might promote the development of effortful control in boys and not in girls. Also, et al. (1998) saw that parents exert more control practices on girls than on boys, making girls feel behaviourally restricted and, consequently, resort to cognitive strategies such as rumination.

The results regarding the moderators involved in the risk for or the protection from the development of rumination also support the Diathesis-Stress Model of Environmental Action (Monroe & Simons, 1991). This model says that individual differences, such as temperamental (e.g., effortful control) and genetic (e.g., female gender) differences, influence how a person responds to the environment. This review corroborates

this model by finding that girls respond differently than boys to negative parenting styles and that variances in effortful control, negative affect, and environmental sensitivity have an impact on how an adolescent responds to different PBs.

### **Strengths and limitations**

The studies included in this review have strengths and limitations. Regarding their limitations, the studies had several methodological dissimilarities between them. The assessment methods used for the parenting construct were distinct (i.e., observational, child-report, parent-report, interview), preventing comparisons across studies. The studies relied mostly on self-reports (Dunning et al., 2022; Hilt et al., 2012; Li et al., 2021; Lionetti et al., 2021; Padilla Paredes et al., 2014; Spasojevic et al., 2002; Tammilehto et al., 2021), which, in part, depend on the accuracy of the participants' recall memory. There was also a heterogeneity across studies in the assessed parenting construct, accounting for various forms of parenting such as parental communication, parental affective expression, parental involvement (Dunning et al., 2022), maternal behaviours (Gaté et al., 2013), overcontrolling parenting, negative-submissive family expressivity (Hilt et al., 2012), parental solicitation (Li et al., 2021), parental demandingness (Lo et al., 2020), and emotional abuse (Padilla Paredes et al., 2014). Parenting control was explored in four different studies (Hilt et al., 2012; Lo et al., 2020; Spasojevic et al., 2002; Tammilehto et al., 2021), whereas the rest were just assessed by one study. This makes parenting control the only construct susceptible to interstudy comparison.

Measures concerning time-variant moderators and moderators generated from the independent to the dependent variable imply a necessity for different time assessments. However, three out of the six studies with moderators assessed time-variant moderators (i.e., temperamental factors) at baseline only (Hilt et al., 2012; Lionetti et al., 2021; Schweizer et al., 2018).

The studies also differed when it came to the parenting sample (e.g., mothers, single mothers, both parents, and non-biological caregivers). The number of follow-ups after baseline assessments and the times between the follow-ups were also different across studies and the children's/adolescents' age also varied between studies. Hampel and Petermann (2005) found an increase in rumination from ages 8 to 13 years, which suggest that the development of rumination might depend on a specific stage of development. However, some studies assessed only throughout one developmental stage (e.g., Lionetti et al., 2021; Schweizer et al., 2018) and others both in childhood and adolescence (Tammilehto et al., 2021), precluding the possibility of interpreting the results in an age-specific manner. Whilst all these differences might induce variability in the results, the findings were relatively consistent across the studies, such that the parenting construct interacted significantly with rumination.

When it comes to strengths, and contrary to the variety of parenting constructs assessed across studies, two out of three moderators (i.e., effortful control and gender) were assessed in different studies (Gaté et al., 2013; Hilt et al., 2012; Schweizer et al., 2017; Spasojevic et al., 2002), making it possible to do interstudy comparisons in more than one construct. The studies were all longitudinal, which accounts for the

understanding of a potential cause-effect relation between PBs and rumination and takes into consideration intraindividual development over time (Crone & Elzinga, 2015). Some studies had multiple methods of assessment (Gaté et al., 2013; Lo et al., 2021; Schweizer et al., 2017; Weissman et al. 2019) supplied by different informants (e.g., parents, children, adolescents, and partners), which avoids the risk of reporting bias susceptible to studies that exclusively use questionnaires.

This review included studies with samples representative of populations from six different countries (i.e., China, Hong Kong, Finland, Spain, Australia, and the USA). This allows for intercultural comparisons and inferences about the transcultural nature of the effect PBs have on rumination. The review did not account for the date of publication, allowing for the exploration of all longitudinal studies assessing the association between PBs and rumination.

In the future, more studies should account for repeated intraindividual measurements to identify differential age effects. It is also relevant that future research uses multiple methods of assessment to avoid reported bias characteristic of exclusive questionnaire use. Most research is focused on exploring the effect of rumination and PBs on the development of depressive symptomatology (e.g., Cortés-García et al., 2020; Kovács et al., 2020; Nolen-Hoeksema, 1998). Given the extensive literature corroborating this effect, it is important to further research the development of rumination. This is crucial to come up with assessment and intervention tools that avoid the development of internalizing problems. Due to the lack of extensive longitudinal literature reinforcing the existence of a link between PBs and adolescent rumination, it is relevant to further explore it. We also recommend that future research accounts for mediators and moderators that might be at work between the two variables. This is crucial to identify who is more prone to develop rumination and which factor provoked by PBs is exacerbating the rumination levels. To do so researchers must conduct longitudinal studies with two or more follow-ups so that time-variable moderators are assessed across time and potential mediators at times between the moments PBs and rumination are measured.

Since there is a wide variety of PBs and various ways to conceptualize them, there must be multiple data on all these variances. This will allow research to converge into the behaviours that seem to have a strong and replicable effect on rumination. While doing so, both the studies that resulted in data that does and does not show an association between PB and rumination should be further replicated to assert either corroboration or refutation. Finally, future research should be focused on both parents and not just on mothers or female caregivers, as the results found by Gaté et al. (2013) suggest.

### **Clinical implications**

This study allows for a better understanding of how rumination develops. Since this emotional regulatory style is strongly linked to internalizing psychopathology (e.g., Butler & Nolen-Hoeksema, 1994; O'Connor et al, 2007; Nolen-Hoeksema et al., 1999), an understanding of how it develops can be crucial to prevent and intervene on it. This study supports that certain PBs are direct and indirect mechanisms for the development

of adolescents' rumination. It is therefore relevant to implement detection (e.g., structured clinical interviews and assessment instruments) and intervention tools to identify and suppress such PBs in intervention programs to prevent internalizing problems. These should also include strategies to promote healthier PBs that encourage the development of various emotion regulation skills in adolescents.

In addition to such programs, interventions aimed at developing different emotional regulation strategies in adolescents should be included. These could be most effective on adolescents under overcontrolling parenting since its effect on rumination was shown to be weakened by high levels of effortful control (Schweizer et al., 2017). The enhancement of such skills gives the adolescent multiple forms to address different problems and prevents the exclusive reliance on inward thinking. Since rumination is usually a response to negative affect characterized by a continuous focus on it (Nolen-Hoeksema, 1991, 2000), these interventions should encourage the development of emotional regulation strategies that can redirect that focus.

These suggestions should be taken more into consideration when the adolescent in hand is a girl, because of the positive association between the female gender and the development of rumination. The identification of the PBs girls is being subject to should be present at the assessment stage when they show signs of persistent engagement in thoughts revolving around negative emotion. Environmental sensitivity should also be assessed when adolescents show signs of the same nature. To intervene in adolescents with high levels of environmental sensitivity, programs should be aimed at the enhancement of behavioural and cognitive strategies to adaptively deal with new and/or overwhelming situations.

In general, this review highlights the importance of parenting on the cognitive development of adolescents. The world is full of complex problems to be solved and if we maximize in adolescents the potential to engage in problem-solving and avoid increasing inaction as a response, typical of rumination, we might have a bigger chance at having those problems solved. Under this premise, investment in parenting and emotion regulation programs is not a trivial but rather a necessary matter.

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