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Are Parental Stress and Rewards Influenced by Child Temperament? Analysis of the Moderating Role of Social Support and Gender in Spanish Parents

Olga Gómez-Ortiz, María Ortiz-Alba, Daniel Falla, and Eva M. Romera

Universidad de Córdoba, Spain

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ABSTRACT

Objective: The aims of this research work were twofold: (1) to validate the factor structure of the Spanish version of the Emotionality, Activity and Sociability Temperament Survey (EAS) and (2) to analyse the relationship between child temperament, and parental stress and rewards, testing the possible moderating roles of gender and social support. *Method:* The reference population was a group of mothers and fathers with children in early childhood education (aged 0-5). For the first study, we used a sample of 701 subjects (70.20% mothers, M_{age} = 36.83), while for the second study, 422 individuals were selected (58.9% mothers, M_{age} = 37.08). We conducted exploratory (EFA) and confirmatory factor analyses (CFA) and moderation analyses. *Results:* The EFA showed a three-factor structure composed of 12 items, and the CFA verified that the three-factor model (sociability, emotionality, and activity) was the most parsimonious and provided the best fit. The results reveal the moderating effect of social support and gender in the relationship between childhood emotionality and parental rewards. One the one hand, with mothers in particular, the parental rewards are especially affected by childhood emotionality when levels of social support are low to moderate. On the other hand, paternal rewards seem to depend to a greater extent on childhood emotionality when there is a high level of support from a significant other. *Conclusions:* Finally, we discuss the protective role played by social support and the possible risk factor of childhood emotionality in parents' appraisal of the parenting task, depending on the gender of the parents.

Being a parent can be both satisfying and challenging (Nomaguchi & Milkie, 2020), and the way parental figures experience and emotionally process this evolutionary task depends on a number of factors. Apart from factors relating to the parental figures themselves or the context in which they play their role, their children's characteristics have been shown to be a key factor which affects the emotional processes experienced by the parental figures during this stage of life (Fang et al., 2022). Of these, temperamental traits have the greatest effect and help shape the infant's future personality (Sechi et al., 2020), and their relation to parental stress has been studied previously, with a direct association found between the two variables (Andreadakis et al., 2020). Nevertheless, practically no previous evidence supports the possibility that certain factors such as social support or parental gender may moderate the impact of temperamental traits on parenting stress. Therefore, one of the objectives of the present study was to examine these possible relationships. Previously, we validated the Emotionality, Activity, and Sociability Temperament Survey (EAS) (Buss & Plomin, 1984), with the aim of evaluating children's temperament, for which suitable psychometric properties have not yet been confirmed in the Spanish population.

Child Temperament and How It Is Measured: EAS

Temperament has been defined as a congenital emotional tendency which defines the way an individual copes with, and reacts to, a given situation in their environment (Cornellà, 2010). It is typically evident in formal characteristics, such as the intensity of responses, latencies, durations, thresholds, and recovery times. These differences, which are linked closely to biological factors, appear in the first four years of life, are long-lasting, and predictive of a number of different psychosocial adjustment outcomes (Abulizi et al., 2017).

According to Buss and Plomin's (1975) widely-accepted Evolutionary Temperament Theory, the construct of temperament can be divided into different key traits. The authors identified these as emotionality (a predisposition to becoming distressed and easily upset), activity (energy levels), impulsivity (giving quick, unpremeditated responses rather than pausing to think and plan before acting), and sociability (a predisposition to seeking company, and a preference for being with others rather than alone). All meet the five requirements present in the definition of temperament: stability during childhood, maintenance until adulthood, genetic origin, adaptive value, and presence in other species apart from

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humans. In line with this theory, the EASI scale (Rowe & Plomin, 1977) was developed to measure a child's temperament through the responses of parental figures and following the four temperamental factors mentioned above (Emotionality, Activity, Sociability, and Impulsiveness). However, the impulsivity factor did not show sufficient stability and was omitted in the revised version of the scale, and the definitive instrument was named EAS (acronym for Emotionality, Activity, and Sociability) (Buss & Plomin, 1984). These authors warned that the original EASI sociability scale was really a measure of shyness, evaluating the difficulties found in coping with social interaction, especially with strangers, and added a sociability scale to the EAS, resulting in a final version composed of 20 items relating to 4 factors: emotionality (e.g., "S/he cries easily"), activity (e.g., "He/she is very energetic"), sociability (e.g., S/he prefers to play with other children rather than on their own") and shyness (e.g., "S/he tends to be shy").

Although this scale has been widely used and validated in populations, the results have not been consistently homogeneous. Boer and Westenberg (1994) conducted the first in-depth analysis of the psychometric properties of the scale in a sample of Dutch children aged between 4 and 12. These authors defended a structure containing 3 factors (Emotionality, Activity, and Shyness) and the need to eliminate the Sociability factor due to its close relationship with the dimensions of shyness in younger children and activity in older children. Later, Mathiesen and Tambs (1999) validated the scale in a Norwegian population (children between 30 and 50 months of age), and found Boer and Westenberg's results to be replicable. Their results also reflected a good fit when sociability was included, and so they proposed a 4-dimensional factor structure. However, the internal consistency results for these scales were not always suitable, with results for sociability below .70, especially for the responses of parents of young children. In another study, Gasman et al. (2002) validated the French version of the scale using a sample of boys and girls aged 6 to 12, their families, and their teachers. Nevertheless, they did not find that the 4-factor structure was fully replicable in their sample, with few improvements seen when testing the three-factor structure. In this study, the factors of shyness and sociability showed a significant overlap in both parent-rated and teacher-rated EAS and many of its items did not load significantly on the corresponding factor. Similarly, Bobes Bascarán et al. tested the psychometric properties of the original scale (20 items) adapted to Spanish, conducting an exploratory factor analysis with a sample consisting of children between 18 and 42 months. While they did not obtain entirely positive results when testing either the three-factor and four-factor structure, they did not suggest deleting any items, maintaining all the items present in the original version of the EAS (Buss & Plomin, 1984), even when some of them showed low factor loadings and, hence, could worsen the data fit of the proposed models or the internal consistency of each factor. In this last case, Cronbach's alpha values were just within limits, or below what is usually considered acceptable for all factors. Despite this, the authors of this study concluded by defending the relevance of a structure consisting of the factors of emotionality, activity, and sociability, which they themselves labelled "bipolar", as they were composed of items originally belonging to two dimensions, and considered that they represent the opposite poles of the same continuum (e.g., shyness and sociability).

In another study, Stringaris et al. (2010) found their data produced a good fit with the three-factor structure and suggested the presence of the three factors of emotionality, activity, and sociability. This last dimension covered the items of shyness, thus including the two social tendencies. In any case, sociability and shyness are not opposite poles of the same continuum, but rather different predispositions that can appear in the same person, generating different social and psychological adjustment profiles depending on the levels of the two tendencies and how much they combine (Poole & Schmidt, 2020). In fact, sociability has been linked to positive emotionality, approach, and adaptability, while shyness has been associated with fearfulness and vulnerability to anxiety disorders (Cheek & Buss, 1981; Mathiesen & Tambs, 1999; Poole & Schmidt, 2020). This difference is especially notable in the adult population and in adolescents. However, Boer and Westenberg (1994) found that the factors of sociability and shyness were totally indistinguishable for parents of infants and toddlers. Similarly, Buss and Plomin (1984) argued that young children's social behaviour may be difficult to assess when exposure to social contexts is mainly controlled by the caregiver. This can apply above all to shyness, which is closely linked to the reaction shown by children when they meet strangers, which, in turn, is determined by the main style of attachment employed by the child towards their main caregiver (Bowlby, 1973) and by the mainstream culture (Gottlieb, 2014).

In short, the available evidence, along with a recent review of the literature carried out by Walker et al. (2017), stresses how difficult it is to find a version of the EAS with optimal psychometric properties due, among other aspects, to the methodological problem of how to integrate items related to sociability and shyness. Although both of these dimensions are theoretical and independently adjusted (Cheek & Buss, 1981; Poole & Schmidt, 2020), they tend to generate overlapping response patterns, perhaps because of their common social nature, which is very difficult to differentiate, especially in early childhood (Boer & Westenberg, 1994; Buss & Plomin, 1984). The first objective of this study was therefore to validate the Spanish version of the EAS (Bobes Bascarán et al., 2011), in order to produce a version with suitable psychometric properties. Although Bobes Bascarán et al. (2011) tested the psychometric properties of the Spanish version of the EAS, the results of their study did not demonstrate that this version (the original, 20-item version) was valid and reliable. This fact highlights the need to establish this aim and modify the scale (the number of items and their organisation into factors) according to the results of data analysis, in an attempt to finally give the Spanish version of the EAS good psychometric properties. As Bobes Bascarán et al. (2011) did a good job in translating and adapting the original items of the EAS into Spanish, their adaptation will be taken as the basis for our work. We put forward the hypothesis ($H1$) that EAS scale's three-factor structure will produce the most favourable results, omitting items related to shyness, considering the difficulties in distinguishing this dimension from the sociability experienced by fathers and mothers of very young children, who are the main object of this study (Boer & Westenberg, 1994; Gasman et al., 2002; Mathiesen & Tambs, 1999). Similarly, we decided to omit this factor rather than sociability, since the latter satisfies more completely the criteria of the definition of temperament, while shyness is linked more to processes of family and cultural socialization (Bowlby, 1973; Gottlieb, 2014).

Child Temperament and Parental Stress

One of the emotional processes that has been linked most closely to child temperament is parental stress. Parental stress arises when parents' expectations about the resources they need to satisfy the demands of parenting do not correspond to the resources available, which leads to different psychological and physiological reactions aimed at finding effective ways of coping with the perceived demands (Deater-Deckard, 2004). Despite its adaptive nature, the presence of high levels of parental stress has a negative impact both on the parents themselves and on their children (Crnic & Ross, 2017; Ward & Lee, 2020), so it is vital to know which factors are linked to this emotional process in order to identify potential coping strategies. Moreover, almost all the available ways of measuring parental stress also include the appraisal of parental rewards or the satisfaction that parents feel

with their role as a parent. This dimension is therefore included in the construct of parental stress, as it is considered complementary and inherent to this emotional process (Abidin, 1995; Berry & Jones, 1995). However, the studies examining its connection with child temperament have focused only on the dimension of stress, which means that more needs to be learnt about its relationship with its other dimension, parental rewards.

The recent evidence available dealing with the relationship between child temperament and parental stress highlights the role of traits linked to the dimension of emotionality as predictors of this emotional process. Of these, the most important is the presence of negative affectivity, low effortful control, and emotional intensity (Andreadakis et al., 2020), with gender differences found in the study by McBride et al. (2002) regarding the impact of this last trait. These authors also highlighted the importance of considering the level of activity and child sociability, although the presence of the former only increased mothers' stress levels, while the latter was only inversely linked to fathers' stress levels.

Another group of studies, rather than addressing the analysis of specific traits has looked into temperament profiles. The most relevant of these studies include Ruiz Ortiz and Barnes' (2019) and Mulsow et al.'s (2002), who link parental stress to the presence of a difficult temperament in children, highlighting traits included in the dimension of emotionality, such as fussy behaviour or intense emotionality, low adaptability, persistence and unpredictability, and a lower tendency towards sociability. Conversely, the presence of a flexible temperament, characterized by good humour and moderate or mild moods, is linked to lower levels of stress in the parents (Rabinowitz et al., 2016; Szyma-ska & Aranowska, 2019). In addition to finding the same trends as previous studies for the direct link between difficult childhood temperament and parental stress, Solmeyer and Feinberg (2011) examined the moderating role of a joint, cooperative parental approach in this relationship. Here, they found that, although this factor is capable of mitigating the impact of childhood temperament on depression and low parental self-efficacy, the same does not occur when it comes to its potential moderating effect on parental stress, which points to the strength of childhood temperament as a predictor of parental stress and the need to analyse other moderating factors. Among these, we could include social support, which covers not only the support of the couple in the family environment (which is what coparenting evaluates), but also other sources and forms of support in the family context applied to different areas.

Social Support and Gender as Moderating Variables of the Relationship between Child Temperament and Parental Stress

Social support is one of the contextual factors which most stands out as an asset that promotes family adjustment and helps to cope with the stress resulting from exercising the role of parent (Fang et al., 2022). Social support can be defined as a resource provided by others, which leads individuals to believe they are cared for and loved, that they are valued, and that they belong to a social network of communication and mutual obligation (Cobb, 1976; Cohen & Syme, 1985).

Previous research into the relationship between social support and parental stress has focused on at-risk populations which start with high levels of stress due to background factors affecting the parents or children, and include studies on teenage mothers, belonging either to ethnic minorities (Huang et al., 2019) or migrant families (Sun & Mulvaney, 2023). Some of these studies also take into account cognitive, developmental difficulties or health problems in the children (Luu & Neece, 2019; Xu et al., 2018), or focus specifically on families which have to cope these circumstances, without considering the background of the parental figures (Lu et al., 2018; Shepherd et al., 2020; Zeng et al., 2020). According to these studies, the importance of social support lies in the fact that it is one of the processes that directly affects parental stress by helping to reduce it (Sun & Mulvaney, 2023), although the effect this support exerts was found to differ depending on who provides it and who receives it (Huang et al., 2019; Xu et al., 2018). Some of this research has also confirmed the indirect or moderating effect of social support, demonstrating its positive effect by increasing levels of parental well-being (Zeng et al., 2020) or life satisfaction, or its conditioning power in preventing high levels of support; these negative results appear, predictably, when the parents and/or children are in situations of risk (Lu et al., 2018; Luu & Neece, 2019; Shepherd et al., 2020).

Despite the fact that we found no studies which examine the moderating role that social support might play in the relationship between child temperament and parental stress, the results of the studies we reviewed suggest that this connection is worth examining. So, our second objective was to study this relationship in a population made up mainly of normative families (with no specific risks confirmed which could negatively affect their levels of parental stress), which have traditionally featured less in past research, despite being the most commonly-found situation. Based on the results provided by research focused on families whose children were at risk, we put forward the hypothesis (*H2*) that this moderating relationship will be significant in the presence of temperamental traits which complicate the parents' work, such as emotionality (Andreadakis et al., 2020; Mulsow et al., 2002; Solmeyer & Feinberg, 2011) and that low levels of support will favour a greater impact of this trait on parental stress or the perception of rewards (Lu et al., 2018; Luu & Neece, 2019; Shepherd et al., 2020; Sun & Mulvaney, 2023).

In addition to social support, other variables could serve to moderate the impact of child temperament on levels of parental stress and rewards, in particular gender, although when parental stress is studied the results are not always homogeneous and coherent (Deater-Deckard & Scarr, 1996; Insa et al., 2018; Oyarzún-Farías et al., 2021). The evidence available points to the existence of gender differences in the levels of stress and rewards experienced by the parents, with the differences being more marked in groups that use the social services, compared to normative families. Specifically, the recent study published by Gómez-Ortiz et al. (2023) reports a greater impact of parental stress on mothers in the first group, with lower levels of rewards and higher levels of stress than their partners. However, hardly any differences were observed between mothers and fathers from normative families, with high parental rewards evident in the case of the mothers.

In general, the gender differences found in the levels of parental stress and rewards are usually perpetuated by the unequal distribution of domestic and family tasks, which still appears to be the norm in heterosexual couples, and is even more marked in families at psycho-social risk (Altuzarra Artola et al., 2018; Gracia & Ghysels, 2017). In this context, the available evidence shows the high incidence of parental stress in women who are overloaded with housework (Cohen & Syme, 1985). In a similar way, it has been found that sharing the burden of the household chores tends to mitigate stress and stimulate the perception of rewards (Nomaguchi et al., 2017; Roxburgh, 2005).

Gender roles also seem to play a key role in explaining the gender differences found in parental stress. In this way, regardless of how long they spend dealing with domestic and family issues, mothers develop a greater sense of responsibility for them (Renk et al., 2003) and continue to be perceived as the ideal parental figure to take care of the children during their first years of life (Henz, 2022). This means that they continue to be those who most often give up their jobs or part of their working day after the couple have a child (European Commission, Directorate-General for Justice and Consumers, 2019). For all these reasons, this study supports

the hypothesis (*H3*) that the parental role, especially when it has to face adverse conditions caused by challenging temperamental traits, such as emotionality, or by reduced social support, will generate a greater emotional impact on mothers, limiting more their perception of rewards, in line with what previous studies have suggested in normative families with no particular risks (Gómez-Ortiz et al., 2023). However, to the best of our knowledge, no studies to date have looked into this idea, which only goes to emphasise the need to address this topic in the second objective, with gender as a second moderating variable together with support, in order to examine its potential effect on the relationship between child temperament, parental stress, and parental rewards.

Method

Participants

The reference population for this study were the fathers and mothers of pupils in the first (0-2 years old) and second cycles (3-5 years old) of pre-school education in the provinces of Córdoba and Badajoz (Spain). The incidental sample was made up of 701 people, all of whom answered EAS scale, and their responses were therefore used to examine the first objective. For the second objective, we used a sub-sample derived from the first, which was the best way to obtain a comprehensive response to all the questionnaires provided. The sample for the first objective was made up of 701 subjects (29.80% men), with ages ranging from 22 to 52 years old (M = 36.83, SD = 5.08). To address the second objective, 422 individuals responded, with 41.1% fathers and 58.9% mothers, aged from 22 to 52 years old (M = 37.08, SD = 4.8).

Instruments

The Emotionality Activity and Sociability Temperament Survey (EAS; Buss & Plomin, 1984)

This survey, adapted to Spanish by Bobes Bascarán et al. (2011), is administered to parents to find out about their children's temperament. In its original version, like in the Spanish adaptation, the scale consists of 20 items featuring 5 Likert-type response options (1 = *not very characteristic of the child,* 5 = *very characteristic of the child*). The psychometric properties of this instrument, modified according to the statistical results, are presented in the Results section.

The Parental Stress Scale (PSS; Berry & Jones, 1995)

Validated in Spanish population by Gómez-Ortiz et al. (2023), this scale evaluates the levels of stress associated with the parental role, using 12 items which are answered on a Likert-type scale with 5 response alternatives (1 = *totally disagree,* 5 = *totally agree*). It is structured around two factors: stressors (e.g., "Having children has been a financial burden") and parental rewards (e.g., "I enjoy spending time with my child[ren]"). In this study, both factors showed adequate internal consistency ($\alpha_{stressors}$ = .82, $\alpha_{rewards}$ = .75).

The Multidimensional Scale of Perceived Social Support (Zimet et al., 1990)

Adapted into Spanish by Landeta & Calvete (2002), this instrument evaluates the levels of perceived social support through 12 items with 7 Likert-type response options (1 = *strongly disagree,* 7 = *strongly agree*). The scale consists of three factors: support from a significant other (e.g., "There is a special person who is around when I am in need"), family support (e.g., "My family really tries to help me"), and support from friends (e.g., "I have friends with whom I can share my joys and sorrows"). The scale has good internal consistency (α = .90), as do its 3 subscales ($\alpha_{significantother}$ = .89, α_{family} = .88, $\alpha_{friends}$ = .91).

Procedure

This study has a retrospective ex-post-facto design (Montero & León, 2007). Permission was requested through the children's schools to collect the data, thus obtaining access to the children's parents as possible participants. The schools distributed the questionnaires and consent forms for families to fill in at home and explained that participation was voluntary, anonymous, and confidential. This research project was approved by the Bioethics and Biosafety Committee of the authors' university and complied with the ethical standards of the Declaration of Helsinki.

Data Analysis

The preliminary analyses consisted of performing descriptive statistics. The sample was divided randomly into two parts to validate the questionnaire. An exploratory factor analysis (EFA) was carried out on the first half, which allowed us to explore the

Table 1. Items (translated from the Spanish version of the EAS), Descriptive Statistics, Communalities, Factor Loadings from the EFA and Sstandardized Factor Loadings from the CFA

	F1	F2	F3	Com	*M*	*SD*	Skew	Kurt	R^2
1. He/she complains and cries often/*Protesta y llora a menudo*	.84			.67	3.07	1.26	0.27	0.80	.66
2. He/she gets angry easily/*Se altera con facilidad*	.83			.77	2.86	1.14	0.03	0.88	.75
3. He/she cries easily/*Llora facilmente*	.74			.50	2.60	1.30	0.33	0.52	.41
4. He/she reacts strongly when upset/*Reacciona de forma muy intensa cuando se altera*	.35	.31		.28	2.61	1.15	0.24	1.02	.51
5. Since getting up in the morning he/she hasn't stopped running/*Desde que se levanta por la mañana no para de correr*		.99		.90	3.15	1.30	0.04	0.76	.67
6. He/she is full of energy/*Es muy enérgico*		.68		.62	3.91	1.07	0.73	0.57	.66
7. He/she never keeps still/*Está siempre moviéndose*		.57		.47	4.10	1.05	1.03	0.45	.67
8. He/she is very sociable/*Es muy sociable*			.78	.59	4.18	1.07	1.04	0.21	.81
9. He/she prefers to play with other children rather than playing alone/*Prefiere jugar con otros niños/as a jugar solo*			.74	.53	4.16	1.06	0.84	0.05	.44
10. He/she makes friends easily/*Hace amigos fácilmente*			.73	.66	3.99	1.03	0.61	0.44	.74
11. He/she likes to be with other people/*Le gusta estar con la gente*			.70	.54	4.19	.91	1.11	1.60	.58

Note. F1 = factor 1; F2 = factor 2; F3 = factor 3; Com = communality; *M* = mean; *SD* = standard deviation; S = skewness; K = kurtosis; R^2 = standardized factor loadings.

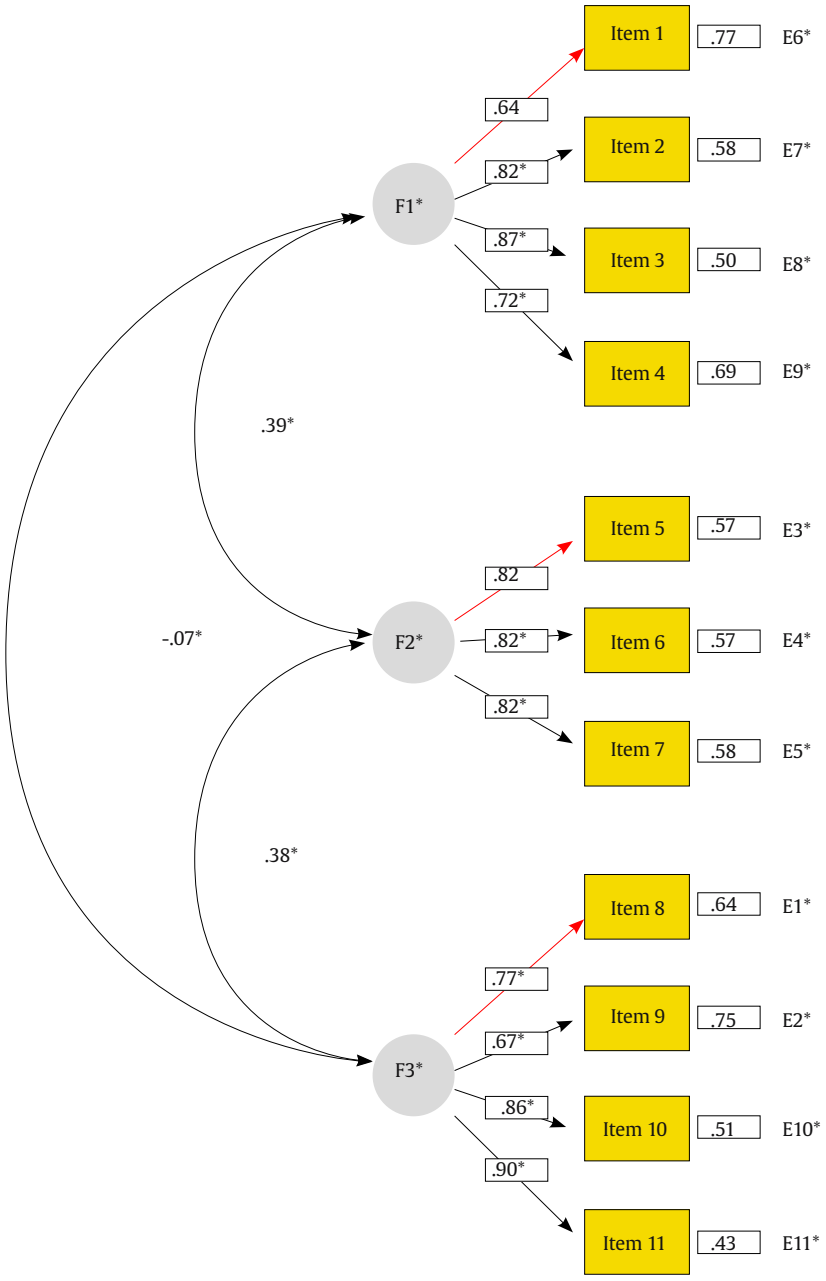

Figure 1. CFA Standardized Coefficients for the Items Belonging to the Emotionality, Activity and Sociability Temperament Survey (EAS).

dimensionality of the EAS and select the final items to be used. This analysis was performed using Factor 9.3 statistical software. We used an unweighted least-squares (ULS) estimation method based on the polychoric correlation matrix, which is recommended when working with non-normal distribution samples and ordinal items (Bryant & Satorrra, 2012). The Promin rotation method was used, with following items excluded from the analysis: items in the EFA with factor loading and communalities below .31 and .28, respectively, and high cross-loadings (Worthington & Whittaker, 2006). In the Appendix, are specified the items that was removed from the Spanish Version of the EAS.

We also conducted a confirmatory factor analysis (CFA) using the EQS program (6.2) (Bentler, 2005) both to establish validity based on the internal structure of the survey and to corroborate the factor structure suggested by the EFA. Taking into account the ordinal nature of the variables in the questionnaire, we used the maximum likelihood estimation method with robust correction (Bryant & Satorrra, 2012). The model fit was assessed using the comparative fit index (CFI), non-normalized fit index (NNFI) (≥ .95), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA) (≤ .08) (Hu & Bentler, 1999).

The number of factors to retain was decided taking into account a comparison of the results from different confirmatory factor analyses (CFAs) with different numbers of factors, as well as other previous theoretical considerations (Lorenzo-Seva et al., 2011).

The reliability of the scale and subscales was calculated using Cronbach's alpha ($\alpha > .70$). We used the PROCESS macro for SPSS to test the moderation effect of gender and social support on the relationship between irritability and rewards and parenting stress, and the Johnson-Neyman technique was used to determine whether the relationships were significant. The significance level adopted for all the analyses was .05.

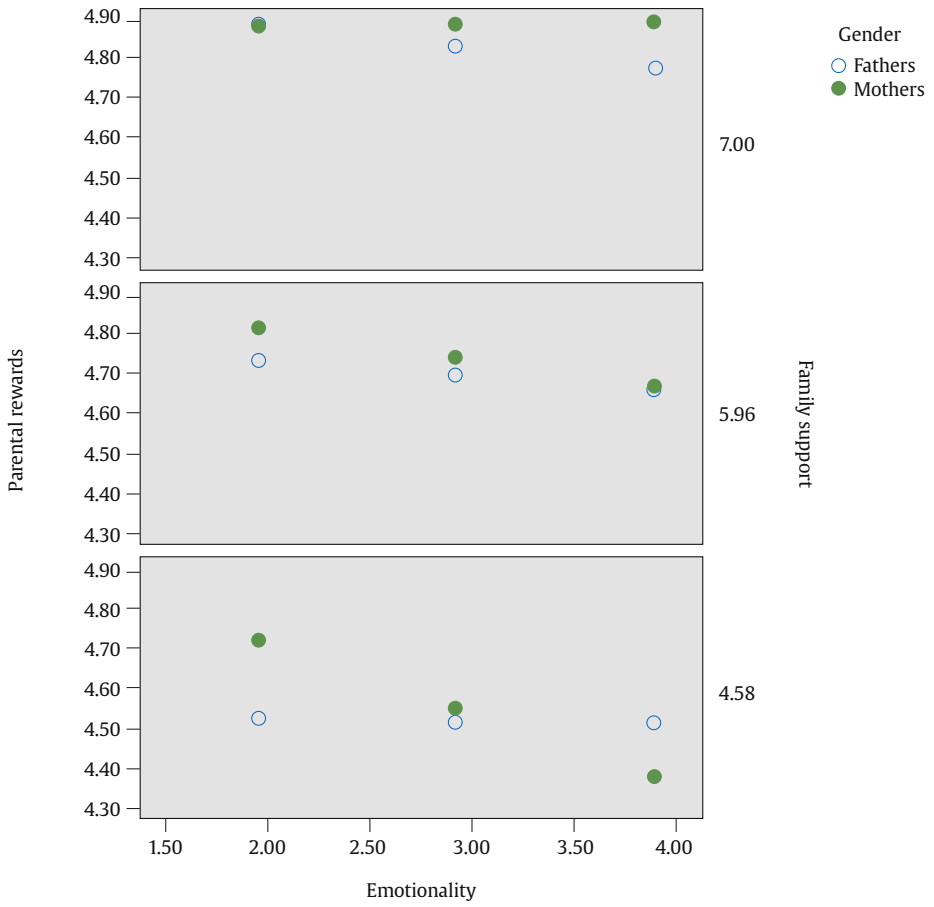

Figure 2. Johnson-Neyman Plot of the Moderating Effect of Gender and Family Support on the Relationship between Parental Rewards and Childhood Emotionality.

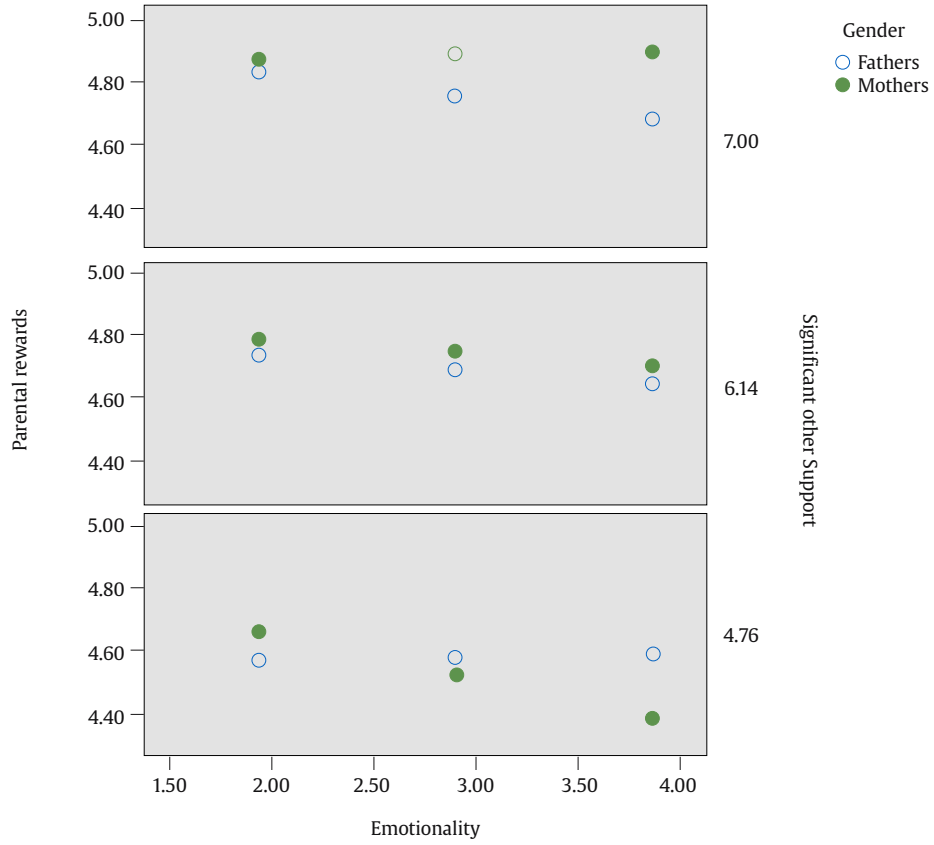

Figure 3. Johnson-Neyman Plot of the Moderating Effect of Ggender and Support from a Significant Other on the Relationship between Parental Rewards and Childhood Emotionality.

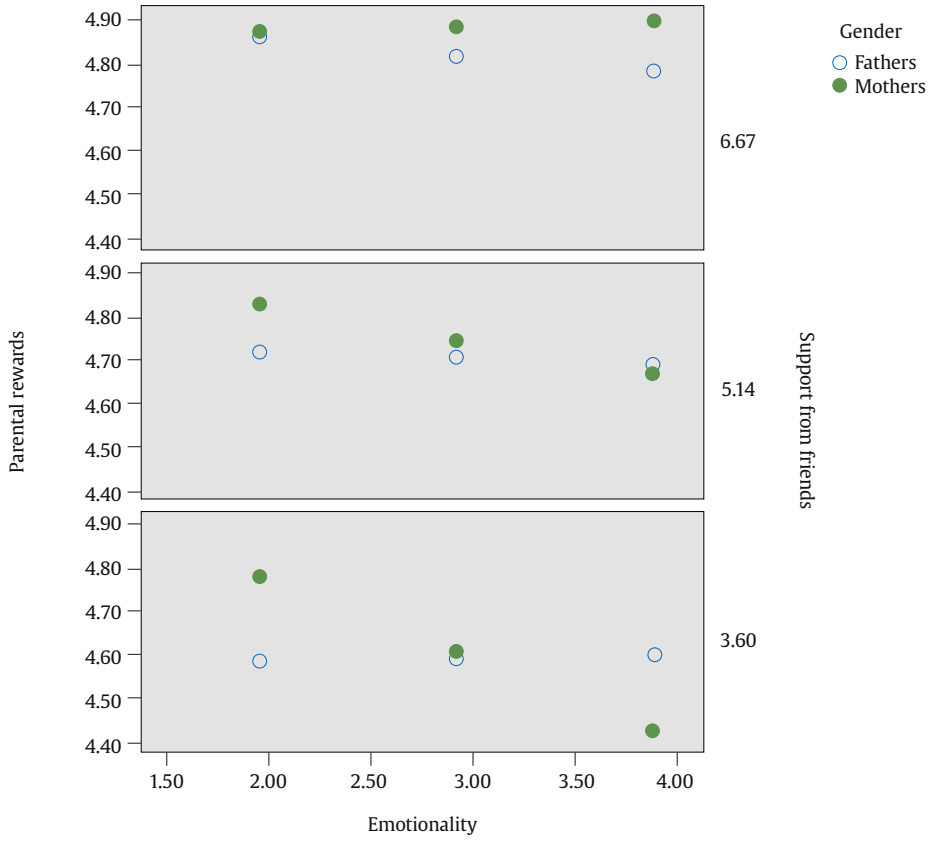

Figure 4. Johnson-Neyman Plot of the Moderating Effect of Gender and Support from Friends on the Relationship between Parental Rrewards and Childhood Emotionality.

Results

Descriptive Analyses

Table 1 shows the means, standard deviations, and skewness and kurtosis indices for each of the EAS items. The highest mean was 4.19 (item 1) and the lowest, 2.60 (item 11). The standard deviations were between 0.91 and 1.30. The kurtosis values ranged from 0.05 to 1.60, with skewness values ranging between 0.04 and 1.11.

Exploratory and Confirmatory Factor Analyses

The KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy, with a value of .67 and Bartlett's test of sphericity, statistically significant at $\chi^2(55) = 1741$, $p < .001$, confirmed the relevance of conducting the EFA. The total percentage of variance accounted for by the three-factor model, after eliminating items with low factor loadings, was 69.74%. The first factor, emotionality, accounted for 34.31% of the variance and was made up of four items (items 1, 2, 3, 4), evaluating how easily the child got upset and the emotional reactions of crying and complaining. The second factor, activity, accounted for 23.34% of the variance and was composed of 3 items (items 5, 6, 7) relating to the level of energy and activity parents observe in their children. The third factor, sociability, accounted for 12.08% of the variance and was made up of four items (items 8, 9, 10, 11) referring to the children's ability to relate to other people and their preference for being with others. Communalities ranged from .28 to .90, with standardized factor loadings ranging from .41 to .81.

The results of the CFA verified the factor structure suggested by the EFA (with three factors: sociability, activity, and emotionality), with the following adjustment indices: χ^2S-B(41) = 121.98, $p = .000$; NNFI = .94; CFI = .95; SRMR = .055; RMSEA = .080. All factor loadings were significant and high ($.64 \leq \lambda s \leq .90$) (Table 1 and Figure 1).

Moderation Analyses

To carry out the moderation analyses, we established child temperament variables as predictors, parental rewards and parental stress as effect variables, and gender and different forms of social support as moderating variables. Only the emotionality variable showed statistically significant results in the analyses carried out.

First, we analysed the moderating effect of gender and family support variables on the relationship between childhood emotionality and parental rewards.

The variables which had a direct effect on rewards were emotionality ($\beta = .71$, $SE = .26$, $p < .01$), gender ($\beta = 1.79$, $SE = .57$, $p < .01$), and family support ($\beta = .46$, $SE = .14$, $p < .01$). An effect of interaction was also found between emotionality and gender ($\beta = -.61$, $SE = .18$, $p < .01$), between emotionality and family support ($\beta = -.11$, $SE = .04$, $p < .01$), between gender and family support ($\beta = -.27$, $SE = .09$, $p < .01$) and between emotionality, gender and family support ($\beta = -.27$, $SE = .09$, $p < .01$). The evaluation using the Johnson-Neyman technique (see Figure 2) showed that this interaction was only significant for women and in cases with low and moderate levels of family support. In this way, when family support was low or moderate, emotionality affected the perception of rewards in mothers, with these decreasing as the childhood emotionality increased. However, when family support was high, a high perception of parental rewards was found, regardless of the levels of childhood emotionality. For men, regardless of emotionality levels, the perception of rewards was greater the higher the family support, with emotionality having much less effect than family support.

Next, we analysed the moderating effect of the variables of gender and support from a significant other in the relationship between childhood emotionality and parental rewards. The variables which exercised a direct effect on rewards were: emotionality (β = .86, *SE* = .30, *p* < .05), gender (β = 1.49, *SE* = .66, *p* < .01), and support from a significant other (β = .43, *SE* = .15, *p* < .01). There was an effect of interaction between emotionality and gender (β = -.67, *SE* = .20, *p* < .01), between emotionality and support from a significant other (β = -.14, *SE* = .04, *p* < .01), between gender and support from a significant other (β =- .23, *SE* = .10, *p* < .05) and between emotionality, gender and support from a significant other (β = .10, *SE* = .03, *p* < .01). The evaluation using the Johnson-Neyman technique (see Figure 3) demonstrated that this interaction was only significant for men in the case of high levels of support from a significant other, and in women when levels of support were low. In parents, therefore, when the support of a significant other was low or moderate, emotionality seemed to have little impact on the perception of rewards, although, in this case, support had a direct effect on this variable. However, when support was high, emotionality did affect the perception of rewards, which decreased as emotionality increased. In women, however, the opposite effect was observed: the effect of the interaction of all the variables appeared when support levels were low, in this case showing an inverse relationship between levels of emotionality and rewards. However, when levels of support from a significant other were moderate or high, rewards hardly varied as a function of emotionality: instead, it was the degree of support which, when moderate or high, appeared to buffer the impact of childhood emotionality.

We also analysed the moderating effect of the variables of emotionality, gender, and support from friends on the relationship between childhood emotionality and parental rewards. In this model, we found that emotionality had a direct effect (β = .53, *SE* = .26, *p* < .05), together with gender (β = 1.33, *SE* = .55, *p* < .01) and support of friends (β = .33, *SE* = .16, *p* < .05), on parental rewards. Although no effect of interaction was found between emotionality and support from friends (β = -.09, *SE* = .05, *p* > .05), it was observed between emotionality and gender (β = -.47, *SE* = .18, *p* < .01), between gender and support from friends (β =- .21, *SE* = .10, *p* < .05) and between emotionality, gender and support from friends (β = .07, *SE* = .03, *p* < .05). The evaluation using the Johnson-Neyman technique (see Figure 4) showed that this interaction was only significant for women, in the case of low and moderate levels of support from friends. Therefore, when support from friends was low or moderate, emotionality affected the perception of rewards in mothers, to a decreasing degree as the child's emotionality increased. However, when this support was high, we found a high perception of parental rewards, regardless of the levels of childhood emotionality. In men, regardless of emotionality levels, the rewards were greater the greater the support from friends, and this affected emotionality much less than support.

When these same models were applied with parental stress selected as the effect variable, the results were not significant, and no direct effect or interaction was found between the variables. The same results were obtained when children's activity level or sociability were introduced as predictor variables of parental stress or rewards. No direct effect was observed on these results, regardless of whether it was moderated by gender or the type of social support.

Discussion

The first objective of this study was to verify the psychometric properties of the Spanish version of the EAS (Bobes Bascarán et al., 2011). The results obtained allow us to confirm the first hypothesis. The data revealed suitable internal validity of the scale and confirmed the three-factor structure, made up of the factors of sociability, emotionality and activity, as established in the study by Stringaris et al. (2010), although these authors included items related to shyness in the dimension of sociability. Other authors chose to put forward a factor structure with four factors, three of which were the same as the ones in this study, plus an additional factor specifically focusing on the tendency to shyness, as proposed by Buss and Plomin (1984) after reviewing the initial version of their scale to establish the definitive version of the instrument. However, the results of their studies did not confirm the suitability of this factorial structure, with a large overlap found between the dimensions of sociability and shyness, and some cross-loading items or items with poor factor loadings, which reflects problems of internal validity in the scale, especially when dealing with responses from parents of young children (Gasman et al., 2002; Mathiesen & Tambs, 1999). To overcome these difficulties, Boer and Westenberg (1994) decided to retain the items of activity, emotionality and shyness, and omit sociability in the initial validation of the scale. However, taking into account the special difficulty of differentiating between these two temperamental traits in the target population of our study, toddlers and children (Buss & Plomin, 1984), we have raised the possibility of omitting the dimension of shyness on the grounds that this trend has been shown to be linked more to family and cultural socialization than to sociability (Bowlby, 1973; Gottlieb, 2014), which further stresses the importance of including the dimension of sociability, since it fits better with the characteristics outlined in the definition of temperament (Buss & Plomin, 1975). The resulting scale used for this study offered optimal psychometric properties, with suitable internal consistency in all its dimensions, unlike previous studies, in which the dimension of sociability, which contained items related to shyness, produced the worst results (Bobes Bascarán et al., 2011; Gasman et al., 2002; Mathiesen & Tambs, 1999). In other studies, alternative versions of this instrument have been proposed, in which the same items were not always used. These differences could be due to the statistical analyses used to check internal validity or the statistical or theoretical criteria followed to decide on the inclusion of the final items in each study (Worthington & Whittaker, 2006). Along these lines, the differences in the composition and factor structure of the EAS scale could be put down to the characteristics of the sample and their origin, as suggested by research on the impact of culture on the parental perception of child temperament (Desmarais et al., 2019) or as observed in the relationship between child temperament and psychosocial adjustment (Campagna et al., 2023). Future studies should test the usefulness of this version of the EAS scale in other populations, since our study focused on Spanish fathers and mothers of preschool children, with their particular characteristics, which may have conditioned the results obtained (Boer & Westenberg, 1994; Buss & Plomin, 1984; Mathiesen & Tambs, 1999). In any case, this version of the EAS should be valid and reliable for its use with populations that share cultural and social characteristics with our study population (i.e., parents of young children living in Western countries), so these results are valuable and of interest for any future research focused on the assessment of young children's temperament, and/or its related factors or consequences.

The second objective of this study was to explore the moderating role of social support and gender in the relationship between child temperament, on the one hand, and parental stress and rewards, on the other. The results showed that how this relationship varies depending on the source of support and the gender of the parents, and it is only significant in the explanation of parental rewards and in the temperamental trait of childhood emotionality. The second hypothesis (*H2*) was therefore only partially supported, in which childhood emotionality would stand out as the only significant temperamental trait when testing the moderating role of social support and gender in its relationship with parental stress and rewards, in line with

previous research (Andreadakis et al., 2020; Mulsow et al., 2002; Ruiz Ortiz & Barnes, 2019). However, the moderation models proposed were only able to account significantly for the variability of parental rewards, and not stress, despite the fact that the available evidence focuses on this latter indicator (Boer & Westenberg, 1994). This fact may be due to the composition of our sample, which was made up of parents with children in the early stages of child education who did not show any specific risks which could lead to an increase in stress levels. In contrast, the existing evidence focuses precisely on families which have experienced exceptional situations, such as having a child with disabilities, or migration, which increase their stress levels (Luu & Neece, 2019; Sun & Mulvaney, 2023; Xu et al., 2018). In these cases, parental rewards have been studied less, unlike the findings of the few studies carried out in normative populations, where this variable seems to be more important (Gómez-Ortiz et al., 2023; Zeng et al., 2020).

We also hypothesised that social support would have a differential effect as a moderating variable, depending on the levels at which it occurred, as shown by a number of studies which emphasize the negative impact of the lack of social support (Fang et al., 2022; Sun & Mulvaney, 2023). Our results support this trend, which was significant only in women who enjoyed some kind of support. However, the data from this study also seem to suggest that moderate levels of support can also negatively condition the impact of childhood emotionality on maternal rewards, although this effect was only found in cases with support from family and friends. Our results also stress the combination of the risk of high levels of childhood emotionality and mothers receiving less social support, which particularly affects their ability to see parenting as a rewarding life task. However, paternal rewards were found to be inversely associated with children's emotionality, albeit only in the presence of high levels of significant other support. These findings are in line with the available studies which reflect differences in the effect of social support on parental stress, depending on who provides it and who receives it (Huang et al., 2019; Xu et al., 2018).

The results of this study also reflect, in line with previous findings, interesting gender differences which can be linked to the third hypothesis, in which we assumed the moderating role of gender, as reflected in research focused on parental stress (Gómez-Ortiz et al., 2023; Insa et al., 2018; Oyarzún-Farías et al., 2021). In this context, the differential effects of the impact of social support were observed in the relationship between childhood emotionality and parental rewards in both men and women. For mothers, parental rewards were found to be inversely related to levels of childhood emotionality with low levels of social support (regardless of the source) and moderate levels of support from family and friends. However, as the levels of social support increase, rewards appear to be no longer subject to the effect of children's emotionality, which suggests that high levels of support have a protective effect which seems to cushion the negative impact of this temperamental trait of children on mothers. Nevertheless, in fathers we found the opposite effect, which appeared when they perceived high support from a significant other. In this case, paternal rewards decreased in inverse proportion to children's emotionality. These data reveal two key circumstances: first, it is mothers who seem to benefit most from high levels of social support, regardless of the source. Mothers generally have a high domestic and family overload (Altuzarra Artola et al., 2018; Gracia & Ghysels, 2017) and a high perception of their responsibility in these areas (Henz, 2022; Renk et al., 2003). As a result, they find parenting a more rewarding life task when they have the necessary support to manage challenging situations such as high levels of emotionality in their children. In these circumstances, the effect of social support seems to eclipse that of emotionality, making parenting more bearable and rewarding, and less exhausting and stressful (Nomaguchi et al., 2017; Roxburgh, 2005).

Moreover, it is worth noting that for fathers, children's emotionality affects their rewards precisely when they have a high level of support from a significant other, while when the support is low, the rewards are not affected by the level of emotionality in their children, and depend more on the level of support. One possible explanation of this is the greater availability of support enjoyed by fathers when they find a high level of family involvement in their female partners, who are usually the significant person of reference (Altuzarra Artola et al., 2018; Cohen & Syme, 1985; Gracia & Ghysels, 2017). In this context, the lower the levels of support, the fewer the paternal rewards, although this increases as more support is received. However, when support levels are high, it may be interpreted as a benefit that will always be available, giving greater protagonism to children's emotionality and making them perceive the task of parenting as less rewarding. In any case, there is a marked absence of specific studies on the differential impact of social support on fathers' and mothers' parental rewards. However, the literature supports the notion that social support can modulate parental perceptions, thereby influencing the manifestation of child temperament (Fang et al., 2022; Sun & Mulvaney, 2023). Further research would be needed to clarify the moderating role of social support coupled with gender in the relationship between childhood emotionality and parental rewards.

This study obviously has certain limitations. Firstly, the sample could have been more representative: although we made an effort to select participants from different origins, all of them lived in a region in the south of Spain, which could affect the generalization of the results to other populations or situations. The use of reports may also be subject to biases and limitations inherent to these instruments: in particular, evaluating child temperament through the perception of the parents could have limited the information obtained. In future studies, it would therefore be advisable to include other sources of information, as well as direct observations of children's behaviour. Likewise, the cross-sectional design of our study also made it impossible to establish causal relationships. As possible future lines of research, longitudinal studies could provide more robust and predictive evidence of the relationship between these constructs, as well as the possibility of testing the proposed objectives in larger samples from different countries, which would lead to more representative results. Finally, the study has focused on examining the relationship between stress, parental rewards and child temperament, as well as the moderating role of social support and gender with a large sample of parents who had at least one child in early childhood education. However, this work has not considered certain circumstances or situations which may influence these connections and which could be taken into consideration in later studies. These factors include parental experience, measured by the number of children the parents have, aspects related to the parents' employment (type of contract – full or part-time –, stability or satisfaction with the salary) and the type of support provided by family, friends or significant other, as well as the specific source of support (for example, siblings or parents, in the case of family support, or partner or other specific person, in the case of support from a significant other). These last aspects cannot be assessed by the social support instrument used in this study, which assess in a more general way the level of social support provided by three sources: family, friends, and significant other.

Conclusion

This study offers valuable results which could serve as a basis for the design of intervention initiatives aimed at preventing parenting stress and its consequences, as well as promoting parental rewards. Social support should be considered a key asset for mental health, especially in the first few years of a child's life, which is characterized by high level of parental demand and involvement. Throughout the whole parenting process, but especially in the

early stages, the search for and acceptance of social support is a key parental competence (Rodrigo et al., 2015). Indeed, the gender differences found here should be taken into account not only in these intervention initiatives, but also when planning political measures aimed at combating gender inequalities. Taking into account the results of this study, as well as all the available evidence, which points to a prevailing imbalance in most Spanish homes as regards how much time women and men invest in domestic and family tasks, the focus should be directed towards mothers who seem to benefit the most from the provision of social support. This resource therefore needs to be implemented not only through the formal channels, but also via informal ones which help to lighten the burden of parenting, such as parental support groups and measures which effectively benefit the conciliation between work and family (e.g., free nursery schools, and the possibility of obtaining paid leave to address unexpected family situations such as a child's illness), together with initiatives to help encourage a greater involvement of men in the task of raising a family. Finally, the EAS scale validated in this work can be used as a valid, reliable tool for evaluating child temperament and its impact on the adjustment of the parental figures.

Conflict of Interest

The authors of this article declare no conflict of interest.

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Appendix

Items Removed from the Spanish Version of the EAS

Sociability/*Sociabilidad*
1. Finds people more stimulating than anything else/*Encuentra a la gente más estimulante que otra cosa*
2. Is somewhat of a loner/*Es algo solitario*
3. When alone, feels isolated/*Cuando está solo, se siente aislado*
Activity/*Actividad*
4. When moving from one place to another, does so slowly/*Cuando va de un sitio a otro, lo hace lentamente*
5. Prefers quiet, inactive games/*Prefiere juegos poco activos y tranquilos*
Emocionality/*Emocionalidad*
6. Has a tendency to be somewhat emotional/*Tiene tendencia a ser algo emotivo*
Shyness/*Timidez*
7. Has a tendency to be shy/*Tiene tendencia a ser tímido*
8. Has a hard time gaining confidence with strangers/*Le cuesta mucho coger confianza con desconocidos*
9. Is very friendly with strangers/*Es muy amistoso con personas desconocidas*