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Orchids at REUNIRmais? An exploratory study of Standard Triple P effects considering the differential susceptibility and vantage sensitivity models

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Informação Adicional

A presente investigação faz parte de um projeto de investigação mais vasto "Sucesso de Reunificação familiar após a institucionalização da criança: Avaliação da eficácia de uma intervenção de parentalidade positiva (REUNIRmais)", coordenado pela Doutora Ana Catarina Canário e pela Prof. Doutora Orlanda Maria da Silva Rodrigues da Cruz, promovido pela Faculdade de Psicologia e de Ciências da Educação da Universidade do Porto (FPCEUP), e financiado pela Fundação para a Ciência e Tecnologia (PTDC/SOC-ASO/31727/2017).

Como colaboradora deste projeto de investigação, durante o ano letivo 2020/2021, tive a oportunidade de colaborar na entrada de dados. O presente estudo constitui uma análise preliminar dos dados quantitativos recolhidos no projeto, com a finalidade de avaliar o efeito da intervenção Standard Triplo P numa amostra de famílias seguidas pelas Comissões de Proteção de Crianças e Jovens (CPCJ) do distrito do Porto com medida aplicada de apoio junto aos pais, recrutadas para participar no projeto REUNIRmais entre outubro de 2019 e março de 2021.

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Resumo

Estudos empíricos e teorias recentes argumentam que as crianças não são igualmente influenciadas pelas mesmas características ambientais. As variáveis genéticas, psicológicas e comportamentais têm sido identificadas como variáveis moderadoras da sensibilidade ambiental. O presente estudo testa os efeitos do programa Standard Triplo P (STP) nos comportamentos das crianças, e contrasta os modelos de Suscetibilidade Diferencial e de Sensibilidade à Vantagem, avaliando se os efeitos naqueles que receberam a intervenção são moderados pelo temperamento das crianças ou pela elevada sensibilidade parental.

Este estudo exploratório seguiu um desenho quase experimental e incluiu 34 pais de crianças seguidos pelas Comissões de Proteção de Crianças e Jovens do distrito do Porto. Os participantes integraram um de dois grupos, intervenção (n=13) e controlo (n=21), e preencheram questionários em dois pontos de avaliação: antes (M1) e após (M2) a intervenção. Antes da intervenção foram recolhidos dados dos pais sobre o temperamento das crianças (SATI) e sobre a sensibilidade parental (HSP), utilizados como variáveis moderadoras. Os problemas de comportamento (SDQ) e as competências sociais (SCS) das crianças foram avaliados pelos pais nos dois momentos de avaliação e utilizados como variáveis dependentes.

As análises estatísticas incluíram análises mistas de variância e análises de moderação (através da macro PROCESS). Os resultados revelaram uma diminuição significativa nos problemas de comportamento das crianças, independentemente do grupo de alocação. Além disso, os resultados indicaram um efeito de moderação da elevada sensibilidade parental nos sintomas emocionais das crianças, problemas de comportamento e problemas de externalização; bem como um possível efeito de moderação da alta sensibilidade parental no comportamento pró-social e na

hiperatividade das crianças, e da atividade das crianças como um traço de temperamento no total de dificuldades das crianças. Globalmente, os resultados das análises de moderação parecem sugerir que os pais com resultados mais elevados na escala de sensibilidade parental beneficiam mais da intervenção STP, com os seus filhos a apresentarem menos problemas de comportamento após a intervenção.

O estudo atual é exploratório e, como tal, é necessário replicar as análises numa amostra maior. Contudo, a evidência apurada parece sugerir que na presente amostra, a forma como as crianças são influenciadas pelo STP é melhor explicada através do modelo Sensibilidade à Vantagem.

Palavras-chave: Standard Triple P (STP), Suscetibilidade Diferencial, Sensibilidade à Vantagem, Problemas de Comportamento da Criança, Temperamento da Criança, Elevada Sensibilidade Parental.

Abstract

Empirical studies and recent theories argue that children are not equally influenced by the same environmental characteristics. Genetic, psychological, and behavioral variables have been identified as moderating variables of environmental sensitivity. The present study tests the effects of the Standard Triple P program (STP) on children's behaviors, and contrasts the Differential Susceptibility and the Vantage Sensitivity models, assessing whether the effects for those who received the intervention are moderated by children's temperament or high sensitive parenting.

The current exploratory study followed a quasi-experimental design and included 34 parents of children, followed by the Child Welfare Services of the district of Porto. Participants took part in one of two groups, intervention (*n*=13) and control (*n*=21), and completed questionnaires at two assessment time points: baseline (M1) and post-intervention (M2). At baseline, parent-report measures were obtained about children's temperament (i.e., SATI) and high sensitive parenting (i.e., HSP), to be used as moderating variables. Children's difficulties (i.e., SDQ) and social competence (i.e., SCS) were completed by parents at baseline and after the intervention and used as outcome variables.

Statistical analyses included mixed analyses of variance and moderation analyses (PROCESS macro). Results revealed significant decreases in children's behavior problems regardless of the allocation group. In addition, results pointed to the moderation effect of high sensitive parenting on children's emotional symptoms, behavioral problems, and externalizing problems; and to a possible moderation effect of high sensitive parenting on children's prosocial behavior and hyperactivity, and of children's Activity as a temperament trait on children's total difficulties. Overall, the moderation

analyses' results seem to suggest that high sensitive parents benefit the most from STP, with their children presenting fewer behavior problems after the intervention.

The current study is exploratory, and the need to replicate the analyses on a broader sample is acknowledged. However, the evidence seems to suggest that, in the current sample, the way children are influenced by STP is better explained through the lens of the vantage sensitivity model.

Keywords: Standard Triple P (STP), Differential Susceptibility, Vantage Sensitivity, Children's Behavior Problems, Children's Temperament, High Sensitive Parenting.

Résumé

Des études empiriques et des théories récentes soutiennent que les enfants ne sont pas influencés également par les mêmes caractéristiques environnementales. Les variables génétiques, psychologiques et comportementales ont été identifiées comme des variables modératrices de la sensibilité environnementale. La présente étude teste les effets du programme Standard Triple P (STP) sur les comportements des enfants, et oppose les modèles de Susceptibilité Différentielle et de Sensibilité Avantageuse, en évaluant si les effets pour ceux qui ont reçu l'intervention sont modérés par le tempérament des enfants ou une parentalité très sensible.

Cette étude exploratoire a suivi un plan quasi-expérimental et a inclus 34 parents d'enfants suivis par les services de protection de l'enfance du district de Porto. Les participants ont pris part à l'un des deux groupes, intervention (n=13) et contrôle (n=21), et ont rempli des questionnaires à deux moments d'évaluation: avant (M1) et après (M2) l'intervention. Avant l'intervention, des mesures de rapport des parents ont été obtenues sur le tempérament des enfants (SATI) et le comportement parental très sensible (HSP), pour être utilisées comme variables modératrices. Les difficultés des enfants (SDQ) et les compétences sociales (SCS) ont été complétées par les parents au début et après l'intervention, et utilisées comme variables de résultat.

Les analyses statistiques comprenaient des analyses mixtes de la variance et des analyses de modération (PROCESS macro). Les résultats ont révélé des diminutions significatives des problèmes de comportement des enfants, quel que soit le groupe d'affectation. En outre, les résultats ont mis en évidence l'effet de modération d'un parent très sensible sur les symptômes émotionnels, les problèmes de comportement et les problèmes d'externalisation des enfants, ainsi qu'un effet de modération possible d'un parent très sensible sur le comportement prosocial et l'hyperactivité des enfants, et de

l'activité des enfants en tant que trait de tempérament sur les difficultés totales des enfants. Dans l'ensemble, les résultats des analyses de modération semblent suggérer que les parents très sensibles bénéficient le plus de la STP, leurs enfants présentant moins de problèmes de comportement après l'intervention.

L'étude actuelle est exploratoire, et la nécessité de reproduire les analyses dans un échantillon plus large est reconnue. Cependant, les données semblent suggérer que, dans l'étude actuelle, la façon dont les enfants sont influencés par la STP est mieux expliquée dans l'optique du modèle de sensibilité avantageuse.

Mots clés : Standard Triple P (STP), Susceptibilité différentielle, Sensibilité Avantageuse, Problèmes de comportement des enfants, Tempérament des enfants, Parent très sensible.

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Abbreviations' list

HSP – High Sensitive Parent

SATI – School-Age Temperament Inventory

SCS – Social Competence Scale

SDQ – Strengths and Difficulties Questionnaire

STP – Standard Triple P

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Introduction

Authors like Bronfenbrenner (1992) and Sameroff (2009) demonstrated that children's development is influenced by their rearing environment. Human's response to their social and physical environment is determined by their dependence on the environment's resources to survive and develop. Still, they are not equally sensitive and responsive to the same environmental conditions (Pluess, 2015). Many studies show that some individuals are more plastic and shaped by their experiences, while others are less affected by environmental exposures (Belsky & Pluess, 2013; Hartman & Belsky, 2016). According to this, children differ in how sensitive they are to parenting and many other environmental influences (Cruz et al., 2018; Hartman & Belsky, 2016).

Different theoretical models describe how much children vary in terms of developmental plasticity and to what extent they are affected by environmental characteristics (Jolicoeur-Martineau et al., 2020; Slagt et al., 2016).

The Diathesis-stress model postulates that children with a specific genetic constitution (i.e., risky genes) are more vulnerable to poor development experiences, such as insensitive parenting and stressful experiences (Bakermans-Kranenburg & van IJzendoorn, 2015), focusing on the dark side of the moderating role of risky genes. A study by Caspi and Moffitt (2006) revealed that children with a history of maltreatment and carrying a variant of the MAO-A gene were more likely to manifest high levels of antisocial behavior compared to those without the gene. In this case, the MAO-A gene was considered a risky gene. According to this model, children who carried this variant would be at a disadvantage in terms of development compared to children without the MAO-A gene. In short, children who carry risky genes are more likely to be negatively affected by the environment than children who do not carry risky genes.

However, the Differential Susceptibility model suggests that the same characteristics that put children at risk are those who make them benefit more from supportive environments (Belsky & Pluess, 2009; Belsky et al., 2007) because children with certain characteristics are more developmentally plastic or malleable (Hartman & Belsky, 2016). Bakermans-Kranenburg and van IJzendoorn (2006) found that, when raised by insensitive mothers, children with the DRD4 exon III 7-repeat allele displayed significantly more externalizing behaviors than children without the DRD4 exon III 7-repeat allele. On the other hand, when raised by highly sensitive mothers, children with the DRD4 exon III 7-repeat allele displayed less externalizing behavior than those who did not have this allele (Bakermans-Kranenburg & van IJzendoorn, 2006). This indicates that carriers of the DRD4 exon III 7-repeat allele are more susceptible to both low-quality (e.g., insensitive mothers) and high-quality (e.g., highly sensitive mothers) parenting, in a for "better and for worse" manner (Belsky et al., 2007). In this case, risky genes are referred to as plasticity genes, considering not only the dark but the bright side of the moderating role of these genes.

In the same perspective, there are a few studies showing that children do not benefit equally from intervention-induced changes in parenting behavior. Genetic and psychological variables were identified as moderators of intervention effects (see Euser et al., 2016; Bakermans-Kranenburg et al., 2008; Velderman et al., 2006). Scott and O'Connor (2012) found that emotionally dysregulated children were more responsive to improvements in parental care induced by The Incredible Years program compared to headstrong children (i.e., children who argue, defy rules, annoy, and blame others), showing a significantly greater decrease in conduct problems between intervention and control groups. Overbeek (2017) also found that children higher on effortful control maintained the beneficial behavior effects of The Incredible Years program at follow-up

while children low on effortful control bounced back to the same levels of disruptive behavior they had before the intervention.

These distinctive patterns of sensibility have been described using the orchid-dandelion metaphor: *orchids* represent the individuals who are more sensitive (i.e., those who do exceptionally well in great conditions and exceptionally bad in poor environments), and *dandelions* represent the individuals less sensitive to environmental features (i.e., can grow anywhere) (Lionetii et al., 2018).

However, some authors started to realize that the positive phenomenon of not succumbing to an adverse experience did not fit in the "bright side" of the differential susceptibility framework (Pluess & Belsky, 2013). The Vantage Sensitivity model emerged to characterize those who benefited disproportionately from positive experiences. Therefore, according to this perspective, it is possible to identify vantage sensitive and vantage-resistant individuals. *Vantage sensitive* individuals are those more positively influenced by positive environmental features, while *vantage resistance* describes the failure to benefit from the same environmental features (de Villiers, Lionetti & Pluess, 2018). In addition, Pluess and Belsky (2013) highlight that just like *protective factors* increase resilience to adversity in the Diathesis-stress framework, *vantage-sensitivity factors* increase vantage sensitivity to the positive influences of good environmental features, and *vantage-resistant factors* diminish or even eliminates that sensibility to the same supportive conditions. In short, individuals with vantage sensitivity increase their level of functioning in response to a positive exposure, while vantage-resistant individuals' level of functioning remains unaltered in response to the same context.

Aron and colleagues (2005) published a randomized experiment of high sensitive personality (i.e., where they created two experimental conditions: (1) a group who had to

solve relatively easy problems (adapted from intelligence tests) (2) and a group who had to solve challenging problems. All participants filled a brief version of the Highly Sensitive Person scale (HSP) (Aron & Aron, 1997) before the task and rated their state negative affect. Results showed that for the participants who scored low on high sensitivity, the experimental condition did not affect their negative affect. But those scoring high on high sensitivity were the ones scoring the least on negative affect when the task was easy. These results are in line with the vantage sensitivity model, showing a moderation effect of high sensitivity on negative affect in a favorable environment.

The current study is part of a wider research project (REUNIRmais, Canário et al., 2020) developed to evaluate the effectiveness of the Standard Triple P program (STP) delivered in community-based services to parents of children followed by Child Welfare and referred to parent support programs.

The present study has two main goals: to determine whether the Standard Triple P program was effective in reducing children's behavior problems; and to verify if there are *orchids* among the participants of the REUNIRmais project, that is, if there are moderating variables of the intervention's effectiveness. The first hypothesis is that the Standard Triple P program is effective in reducing children's behavior problems. The second hypothesis establishes that the effects of this positive parenting program are moderated by children's temperament, with the outcomes on children's behavior being better for children with worse temperament characteristics. The third hypothesis states that children whose parents score higher in high sensitivity parenting benefit the most from the Standard Triple P program, presenting better behavior outcomes.

Method

Participants

Participants were recruited amongst families assisted by social welfare services and, therefore, at psychosocial risk. To be included in this study, participants had to meet the following criteria: (1) families had to be assisted by social welfare services and be in a situation of family preservation or reunification (in this case, the child has to be already reunited with his family); (2) families with at least one child between 6- and 11 years of age; (3) parents are available to attend a 10-week individual intervention program. Families were excluded from this study if: (1) the child or his parents had a developmental disorder or a severe intellectual disability; (2) the child or his parents had a severe mental disorder; (3) the mother/father is currently receiving treatment or received in the last year for substance abuse or alcoholism problems; (4) the child or his parents do not read or understand European Portuguese (Canário et al., 2020).

Table 1 describes the participants' (parents and children) sociodemographic and family characteristics. Participants were mostly mothers, with an average of 37.71 years and 2.71 children, unemployed and with less than nine years of schooling, from urban areas and without prior contact with positive parenting programs. Children were mostly male, attending the first cycle of basic education, and with an average of 8.97 years of age. Most of them lived in single-parent or reconstituted families' households, followed by Child Welfare due to neglect or exposure to domestic violence. About half of the children have had prior referrals (at least one) to Child Welfare in their lifetime.

As previously stated, the current study presents data collected in the REUNIRmais Project. Even though the project recruited over 100 families, the current study only includes those that completed two assessment time points until May 2021 (N=34). The families took part in the intervention condition (STP) (n=13) or the control condition

(*n*=21) according to the criteria defined by the professionals in the Child Welfare Services to address the parents' needs of parenting intervention. As presented in table 1, participants of both conditions were not different in their sociodemographic or family characteristics.

Table 1. Sociodemographic characteristics of the participants.

	STP *n*= 13 *M* (*SD*)	Control *n*= 21 *M* (*SD*)	Total *n*= 34 *M* (*SD*)
Children's age	9.00 (1.68)	8.95 (1.60)	8.97 (1.61)
	t (32) = 0.08, *p*= .94		
Number of children	2.77 (1.48)	3.05 (1.47)	2.94 (1.46)
	t (32) = 0.54, *p*= .60		
Parent's age	39.69 (7.15)	36.48 (9.44)	37.71 (8.67)
	t (32) = 1.05, *p*= .30		
Parent's years of schooling	9.00 (3.76)	7.90 (2.09)	8.32 (2.85)
	t (32) = 1.09, *p*= .28		
	%	%	%
Children's sex			
Female	31	24	26.5
Male	69	76	73.5
	Fisher's Exact Test = 0.70		
Children's school year			
1st	0	5	2.9
2nd	15	19	17.6
3rd	39	19	26.5
4th	23	38	32.4
5th	8	14	11.8
6th	15	5	8.8
	X^2 (5) = 3.71, *p*= .59		
Relationship to the child			
Mother	77	86	82.4
Father	15	14	14.7
Stepmother	8		2.9
	X^2 (2) = 1.70, *p*= 0.43		
Occupational status			
Employed	39	38	38.2
Unemployed	54	57	55.9
Retired		5	2.9
	X^2 (2) = 0.60, *p*= 0.74		
Family structure			
Original	46	19	29.4
Reconstituted	8	24	17.6
Single parent	31	29	29.4
In a relationship (not cohabiting)	8	5	5.9
Other	8	24	17.6
	X^2 (4) = 4.50, *p*= 0.34		
Living area			
Urban	62	48	52.9
Semi-urban	15	29	23.5
Rural	23	24	23.5

	X^2 (2) = 0.89, p= 0.64		
Children's behavioral problems			
Yes	31	29	52.9
No	69	71	47.1
	Fisher's Exact Test = 1.00		
Children's emotional problems			
Yes	31	29	29.4
No	69	71	70.6
	Fisher's Exact Test = 1.00		
Previous contact with positive parenting programs			
Yes	8	10	8.8
No	92	91	91.2
	Fisher's Exact Test = 1.00		
Reasons for Child Welfare referral			
Neglect	39	29	32.4
Domestic violence	15	48	35.3
Disruptive behaviors	31	14	20.6
Other (e.g., physical abuse, or exposure to risk behaviors as drug addiction)	15	10	11.8
	X^2 (3) = 3.90, p= 0.27		
Previous referrals to Child Welfare			
Yes	54	43	47.1
No	39	48	44.1
	Fisher's Exact Test = 0.72		

Procedures

This study is part of a larger research project (REUNIRmais) that aims to evaluate the effectiveness of the Standard Triple P program using a quasi-experimental design (Canário et al., 2020). The Ethics Committee of Faculty of Psychology and Education Science, University of Porto, approved this project (Ref. 2020/04-2). No economic compensation was given for participation in this study.

Data was collected through interviews by a research assistant, and the assessments took place in two assessment time points: before (M1) and after (M2) the intervention. The instruments used were administered to the participants, and they either completed themselves or were administered in the form of an interview in case of difficulties. Data from the Strengths and Difficulties Questionnaire (SDQ) and the Social Competence Scale (SCS) was used as outcome variables. Data from the School-Age Temperament Inventory (SATI) and the High Sensitive Parent (HSP) were used as moderating variables to test the presented hypothesis.

The families took part in the intervention condition (*n*=13) or the control condition (*n*=21) according to the criteria defined by the professionals in the Child Welfare Services to address the parents' needs of parenting intervention. The Control Condition's participants received the usual intervention provided by social welfare services. This intervention is not manualized or structured and usually includes biweekly or monthly appointments with a social worker or a psychologist at the services location and home visits, if necessary. After completing all the assessment time points, the participants in this condition will be given the opportunity to receive the STP intervention.

STP intervention was delivered to the intervention condition by accredited providers. Their training is done over five days, including one day of pre-accreditation and a half-day for the actual accreditation (Sanders et al., 2016). These professionals (i.e., psychologists, doctors, nurses, social workers) use standardized materials to ensure the program's integrity, fidelity, and accuracy (Sanders et al., 2016). Also, to assure that the program's implementation runs as expected, professionals have access to moments of supervision, based on the PASS model (Sanders & Murphy-Brennan, 2010): small group meetings where they review their work and reflect on the work of other colleagues.

STP, an individual format tailored evidence-based parenting intervention delivered in 10 weekly sessions, is part of the Triple P system. Several studies support the systems (Sanders et al., 2014), and identified positive effects on children's behavior, parenting practices, and competence (Nogueira et al., 2021; Canário et al., 2021) and families' social support network (Nogueira et al., 2021). Other studies identified sustained reductions in children's behavior problems over time (van Aar et al., 2017), and also that STP is cost-effective in treating children's behavior problems (Sampaio et al., 2018; Nystrand et al., 2019). These findings suggest that STP can be a useful resource to provide parenting support to vulnerable families in community-based services.

Standard Triple P is a parenting skills training program, integrated into the Triple P system, suited for parents of children up to 12 years of age with moderate to severe behavior problems (e.g., aggressiveness, disobedience). It is a level 4 intervention where positive parenting skills are promoted and opportunities for parents to practice those skills through role-playing provided, followed by accredited specialists, and through homework activities to put some strategies into practice with their children. The main goal is to promote a sense of autonomy and agency in parents, concepts that are part of the conceptual axis of self-regulation. It is important that these parents can replicate what they learn in this program in their natural contexts (Triple P Implementation, 2020). Table 2 presents a brief description of each session.

Table 2. Contents of Standard Triple P sessions.

Session	Description
Session 1: Initial Interview	Gather information from parents regarding the child's history and their behavioral problems. Completing questionnaires. Teaching ways to monitor a specific child's problem throughout the week.
Session 2: Observation of family interaction and assessment feedback	Practitioner's observation of child behavior and parenting. Feedback about all the assessments and about the nature, severity, and probable causes of the current issues. Treatment negotiation. Parents set goals for their own, and their child's behavior changes.
Session 3: Promoting children's development	Presentation of strategies that aim to enhance the quality of the parent-child relationship. Moment of practice.
Session 4: Managing misbehavior	Introducing parents to strategies for dealing with misbehavior. Rehearsing a routine for managing non-compliance. Setting new homework tasks.
Session 5-7: Practice and feedback	Assisting parents in using the behavior change strategies. Observation of a parent-child interaction planned to practice specific parenting strategies. Parent's self-evaluation and goal setting.
Session 8: Planned activities training	Identification of high-risk home and community activities by parents. Development of planned activities and routines to target specific behaviors. Implement one of those routines as homework.
Session 9: Using planned activities training	Implementation of planned activities and routines to encourage independent play when busy and a structured play activity. Practitioner's feedback and observation of parents implementing a final planned activities routine to get their child ready to go out.
Session 10: Program close	Progress review and discussion about family survival tips and how to keep up the changes made. Future problem-solving exercises and final assessment.

Measures

School-Age Temperament Inventory (SATI)

The *School-Age Temperament Inventory* (SATI), developed by McClowry (1995), is a questionnaire for parents or caregivers of children aged between 8 and 11 that assesses the child's temperament along four dimensions (that can combine into four multidimensional profiles): (1) Negative Reactivity; (2) Task Persistence; (3) Approach/Withdrawal; (4) Activity. *Negative Reactivity* refers to the intensity and frequency in which the child expresses negative affect. *Task Persistence* refers to the degree of self-direction that the child exhibits in fulfilling tasks and other responsibilities. *Approach/Withdrawal* describes the child's initial response to new people and situations. At last, *Activity* portrays the child's amount of large motor activity.

This instrument consists of 38 items, rated on a 5-point scale ranging from 1 (*never*) to 5 (*always*). The score of each dimension is calculated through the sum of the responses divided by the respective number of items (i.e., mean).

In terms of reliability, the original version of SATI has an internal consistency between $\alpha = .85$ and $\alpha = .90$. Lima, Lemos and Guerra (2010) created a Portuguese version of SATI, obtaining satisfactory levels of internal consistency in all subscales: Negative Reactivity ($\alpha = .87$); Task Persistence ($\alpha = .84$); Approach/Withdrawal ($\alpha = .82$); and Activity ($\alpha = .77$).

Parents completed this instrument at baseline (M1), and the results yielded appropriate reliability scores: .89 for the Negative Reactivity subscale, .89 for the Task Persistence subscale, .81 for the Approach/Withdrawal subscale, and .78 for the Activity subscale.

High Sensitive Parent (HSP)

The *High Sensitive Parent* is a questionnaire with 12 items used to identify individual differences in environmental sensitivity. This questionnaire is an adaptation of the *Highly Sensitive Person Scale*, developed by Aron and Aron (1997), a 27-item scale to identify differences in environmental sensitivity. HSP counts with questions such as *"Do you think you are aware of the subtleties in your environment?"*, *"Do you make a point of avoiding violent movies and television series?"* and *"Do you feel easily overwhelmed by things like bright lights, strong smells, harsh fabrics, or sirens near you?"*. The 12 items are rated from 1 (*never*) to 7 (*extremely*), and the total score is obtained by calculating the sum of the responses divided by the respective number of items (i.e., mean). In this study, the HSP was completed by parents at baseline (M1) and was obtained a Cronbach alpha value of .78.

Strengths and Difficulties Questionnaire (SDQ)

The Strengths and Difficulties Questionnaire (SDQ), created by Goodman (1997), aims to identify psychological attributes (either positive or negative). Those attributes can be divided between 5 dimensions: (1) emotional symptoms (α = .65).; (2) behavioral problems (α = .71); (3) hyperactivity/inattention (α = .69); (4) peer relationship problems (α = .58); (5) prosocial behavior (α = .69). The sum of the scores on the first four dimensions origins a total score of behavior difficulties (α = .71).

This is a 25-item questionnaire rated on a 3-point scale, from 0 (*not true*) to 3 (*very true*). Each subscale results are obtained by adding the values of the five items of each one of them. Those scores can be interpreted as normal, borderline, or clinical, based on standard values. The sum of all items represents the total of children's difficulties. The

questionnaire includes an additional set of 8 items that allow identifying the impact of the children's behavior problems in multiple domains of their lives (e.g., at home or in school)

There are three versions of this instrument: (1) for parents; (2) for teachers; (3) and a self-report version for teenagers with ages between 11 and 16. In this study, we used the Portuguese version, adapted by Fleitlich, Loureiro, Fonseca, and Gaspar (2005), a proxy-report measure to be completed by parents or caregivers.

This questionnaire was applied at baseline (total score of behavior difficulties: α = .85; emotional symptoms: α = .78; behavioral problems: α = .70; hyperactivity/inattention: α = .66; peer relationship problems: α = .54; prosocial behavior: α = .60; impact score: α = .84) and at post-intervention (total score of behavior difficulties: α = .65 emotional symptoms: α = .59; behavioral problems: α = .55 hyperactivity/inattention: α = .70; peer relationship problems: α = .26; prosocial behavior: α = .75; impact score: α = .79).

Social Competence Scale (SCS)

The Social Competence Scale, developed by Blumberg et al. (2008) consists of 8 items, retrieved from two existent subscales: the Behavior Problems Index (based on Child Behavior Checklist (Achenbach & Edelbrock, 1981)); and the Positive Behavior Scale. The items selected represent two constructs: (1) social skills (α =.65); (2) behavioral problems (α = .67).

Each subscale scores can be obtained by estimating the sum of the responses divided by the respective number of items (i.e., mean). In this study, we used the original scale translated into European Portuguese by Canário, Abreu-Lima and Cruz (2021).

The scale was completed by parents at baseline [social skills (α =.66); behavioral problems (α =.83)] and at post-intervention [social skills (α =.67); behavioral problems (α =.71)].

Analytic plan

Descriptive statistics and frequencies were obtained for the sociodemographic and family variables. Comparison of these variables across groups (intervention vs. control) was made through independent sample t tests and qui-square tests, according to the status of each variable (scale vs nominal).

To test the first hypothesis, if STP is effective in reducing children's behavior problems, mixed analysis of variance (ANOVA) were performed. The models (one outcome variable) included the outcomes of each dependent variable at each time point as within-subject factor and the condition (intervention vs. control) as between factor subject. According to a priori power analysis, a sample size with at least 24 observations would be enough to reach high effect sizes (effect size f = 0.4) considering p<.05, 95% power, two groups and two measures, a correlation of .5 between repeated measures and a non-sphericity correlation of 1 (Hyunh-Feldt).

To test the second and third hypotheses, assessing whether the effects of the intervention on children's behaviors are moderated by children's temperament or parents' high sensitivity, moderation analyses were performed using the Macro PROCESS (v. 3.5, Hayes (2020)) for IBM SPSS (SPSS version 27). The model template used for the Macro PROCESS was model 1, a simple moderation model where the moderating variable and the independent variable interact in their influence on a dependent variable (Hayes, 2018).

These analyses were only performed in the sample of participants that received the intervention (n=13). It is acknowledged that the sample size may be inadequate to

identify effects of any type. According to a priori power analysis, a sample size with at least 40 observations would be necessary to identify high effect sizes (effect size f^2 = 0.35) in a multiple regression model testing for one predictor (interaction term) in a total of 3 predictors (interaction term and independent variables) considering $p<.05$, and 95% power. As such, acknowledging that the sample size is insufficient and unable to provide generalizable results, the results of the moderation analysis in the next section should be interpreted with caution and understood as exploratory.

Power analyses were performed with the software G*Power (Faul et al., 2007, 2009) and the statistical analyses with IBM SPSS (v. 27, 2020).

Results

STP effects on children's behavior problems

The descriptive statistics and univariate results of the mixed ANOVAs for each dependent variable are presented in table 3. All outcome variables were found to decrease from M1 to M2, except for children's prosocial behavior and total impact score. However, the results were not different across groups.

Table 3. Descriptive statistics (mean and standard deviation) of the study outcomes, and tests of within-subject effects.

	Control Condition			STP			Time			Time vs. Condition		
		M1	M2		M1	M2						
	n	*M (SD)*	*M (SD)*	*n*	*M (SD)*	*M (SD)*	*F (df)*	*ηp²*	*Observed Power*	*F (df)*	*ηp²*	*Observed Power*
Total difficulties (SDQ)	16	15.13 (7.21)	10.44 (4.03)	13	17.15 (6.94)	13.31 (4.85)	15.48 (1,27)***	.36	.97	0.15 (1,27)	.006	.066
Emotional Symptoms (SDQ)	16	3.19 (2.04)	1.81 (1.91)	13	4.23 (2.77)	2.69 (2.02)	9.50 (1,27)***	.26	.84	0.30 (1,27)	.001	.053
Behavior Problems (SDQ)	16	3.44 (2.50)	2.25 (1.48)	13	3.85 (1.95)	2.69 (1.84)	11.78 (1,27)***	.30	.91	0.002 (1,27)	.000	.050
Hiperactivity (SDQ)	16	5.56 (2.58)	4.31 (2.50)	13	6.15 (2.23)	5.54 (2.15)	6.35 (1,27)***	.19	.68	0.74 (1,27)	.027	.131
Peer Relationship Problems (SDQ)	16	2.94 (2.21)	2.06 (0.93)	13	2.92 (2.14)	2.38 (2.18)	4.66 (1,27)***	.15	.55	0.26 (1,27)	.010	.079
Prosocial Behavior (SDQ)	16	8.31 (1.78)	8.31 (1.89)	13	8.46 (1.27)	8.23 (2.01)	.105 (1,27)	.004	.06	0.11 (1,27)	.004	.061
Impact Score (SDQ)	16	7.56 (5.78)	5.25 (5.22)	13	9.38 (5.30)	8.00 (5.08)	3.80 (1,27)	.12	.47	0.24 (1,27)	.009	.076
Externalizing Problems (SDQ)	16	9.00 (4.90)	6.56 (3.52)	13	10.00 (4.02)	8.23 (3.52)	11.97 (1,27)***	.31	.92	0.30 (1,27)	.011	.083
Internalizing Problems (SDQ)	16	6.13 (3.52)	3.88 (1.96)	13	7.15 (3.80)	5.08 (3.52)	9.59 (1,27)***	.26	.85	0.02 (1,27)	.001	.052
Social Competences (SCS)	20	3.10 (0.64)	3.26 (0.59)	12	2.88 (0.54)	3.10 (0.73)	1.94 (1,30)	.06	.27	0.06 (1,30)	.002	.056
Behavior Problems (SCS)	20	1.89 (0.55)	1.73 (0.40)	12	2.27 (0.75)	2.04 (0.71)	6.04 (1,30)***	.17	.66	.18 (1,30)	.006	.069

Note. M1= pre-intervention; M2= post-intervention ***$p < .001$

STP effects on children's behaviors moderated by children's temperament and parents' high sensitivity

Several models were performed. The dependent variables were SDQ Total Difficulties, SDQ Emotional Symptoms, SDQ Behavioral Problems, SDQ Prosocial Behavior, SDQ Externalizing Problems, and SDQ Hyperactivity, measured at post-intervention (M2). The independent variables were SDQ Total Difficulties, SDQ Emotional Symptoms, SDQ Behavioral Problems, SDQ Prosocial Behavior, SDQ Externalizing Problems and SDQ Hyperactivity, measured at pre-intervention (M1). HSP and each of the SATI dimensions assessed at pre-intervention (M1) were included as moderating variables. Few interaction effects were found. Results revealed marginally significant interaction effects, pointing towards a possible moderation effect of Activity on SDQ Total Difficulties, *B*=-0.39, *SE*= 0.21, *t*= -1.86, *p*=.095, and of HSP on Hyperactivity, *B*=-0.23, *SE*=0.13, *t*=-1.84, *p*=.10 and Prosocial Behavior, *B*=-0.71, *SE*=0.37, *t*=-1.92, *p*=.09. In addition, significant interaction effects suggest the moderation effect of HSP on Emotional Symptoms, *B*=0.71, *SE*=0.26, *t*=2.77, *p*=.02, Behavioral Problems, *B*=-0.46, *SE*=0.17, *t*=-2.76, *p*=.02, and Externalizing Problems, *B*=-0.35, *SE*=0.10, *t*=-3.49, *p*=.007.

The possible moderation effect of Activity on SDQ Total Difficulties is depicted in Figure 1. The analysis of single slopes suggests that children with higher Activity as a temperament trait are those who score the lowest on SDQ Total Difficulties at M2, *B*=-0.19, *SE*= 0.39, *t*= -0.50, *p*=.63, comparing to children with lower Activity as a temperament trait, who score the highest on SDQ Total Difficulties at M2, *B*=0.65, *SE*= 0.23, *t*= 2.87, *p*=.02.

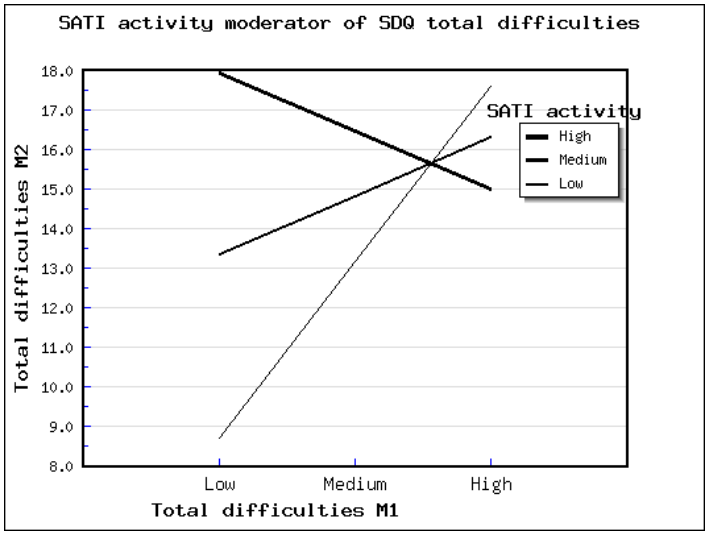

Figure 1. Graphic depicting the moderation of SATI's Activity on SDQ Total Difficulties.

The possible moderation effect of HSP on SDQ Hyperactivity is depicted in Figure 2. The analysis of single slopes suggests that children whose parents score higher on HSP are those who score lower on SDQ Hyperactivity at M2, *B*=-.32, *SE*= .32, *t*= 1.00, *p*=.34, whereas children whose parents score lower on HSP are those who score higher on SDQ Hyperactivity at M2, *B*=.92, *SE*= 0.20, *t*= 4.56, *p*=.001.

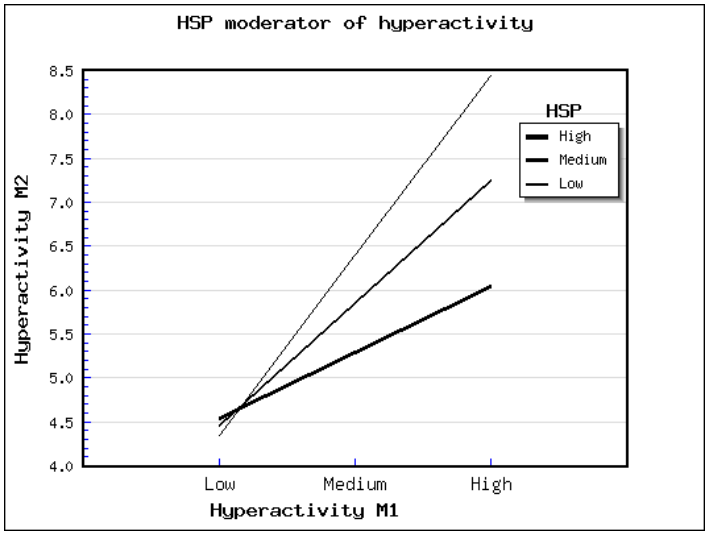

Figure 2. Graphic depicting the moderation of HSP on SDQ Hyperactivity.

The moderation effect of HSP on SDQ Prosocial Behavior is depicted in Figure 3. The analysis of single slopes suggests that children whose parents score higher on HSP are those who score higher on SDQ Prosocial Behavior at M2, *B*=-.005, *SE*= .62, *t*= -0.008, *p*=.99, whereas children whose parents score lower on HSP are those who score lower on SDQ Prosocial Behavior at M2, *B*=1.82, *SE*= 0.57, *t*= 3.20, *p*=.01.

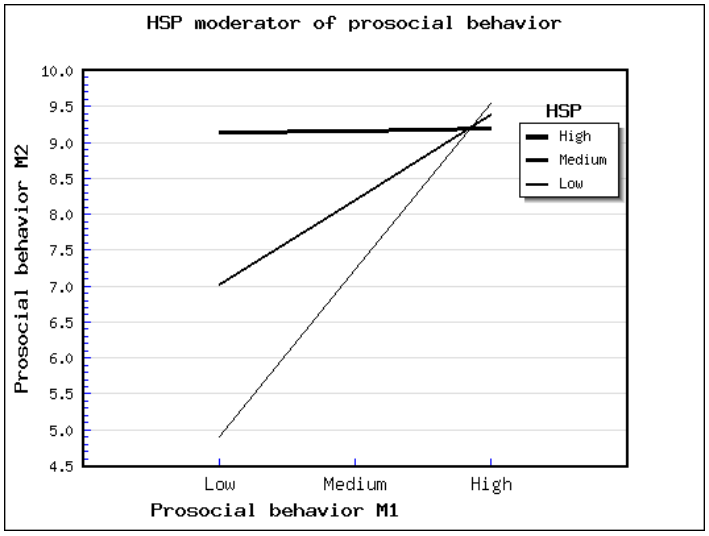

Figure 3. Graphic depicting the moderation of HSP on SDQ Prosocial Behavior.

The moderation effect of HSP on SDQ Emotion Symptoms is depicted in Figure 4. The analysis of single slopes suggests that children whose parents score higher on HSP are those who score higher on SDQ Emotional Symptoms at M2, *B*=-1.03, *SE*= 0.31, *t*= 3.33, *p*=.009, whereas children whose parents score lower on HSP are those who score lower on SDQ Emotional Symptoms at M2, *B*=-0.78, *SE*= 0.42, *t*= -1.87, *p*=.09.

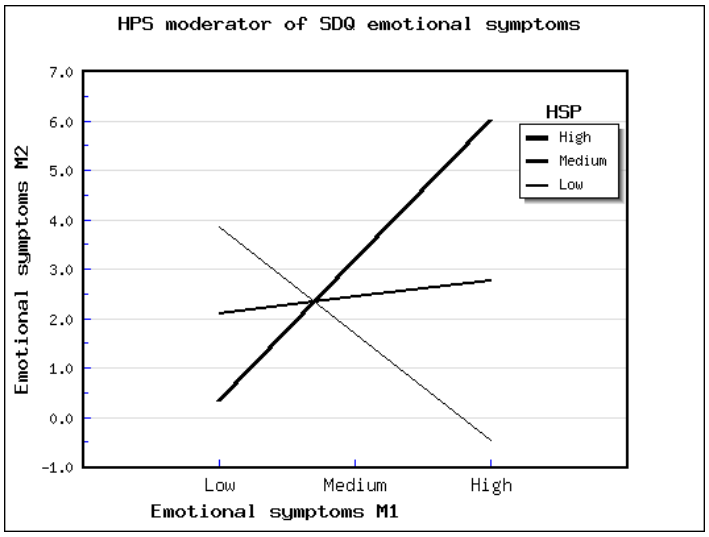

Figure 4. Graphic depicting the moderation of HSP on SDQ Emotional Symptoms.

The moderation effect of HSP on SDQ Behavior Problems is depicted in Figure 5. The analysis of single slopes suggests that children whose parents score higher on HSP are those who score lower on SDQ Behavior Problems in M2, *B*=-0.09, *SE*= 0.32, *t*= -0.27, *p*=.80, whereas children whose parents score lower on HSP are those who score higher on SDQ Behavior Problems at M2, *B*=1.09, *SE*= 0.25, *t*= 4.34, *p*=.002, even though both had low scores of SDQ Behavior Problems at M1.

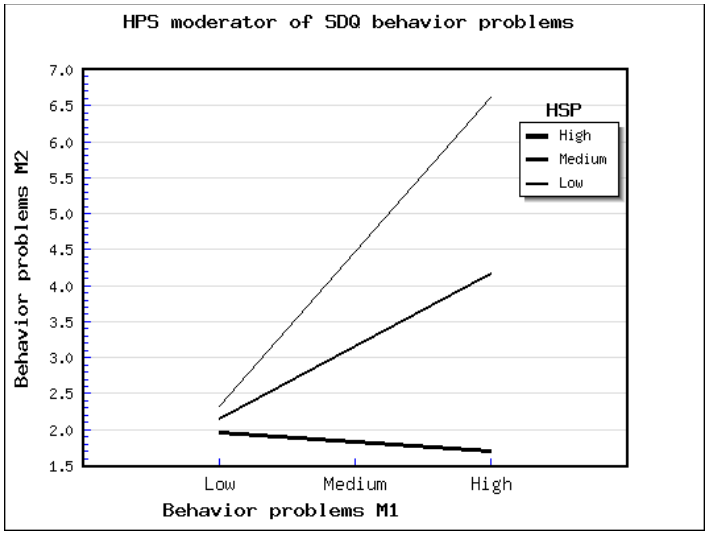

Figure 5. Graphic depicting the moderation of HSP on SDQ Behavior Problems.

The moderation effect of HSP on SDQ Externalizing Problems is depicted in Figure 6. The analysis of single slopes suggests that children whose parents score higher on HSP are those who score lower on SDQ Externalizing Problems at M2, *B*=0.10, *SE*= 0.23, *t*= 0.44, *p*=.67, whereas children whose parents score lower on HSP are those who score higher on SDQ Externalizing Problems at M2, *B*=0.99, *SE*= 0.15, *t*= 6.44, *p*<.001.

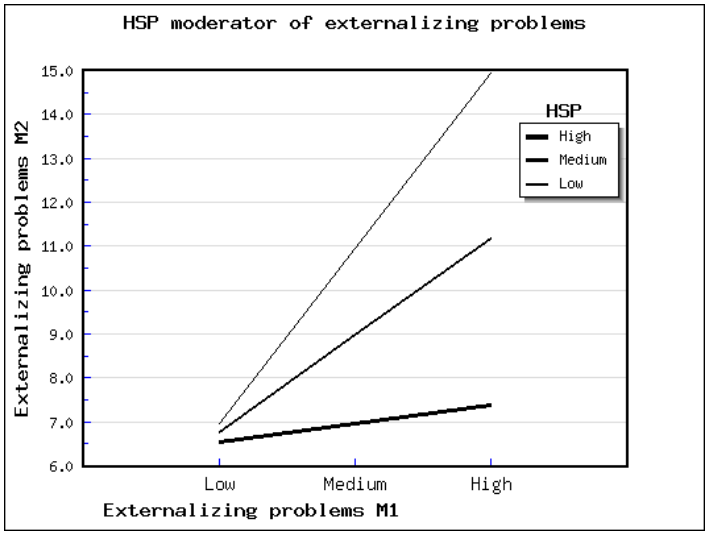

Figure 6. Graphic depicting the moderation of HSP on SDQ Externalizing Problems.

Discussion

The purpose of the current study was to assess the effects of STP parenting program on children's behavior problems comparing the intervention condition with a care-as-usual condition, and to verify whether the effects for those who received the intervention were moderated by children's temperament or high sensitive parenting, in a sample of participants assisted by child welfare services, in a situation of family preservation or reunification.

Results revealed a decrease in the children's behavior problems, regardless of which group they belonged to. Although it was expected that there would be a greater decrease in STP intervention, compared to the control condition, there were no interaction effects between time and allocation for the children's behavior outcome variables. This leads to the rejection of hypothesis 1, meaning that the STP intervention was not effective in reducing children's behavior problems in this small sample. Even though Sanders et al. (2000) and Sanders et al. (2007) reported that individuals who received STP, in comparison to control waiting list, had greater improvements in terms of behavioral problems, these results are not consistent with the findings of the present study. Perhaps the sample size, being small, is insufficient to identify effects. Future research should replicate the analyses in larger sample sizes to further evaluate the program's effectiveness.

The moderation analyses' results pointed out a marginally significant interaction effect between children's Activity as a temperament trait and SDQ Total Difficulties. Children with higher Activity may be among those who benefit the most from STP intervention, as they present low SDQ Total Difficulties scores after the intervention. This result is in line with the expected in the second hypothesis of the current study,

considering that children's temperament moderates the response to improvements in parental care induced by parenting interventions (e.g., Scott & O'Connor, 2012).

Also, the moderation analyses' results pointed out HSP as a moderator of children's emotional symptoms, behavioral problems, and externalizing problems. Results suggest that children whose parents score higher on HSP may be among those who benefit the most from STP intervention, since they score the lowest on behavioral and externalizing problems at M2, comparing to those whose parents score lower on HSP. Although through a marginally significant interaction effect, results also suggest that children whose parents score higher on HSP may be among those who benefit the most from STP intervention, since they score the highest on prosocial behavior and the lowest on hyperactivity at M2, comparing to children whose parents score lower on HSP.

These results are consistent with findings from prior studies suggesting that high sensitive personalities/persons perform exceptionally well in ideal conditions (Aron et al., 2005; Lionetti et al., 2018). If parents are more sensitive to environmental changes, they become more aware of their children's problems and implement intervention strategies to mitigate such problems. These results support the third hypothesis, confirming that parent's sensitivity to environmental features moderates the effectiveness of the intervention, leading children to benefit more from the intervention when their parents are more sensitive to the environment influences. This is in line with some recent studies that point out sensory processing sensitivity as a moderating variable (see Slagt et al., 2018).

Unexpectedly, children whose parents scored higher on HSP were those who scored higher on emotional problems at M2. These results can be explained by the fact that the STP program focuses on behavior problems, through a cognitive-behavioral perspective and does not address emotional issues (Sanders et al., 2014). At the same

time, if parents are more sensitive to environmental changes, they may have become more aware of their child's other problems throughout the intervention, resulting in an increase of children's emotional symptoms reported by their parents at M2.

The findings from this study have implications for practice. First, studying the effectiveness of these programs means giving practitioners evidence-based programs that can guide their practice and improve their results. Practitioners may feel empowered when using programs known to be effective. As such, STP can be a valuable resource for practitioners in community-based settings to address the needs of vulnerable families at-risk, particularly for the parents identified as highly sensitive. At the same time, the current study's results also provide relevant information for the body of knowledge on parenting interventions' effects. Identifying the moderating variables of programs' effectiveness can result in more personalized intervention programs that meet the unique needs of parents and children, addressing a relevant question in prevention science "What works best for whom?" (Gottfredson et al., 2015).

To the best of our knowledge, the current study was one of the first studies to address the effects of an intervention of the Triple P system contrasting the Differential Susceptibility and Vantage Sensitivity models. However, its main limitation consists of a small sample size. Constraints caused by the pandemic made it difficult to implement the second assessment time point, resulting in a small sample size. As mentioned before, future research should continue this work with a larger sample size to evaluate the program's effectiveness further and verify the existence of other moderating variables. Future studies should also employ the needed statistical procedures to determine the best fit of the data comparing against the Diathesis-Stress, Differential Susceptibility, and Vantage Sensitivity models (e.g., Widaman et al., 2012; Roisman et al., 2012).

Conclusion

Results on the contrast between the Differential Susceptibility and the Vantage Sensitivity models allow concluding that for the current study's sample, the way children are influenced by STP is better explained through the lens of the vantage sensitivity model, children seemed to benefit more from a good environmental feature (promoted by the STP intervention) if they had parents who rated high on the HSP scale or if they scored high on SATI's Activity. As such, and in reply to the question in the dissertation title, there seems to be, in fact, orchids at REUNIRmais. The participants with high scores on HSP were those who performed exceptionally well in the optimal condition provided, the STP intervention.

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