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The Coparenting Relationship Scale - Prenatal Version: A Contribution to the Validation

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Validation**

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AVISOS LEGAIS

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Resumo

O presente estudo contribuiu para a literatura existente sobre coparentalidade ao examinar as propriedades psicométricas da Escala de Relação Coparental Versão Pré-natal (CRS-FPV) numa amostra portuguesa de mães e pais primíparos. A CRS é uma medida amplamente utilizada para avaliar a dinâmica da coparentalidade, sendo a CRS-FPV específica do período pré-natal. No entanto, as suas propriedades psicométricas em relação a mulheres grávidas ainda não foram investigadas. Para colmatar esta lacuna, o instrumento foi administrado a futuros pais e mães para avaliar se a atual estrutura de subescalas continuaria válida ou se necessitaria de ser modificada quando se considerassem as mães. Foi realizada uma análise fatorial confirmatória para avaliar a consistência e a adequação das subescalas. A invariância de género foi examinada em dois níveis diferentes: (1) invariância configural e (2) invariância fatorial. Em geral, o modelo anterior foi reproduzido com sucesso numa amostra de mães e pais expectantes. A estrutura de quatro fatores foi mantida, as únicas alterações feitas referem-se à realocação dos itens 5 e 12, ambos movidos para o fator Sabotagem. No que diz respeito ao género, verificou-se uma invariância parcial das cargas fatoriais. Os resultados deste estudo forneceram informações valiosas sobre a aplicabilidade da CRS-PV no contexto português e exploraram as dinâmicas de coparentalidade dos futuros pais durante o período pré-natal, melhorando a nossa compreensão das propriedades psicométricas da escala pré-natal. Este conhecimento alarga a compreensão da coparentalidade e contribui para o desenvolvimento de intervenções mais eficazes e para apoiar futuras investigações, práticas clínicas e programas destinados a promover relações coparentais saudáveis durante a fase pré-natal.

Palavras-chave: Coparentalidade; Coparentalidade Prospetiva; Escala de Relação Coparental; Pré-natal; CRS-FPV;

Abstract

This study contributed to the existing coparenting literature by examining the psychometric properties of the Coparenting Relationship Scale—Father's Prenatal Version (CRS-FPV) in a Portuguese sample of both primiparous mothers and fathers. The CRS is a widely used measure to assess the dynamics of coparenting, with the CRS-FPV being specific to the prenatal period. However, its psychometric properties in relation to pregnant women have not yet been investigated. To address this gap, the measure was administered to expectant parents to assess whether the current subscale structure would remain valid or require modification when considering mothers. Confirmatory factor analysis was conducted to evaluate the consistency and appropriateness of the subscales. Gender invariance was examined at two different levels: (1) configural invariance and (2) factor loading invariance. For the most part, the previous model was successfully replicated with a sample of both expecting mothers and fathers. The four-factor structure was maintained, the only changes made refer to the reallocation of items 5 and 12, where both were moved to factor Undermining. In regards to gender, partial factor loading invariance was found. The results of this study provided valuable insights into the applicability of the CRS-PV in the Portuguese context and shed light on the coparenting dynamics of expectant parents during the prenatal period by enhancing our understanding of the psychometric properties of the prenatal scale. This knowledge expands our understanding of coparenting and contributes to the development of more effective interventions and support future research, clinical practice, and programs aimed at promoting healthy coparenting relationships during the prenatal phase.

Keywords: Coparenting; Prospective Coparenting; Coparenting Relationship Scale; Prenatal; CRS-FPV;

1. Introduction

Coparenting can be defined as the continuous involvement of two caregivers in the rearing, educating, and decision-making required throughout a child's life, focusing on the relationship that encapsulates those interparental interactions (Feinberg, 2003).

This relationship refers exclusively to the cooperation and partnership between the adults in charge of the child for whom they share responsibilities, and, in that sense, it differs from the parenting and romantic relationship, despite interacting reciprocally with those domains (Feinberg, 2002). Accordingly, an effective coparental relationship exists when the individual needs of each parent are harmoniously articulated with those of the child (McHale, 1995).

The quality of the coparenting relationship is reflected in the degree to which each parent functions either as an ally or opponent, whereby its quality is a better predictor of parenting and child outcomes than the quality of the marital relationship (Feinberg et al., 2010), impacting children's psychological adjustment at different ages (Feinberg et al., 2012; Teubert & Pinquart, 2010; Zemp et al., 2018). Feinberg (2002) argued that improvements in coparenting quality would promote an increase in the parenting sensitivity, consistency, and contingency, which would consequently improve children's emotional health and social competence. This perspective aligns with all the findings that have since been reported (e.g., Teubert & Pinquart, 2010; Tissot et al., 2019; Zemp et al., 2018,). Thus, coparenting has been well established as an enhancer for child outcomes, parental well-being and family function as a whole (e.g., Campbell, 2022; Ece et al., 2023; Feinberg et al., 2010; Kolak & Volling, 2013; Lamela & Figueiredo, 2016; McDaniel et al., 2017; Murphy et al., 2017; Schoppe-Sullivan et al., 2023; Williams, 2018).

Considering that the coparenting relationship begins with conception, or arguably even earlier if the couple is actively trying to conceive, and is built progressively while the new parents are transitioning into parenthood (Feinberg, 2003; Van Egeren, 2004), it is vital that we understand how this relationship originates and changes across time. Since the planning and negotiation involved in rearing generally already take place before the child is born, the construction of the coparenting relationship can be conceptualized as being operative prenatally (e.g., Altenburger et al., 2014; Favez et al., 2012; Ranta et al., 2022; Shai, 2019), as expecting

parents begin to discuss parenthood and start to develop mental representations of their coparental selves' during pregnancy (e.g., Feinberg, 2003; Kuersten-Hogan, 2017; Van Egeren, 2004).

The onset of the *transition to parenthood* overlaps with that of the development of the coparenting relationship, beginning with pregnancy and generally considered to be over by the child's first or second year of life (Feinberg, 2002; Van Egeren, 2004; Xuereb et al., 2012). Being one of life's biggest shifts it is usually defined as a crisis (Parfitt & Ayers, 2014), as it is potentially accompanied by a high level of stress and strain that permeates the parenting relationship and may negatively impact children (Feinberg & Kan, 2010).

For children, the first two years of life are indubitably the most crucial years of their development (e.g., Cusick & Georgieff, 2016), which co-occur with the most challenging times for parents as well. The birth of a child can result in profound changes in the whole family system, influencing the parent's personal and relational well-being (Feinberg, 2002). This is an event marked by major adjustments for the couple, as they are required to negotiate the expectations and duties of their new roles in a period of significant change and under great stress. Additionally, couples have to deal with a high degree of unpredictability, while still being expected to be able to meet their infant's needs (Sheedy & Gambrel, 2019). All in all, the transition to parenthood is reported as bringing about more profound changes than any other life transition or family life cycle stage, which is why new parents report feeling unprepared for this developmental task (e.g., Deave et al., 2008; Guzzo & Hayford, 2020; Priel & Besser, 2002).

Although we've defined it as a crisis, this transition also presents itself as the ideal timeframe for change. The coparenting relationship is still quite plastic, and the new parents are open to suggestions and improvements (Feinberg, 2002). Consequently, research conducted on prospective coparenting, particularly regarding the initial stage of the transition to parenthood when so many changes can be implemented, will directly add not only to the field but especially to the dynamics of new parenting couples and their families. Although there has been some recent research conducted on prospective coparenting (e.g., Durtschi et al., 2017; Kuersten-Hogan, 2017; Ranta et al., 2022), it is still, comparatively to the existing literature on postnatal coparenting, quite seldom.

1.1. Prospective Coparenting in the Transition to Parenthood

As previously stated, the coparenting relationship does not simply emerge after the child's arrival, but rather during the prospective planning taking place during pregnancy (McHale et al., 2004; Van Egeren et al., 2004). In this regard, partners have already begun a coparenting relationship long before childbirth, when they reflect and deliberate on joint caregiving matters, discuss vital issues, and create expectations for themselves as parents-to-be (e.g., Altenburger et al., 2014; Favez et al., 2013; Van Egeren & Hawkins, 2004). Mothers and fathers are able to develop attachments to their babies during pregnancy if they find the balance between presenting the baby as a part of themselves, which guarantees affiliation, and presenting the baby as an individual, which ensures that the baby's needs are recognized. By sharing and co-creating these mental representations with the partner, mothers and fathers will have a common vision of their baby, which promotes coparenting (Kuersten-Hogan & McHale, 2021).

A growing amount of research provides evidence that the prenatal coparenting relationship has significance for family functioning postnatally. Altenburger and colleagues (2014), as well as Kuersten-Hogan (2017) did observational assessments of the prenatal coparenting alliance in which expectant parents engage in symbolic play enactments with their unborn child by role-playing with a life-size doll. Those studies provided good evidence that coparenting develops prenatally as they examined whether prenatal coparenting behavior predicted later coparenting. They found coparenting continuity as dyads who engaged in higher quality prenatal coparenting behavior demonstrated more supportive and less undermining coparenting behavior postpartum (Altenburger et al., 2014). In fact, multiple researchers (e.g., Carneiro et al., 2006; McHale & Rotman, 2007; Schoppe-Sullivan et al., 2004; Van Egeren, 2004) have previously shown that prenatal coparenting behaviors demonstrate moderate stability through the child's early years, highlighting the relevance of the prenatal period to subsequent coparenting dynamics. Thereby, parents envisioning their coparenting relationship appears to be a good indicator of their effectiveness in developing a successful and solid coparenting alliance. The influence of this planning is lasting, as there is evidence underlining that the way parents coparent during the early days lays a cornerstone for future coparenting habits (McHale et al., 2007; Tissot et al., 2016).

It has been observed that expecting couples with more supportive family alliances during pregnancy and coparenting dynamics are more likely to have more supportive postpartum alliances and coparenting at 3 months (Carneiro et al., 2006; Kuersten-Hogan,

2017), at 9 months (Altenburger et al., 2014), and at 2 years (Favez et al., 2006) as well as in adolescence (Frascarolo et al., 2018). The evidence supports the existence of a prenatal coparenting relationship and highlights its predictive value for postpartum coparenting relationships.

Furthermore, building an effective and supportive coparental relationship during pregnancy can also facilitate the transition to parenthood (Durtschi et al., 2017; McHale et al., 2004; Van Egeren, 2004), easing the tumultuous nature of that major developmental task. Besides the clear impact of prenatal coparenting is not exclusive to caregivers, as recent research has found that prenatal coparenting behavior predicts child outcomes as well (Witte et al., 2019). Shai (2019) found that higher rates of negative escalation in prenatal coparenting predicted lower early learning scores in children, despite controlling for postnatal coparenting behavior.

1.2. Gender in Coparenting

When seeking to observe the influence of gender most studies of coparenting have focused primarily on marital quality as a predictor, and fewer have considered parent characteristics such as gender-role beliefs.

Previous research on marital quality and coparenting during the transition to first-time parenthood have exhibited mixed results, with some finding stronger associations, while others found no differences by parent gender. For instance, fathers' reports of lower marital satisfaction predicted more competitive coparenting, but the same did not apply to mothers' marital satisfaction (Christopher et al., 2015). In fact, in the context of an average or low relationship quality, mothers' beliefs about fathers' roles seem to play a greater role in the level of coparenting support that emerges between the coparents. However, in a study on the transition to parenthood, the level of marital quality prior to the birth was associated with greater perceived coparenting support for mothers and fathers as well as less perceived coparenting undermining (Le et al., 2016), having found no gender differences.

Through the lens of the *social role theory* (Eagly & Wood, 2012) it is perceived that fathers and mothers may experience parenting roles differently according to their gender and, similarly, such an analysis can also be applied to coparenting roles. In European societies, current studies demonstrate that gender ideologies continue to shape the transition to parenthood, creating different images of 'good' motherhood and fatherhood, which could reflect

both gender stability and gender change as a result of social expectations (Evertsson & Boye, 2016; Grunow & Veltkamp, 2016; Yavorsky et al., 2015).

Since fathers' roles are often considered to be ambiguous or even secondary to mothers' (Brown et al., 2011), their coparenting behaviors are likely more susceptible to ecological factors, including marital experiences, gender role beliefs, and children's temperament. Comparatively, due to their socialization as primary caregivers, women may be less susceptible to ecological forces in their coparenting behavior (Eagly & Wood, 2012).

As a result of social expectations, parenting plays a more central role in the identity of women (Katz-Wise et al., 2010; Simon, 1992), and mothers generally assume greater parenting responsibility and may act as the "gatekeepers" to men's involvement in parenting (Craig, 2006; Schoppe-Sullivan et al., 2008). Women are more likely to take on managerial roles in coparenting situations, and their support or undermine of fathers' parenting behaviors has a greater influence on their behavior (Fagan & Barnett, 2003; Schoppe-Sullivan et al., 2008). Studies on maternal "gatekeeping" have examined how social expectations influence parenting and coparenting, despite not focusing on gender-role orientation. There has been evidence that mothers may inadvertently or purposefully engage in behaviors that restrict a father's access to his child or reduce his control over child-related daily activities. This form of maternal gatekeeping is tagged as "negative gatekeeping behaviors"; as a result, the father may disengage himself from parenting. Coparenting cooperation is therefore adversely affected by this dynamic. As such, maternal beliefs about mother and father's roles in the family influence gatekeeping behaviors, whether they are consciously or unconsciously held (Allen & Hawkins, 1999; Kuersten-Hogan & McHale, 2021; Van Egeren, 2004).

According to Brown (2006), the transition to parenthood and parenting reaffirms biological differences through social practices, and motherhood and fatherhood might be conceptualized as "gendered institutions". The gender role attitudes and behaviors of partners tend to change after the birth of the first child, becoming more traditional, more so for mothers than for fathers (Katz-Wise et al., 2010; Kluwer et al., 2002). Among the factors contributing to gender differences in psychological strain during the transition to parenthood may be mothers' greater childcare burden, which has been linked to numerous psychological challenges faced by expectant and new mothers, including reduced well-being and poorer mental health (e.g., Deutsch, 1999) as well as relationship dissatisfaction (Adamsons, 2013; Moller et al., 2008). It is particularly difficult for mothers returning to paid employment after only a brief maternity leave (Feldman et al., 2004), which luckily is mostly not the case for Portugal. Fathers are also affected by role overload when transitioning to parenthood (Lachance-Grzela

& Bouchard, 2009). The anticipation of future childcare overload may account for the gender differences in certain areas of pregnant women's coparenting, as the mothers foresee the need for different kinds of support, for instance (Sheedy & Gambrel, 2019).

Moreover, it has been found that coparenting is associated with paternal gender role orientation only, as maternal gender-role orientation was not associated with coparental interactions. Mothers may show a dissociation between the ability to enact collaborative parenting and coparenting behaviors and their perception of themselves in relation to gender stereotypes, whereas fathers are more likely to identify with their ability to collaborate effectively (Favez & Frascarolo, 2020). There may also be a contextual effect, since some men may change their dominant characteristics in order to fit an environment traditionally defined as feminine compared to their workplace - their family life (Donnelly & Twenge, 2017; Maurer et al., 2001).

From a socio-constructivist point of view, the present situation is an intermediate one in which both traditional and contemporaneous contradictory forces exert varying degrees of influence on families and parents; as early as pregnancy, where parenting and coparenting can be expected to be influenced by the extent to which parents adhere to traditional versus more contemporary roles, as well as their gender-role orientation (Katz-Wise et al., 2012; Koivunen et al., 2009). Studies suggest that traditional views often prevail in the early postpartum period after couples' more contemporaneous views during pregnancy (Kuersten-Hogan & McHale, 2021). It was discovered by Cowan and colleagues (1985) that many men and women who held egalitarian views during their first pregnancy adopt more gender-stereotypical attitudes after the birth of their child. Postpartum decreases in couples' marital satisfaction were associated with these violations of prenatal egalitarian expectations. Conversely, couples with equally shared child care responsibilities during the postpartum period experienced greater satisfaction with their parenting roles and couple relationships (Cowan & Cowan, 1987).

In a research conducted by Schoppe-Sullivan and Mangelsdorf (2013), when couples had a low or average quality of marital relationship before birth, mothers' egalitarian gender-role beliefs were positively associated with supportive coparenting attitudes during an interaction with their infants, but in another, there were no associations between parents' gender-role beliefs and coparenting of preschoolers (Buckley & Schoppe-Sullivan, 2010).

The data available thus far suggest that there may be some differences between men and women in coparenting, as one would expect, although the pattern of such perceptual differences varies greatly from study to study.

1.3. Coparenting Relationship Assessment

The coparenting relationship has been a bustling topic of discussion over the last two decades, counting on the valuable contribution of multiple comprehensive theoretical conceptualizations such as, for instance, McHale's (1997), Margolin et al.'s (2001), Feinberg's (2003), and Van Egeren and Hawkins's (2004).

Due to the expanding interest in coparenting, there has been a corresponding increase in the multitude of ways to assess the concept with observational tools, questionnaires, and self-reports being developed for research and clinical purposes. Besides, in light of the broad array of theoretical definitions of coparenting, a large degree of heterogeneity is noticeable in the available measurement instruments used to assess the concept (Cusí et al., 2020). Thus, the present work will focus exclusively on one of the most widely used measures - the *Coparenting Relationship Scale* (CRS; Feinberg et al., 2012), more specifically on the adaptation *Coparenting Relationship Scale—Father's Prenatal Version* (CRS-PV; Pinto et al., 2019) a version of the CRS to be used with expecting parents.

Feinberg (2003) proposed an empirically based coparenting ecological model, conceptualizing coparenting in four interrelated dimensions: (a) the agreement versus disagreement on childrearing issues, (b) the division of labor, (c) the support versus undermining of the coparental role, and (d) the joint management of family interactions. A fifth dimension of (e) parenting-based closeness was later added (Feinberg et al., 2012).

Several factors influence how fathers and mothers adjust to their new roles as coparents. According to this model, coparenting is shaped by individual, family and extra-familial factors, highlighting four main dimensions: (1) individual parental characteristics; (2) child characteristics; (3) interparental relationship; (4) stress and support from contextual sources (Feinberg, 2003). By valuing many external factors to the coparenting relationship and offering a distinct systemic view of parenting scarcely explored in other conceptualizations, this model approaches a more holistic viewpoint with a greater potential to capture the complexities of family phenomena (Lamela et al., 2010).

The Coparenting Relationship Scale (Feinberg et al., 2012), based on Feinberg's theoretical model (2003), is a validated 35-item self-report instrument that assesses seven different domains of the coparenting relationship (coparenting agreement, coparenting closeness, exposure of the child to conflict, coparenting support, coparenting undermining, endorsement of partner's parenting and division of labor). Each of the domains can be

computed into an individual subscale and it is also possible to compute them into a total scale. The instrument displays good psychometric properties across the board: reliability, construct validity, stability and intertester agreement. In addition to the full version of the CRS, a brief version of the Coparenting scale with four domains and 14 items is also available. The CRS has been translated by researchers in numerous languages and has already been validated for use in Portuguese (Costa et al., 2020; Lamela et al., 2016).

However, as far as we know, not many studies have yet assessed the prospective coparenting relationship, the ones that have and made use of the CRS, focused either exclusively on expecting fathers (Pinto et al., 2019) or included additional items regarding support from the family of origin, having found a different set of factors (Leal et al., 2022).

Pinto and fellow researchers (2019) administered the CRS-PV on 91 primiparous fathers during the first trimester of gestation in order to validate its prenatal version (Pinto et al., 2019). Confirmatory factor analysis revealed a good model fit and the adaptation presented good psychometric properties with subscales' internal consistency ranging from .69 to .94.

Leal et al. (2022) also adapted the scale to sexual minority people, in addition to heterosexual dyads, which represents a valuable pioneering contribution that adds to the ecological validity of the model. Different factorial structures as a function of sexual orientation were observed. The heterosexual sample was composed of 176 child-free participants in a committed relationship that reflected on future coparenting domains. Despite the clear pertinence of the study's conclusions, one could argue that the prospective coparenting assessed was perhaps too anticipatory, as the couples were not yet expecting a child with that partner, which might account for more volatile coparenting perceptions.

Overall, in the CFA for heterosexual people and EFA for sexual minority people the indices demonstrated a good model fit. All the remaining CFA subscales presented satisfactory composite reliability values starting at 0.73 and lowest EFA subscale alpha was 0.59.

1.4. The Present Study

The present study aims to expand upon the current coparenting literature by examining the psychometric properties of the Coparenting Relationship Scale—Father's Prenatal Version (CRS-FPV) (Feinberg et al., 2012; Pinto et al., 2019) in a Portuguese sample of both primiparous mothers and fathers. We administered the measure to expectant parents to assess with confirmatory factor analysis whether the existing subscale structure would remain intact or require modification when contemplating mothers. For simplicity purposes, the following

scaling structure is referred to throughout the current report as Coparenting Relationship Scale—Prenatal Version (CRS-PV).

2. Method

2.1. Procedure for Data Collection

The present study was part of a larger international research project called “CopaGloba: Learning to coparent, a longitudinal study on construction of coparenting in transition to parenthood”. “CopaGloba” consists of a collaboration between universities in Finland, Japan, and Portugal, as well as with the Finnish National Institute for Health and Welfare, funded by the Academy of Finland.

This study exclusively makes use of the Portuguese survey data collected from May 2021 until the end of December 2021. The questionnaire was accessible online via the LimeSurvey software (Limesurvey GmbH) and intended to be answered individually by expecting couples. Before being administered to participants, the CRS-FPV's Portuguese translation and English adaptation were refined to better ensure the lexical, grammatical and conceptual equivalence to the original scale (Feinberg et al., 2012; Pinto et al., 2019) seeing that Pinto and colleagues' Portuguese version (Pinto et al., 2019) had an unavoidably feminine use of language as it was solely intended towards fathers. In that sense, the Portuguese version used in the present report applied both feminine and masculine gender words so that the questionnaire was applicable to mothers and fathers and also included slight alterations to stay closer to the original English scale. This tweaking process was collaboratively conducted by the international “CopaGloba” research team.

The recruitment process was mainly done via social media posts and the distribution of leaflets in local health services and various childcare articles establishments using a snowball and convenience sampling method. A gift card worth 250 euros was raffled off and given to one of the participating couples. In order to participate in the raffle, both members of the couple must have completed the questionnaire individually.

The inclusion criteria for participants were to be older than 18 years old; to be expecting their first child; and to be in the last trimester of pregnancy. Initially, being in the third trimester

was a fixed requirement, as it would be ideal for the assessment of prospective coparenting. However, on account of some difficulties experienced while recruiting pregnant couples, due to the sanitary restrictions still in place at many health services and other locations, we eased that boundary to increase the number of participants. Therefore, it was required of parents to have already surpassed the 20 weeks of gestation benchmark so that couples were at least halfway through the second trimester of pregnancy and coparenting dynamics were already in place.

The aims of the study were described in the first section of the questionnaire. A website page with supplementary information about the research objectives, procedures, and the team was made available. It was ensured that participation in the study was voluntary, fully confidential, and that the data provided by the participants would be processed collectively and used exclusively for scientific research purposes. The research team provided an email so as to clarify any questions participants might have had regarding participation in the study. The questionnaire was approved by the Ethics Committee of the Faculty of Psychology and Education Sciences of the University of Porto (Ref. 2020/02-04) and the data processing complied with the General Data Protection Regulation (EU-GDPR 2018). Each participant consented that they had received and understood all the information needed regarding the study before accessing the second page of the survey.

2.2. Measures

The questionnaire used as part of this research enquired about: 1) Sociodemographic data (e.g. education, nationality, marital status, duration of relationship, professional status, working hours, current monthly income, population density in area of residence); 2) Items on COVID-19 (e.g. changes in lifestyle due to the pandemic, apprehension about the pandemic, influence of COVID-19 on future upbringing/education of children); 3) Parenting [e.g. expected date of birth, pregnancy planning, difficulties experienced during pregnancy, future plans for children, The Coparenting Relationship Scale (Feinberg et al., 2012; Pinto et al., 2019)]; 4) Relationship with partner [e.g. Quality of Marriage Index (Norton, 1983), Experiences in Close Relationship (Wei et al., 2007), Conflict Resolution Styles Inventory (Kurdek, 1994)]; 5) Division of domestic labour (weekly division of tasks, reasons for current division, perception of fairness of division of tasks); 6) Personal attitudes [Intensive Parenting Attitudes Questionnaire (Liss et al., 2012), Personal Cultural Orientations Scale (Sharma, 2010)]; 7) Wellbeing [Mental Health Inventory-5 (Marques et al., 2011)].

For the purposes of this dissertation, we only treated data concerning sociodemographic and parenting information, namely CRS-FPV (Feinberg et al., 2012; Pinto et al., 2019).

Coparenting Relationship Scale

The *Coparental Relationship Scale* (CRS, Feinberg et al., 2012) is a self-report measure composed, in its original version, of 35 items divided into seven subscales. The *Coparenting Relationship Scale - Father's Prenatal Version* (Pinto et al., 2019), the only coparenting measure used in this study, is a prenatal version adapted from the CRS to assess parents' coparenting during pregnancy. The CRS-FPV comprises 30 items, as five items were removed since they reduced the scale's internal consistency and presented low item-total correlations. The scale is rated with a 7-point Likert scale of 0 (Not true of us) to 6 (Very true of us).

The items in CRS-FPV are divided into four subscales that assess four dimensions of coparenting: (1) the *coparenting support* subscale that assesses the perception of support that the couple member will provide to the other member (e.g., When I will be at my wits end as a parent, my partner will give me the extra support I will need.) (15 items); (2) the *coparenting conflict* subscale that assesses the dyad's perception of the likelihood of exposing the child in the future to parental conflicts related to their education (e.g., We will yell at each other within earshot of the child.) (5 items); (3) the *coparenting disagreement* subscale that assesses to what degree each couple member will disagree on issues related to the infant (e.g., We will have different ideas about how to raise our child.) (6 items) and (4) the *coparenting undermining* subscale that assesses the parents' anticipatory perception of competition, guilt and criticism between them (e.g., My partner will try to show that she or he is better than me at caring for our child.) (4 items).

According to the results of the CRS, the values indicate construct validity, with a strong internal consistency, in which Cronbach's Alpha values range between .91 and .94 (Feinberg et al., 2012). The CRS-FPV showed good internal consistency, $\alpha = .85$ for the total scale; .94 for the lack of Coparenting Support subscale; .90 for the Coparenting Conflict subscale; .79 for the Coparenting Disagreement subscale; and .69 for the Coparenting Undermining subscale (Pinto et al., 2019). In the present sample, Cronbach's α 's were .91; .83; .72 and .59, respectively.

2.3. Participants

The initial sample consisted of 296 participants, 136 dyadic answers (corresponding to 68 couples) and 160 individual answers. In order to ensure the credibility and validity of the results, one male dyadic participant was removed from the sample due to a lack of answers on all items of the scale ($n=1$). The sample was subsequently split into two parts to exclude nested data (i.e. reports originating from the same dyad). For more information, refer to Table 1.

Table 1

Sample description according to gender and type of participation

		Type of answer		Total
		Individual or as a couple		
		Couple	Individual	
Sex	Masculine	67	10	77
	Feminine	68	150	218
Total		135	160	295

Sample characterization

The sample used consisted of 227 participants ($n = 77$ men; $n = 150$ women); all 150 women answered the questionnaire individually, ten men also answered individually, and the remaining 67 men answered as a couple, but their partners' responses were not included in the analyses to guarantee that the data was independent. The participants ranging from ages 18 to 49 years old ($M = 30.76$, $SD = 4.37$) had between 21 and 42 weeks of gestational age ($M = 31.55$, $SD = 4.63$). About half the participants were married, and all were in heterosexual relationships, with a mean length of relationship duration of 7.23 years ($SD = 4.23$) and a mean length of cohabitation of 4.25 years ($SD = 2.85$). Pregnancy was planned in 84% of cases and unplanned in 16% of the cases. Almost three-quarters of the sample (72%) had a high level of educational attainment (Bachelor's/Master's). The sociodemographic characteristics of the sample are summarized in Table 2.

Table 2*Sociodemographic characteristics of the sample (N= 227)*

	%
<hr/>	
Sex	
Masculine	33.9
Feminine	66.1
Other	0.0
Age	
18-25	10.2
25-30	39.8
30-35	38.1
35-49	11.9
Marital Status	
Married	46.7
Registered Partnership	25.3
Cohabitation	16.4
Single	11.6
Educational Attainment	
9 th grade	2.7
12 th grade	17.3
Technological specialization course	5.3
Professional higher technical course	3.1
Bachelor's degree	40.7
Master's degree	31.0
Household's Monthly Income	

≤600	1.3
600-1200	18.5
1200-1800	33.5
1800-2400	19.4
2400-3000	14.5
≥3000	10.5

2.4. Analytical Strategy

We resorted to software SPSS (version 26) and AMOS (version 28) (IBM SPSS Inc, Chicago, IL) for the statistical treatment of data. The latter enables structural equation modeling (SEM) which allows data shaping through structural equations providing a diagrammatic representation of our theoretical model.

Confirmatory analysis by means of SEM, as Marôco (2014) states, assesses the adjustment quality of a theoretical model and the correlations' structure between the variables measured. The relationships between the observed variables and the factors are modeled by a series of linear regressions using a covariance matrix (Byrne, 2013).

2.4.1. Data Screening and Data Management

Descriptive analyses were carried out in order to obtain the distribution profile of the sample's sociodemographic characteristics.

In a phase prior to the statistical analysis per se, database cleaning procedures recommended by Funk and Rogge (2007) were carried out. Thereby, participants who left many items of the scale unfilled were eliminated. As previously mentioned, one participant was removed from the sample on account of not meeting these criteria.

Before the Confirmatory Factor Analysis (CFA), the data were assessed for univariate outliers by examining the standardized score values greater than the absolute value of 3.29 (Kline, 2016), whereby no cases were deleted despite some values surpassing the benchmark, as it is expected in larger samples. Multivariate outliers were also assessed with the use of Mahalanobis square distance (D^2). Although quite some observations ($n= 23$) presented values of the square distance of Mahalanobis indicating the existence of outliers (p_1 and $p_2 < .001$)

(Marôco, 2014), we opted for keeping most of them since their removal would lead to a decrease in the variability associated with the components under study. An analysis without said outliers was conducted and when eliminated the severity of the normality violation increased. In a conservative manner, one multivariate outlier observation was later on removed (case 99), as it presented the highest D^2 , differing pronouncedly from the subsequent cases. The D^2 intervals on the remaining cases were rather regular (Collier, 2020).

The normality of the variables was examined according to the guidelines for values of skewness and kurtosis provided by Kline (2016), and univariate normality was not assured. Several variables showed skewness and kurtosis values indicative of severe violations of the normal distribution ($|Sk| < 3$; $|Ku| < 7$) (see Table 5). Multivariate normality estimated by the critical ratio representing Mardia's (1970) normalized estimate of multivariate kurtosis was therefore also not assured, as the value was considerably higher than the acceptable range of < 5 (Bentler, 2005). In light of this violation, we utilized Bootstrapping techniques to address the nonnormal data (Byrne, 2013). Bootstrap samples were set at 5000 as recommended by Collier (2020) and the bias-corrected confidence interval was set at the 95% confidence level.

In order to examine whether values were missing completely at random, missing data analyses were performed. Little's MCAR test (Little, 1988) was significant $\chi^2(929) = 1093.66$, $p < .01$, suggesting that values might not be missing completely at random. Since some analysis techniques later conducted are not particularly robust to data absence, we imputed the scale's missing data using the Expectation-Maximization (EM) algorithm (Dempster et al., 1977). We were able to do this imputation as the percentage of missing data was lower than 3.5%.

2.4.2. Statistical Analysis

The Confirmatory Factor Analysis was used to assess the quality of adjustment of the proposed theoretical model to the correlational structure observed between the variables in the study sample. To this end, the adjustment indices were analyzed. In order to estimate the proposed model, the maximum likelihood method (MLE) was chosen, as it is the most commonly used method (Marôco, 2014), with additional Bootstrapping techniques to correct for non-normality.

The CFA of the model (Pinto et al., 2019) was performed through the analysis of the Quality of Fit Indices, including the normed ratio of Chi-square per degrees of freedom (χ^2/df ; Wheaton et al., 1977), the Comparative Fit Index (CFI; Bentler, 1990) and the Root Mean Square Error of Approximation (RMSEA; $P[rmsea \leq 0.05]$; Steiger & Lind, 1980; Steiger,

1990), Modified Expected Cross-Validation Index (MECVI; Browne & Cudeck, 1992). According to Marôco (2014), the overall adjustment quality of the hypothesized model to the observed covariance matrix is considered good if χ^2/df is less than 2, if the relative indices CFI and GFI are greater than .90 and if the RMSEA lays in the interval [.05;.08[with a probability $P[\text{rmsea} \leq 0.05]$, nonsignificant. We also resorted to Bollen–Stine bootstrap (Bollen & Stine, 1993) as it generates adjusted and corrected p values for model test statistics (Kline, 2016).

Concerning reliability, the internal consistency of the scale and each of its dimensions was analyzed by calculating Cronbach's alpha coefficient (α), considering values equal to or higher than .70 acceptable (Bland & Altman, 1997; Nunnally, 1978). Internal reliability refers to the ability of the CRS to consistently and replicable measure the four factors of interest. In order to determine the particular contribution of each item to the internal consistency of the dimension, Cronbach's alpha coefficients were determined by excluding the respective items and then comparing them to the overall alpha of the dimension. To assess each item's discriminative power or internal validity, the correlation coefficients were analyzed between each item and the total.

Convergent validity was assessed by composite reliability and the Average Variance Extracted (AVE; Fornell & Larcker, 1981), the amount of variance that is captured by the latent factor in relation to the amount of variance that can be accounted for by measurement error. Convergent validity can be deemed adequate whenever the AVE value is greater than .50 (Fornell & Larcker, 1981; Hair et al., 2019). Discriminant validity is achieved when the Average Variance Extracted (AVE) is greater than the Maximum Shared Squared Variance (MSV) (Hair et al., 2019).

In order to determine if the scale was invariant for men and women, measurement invariance was examined at two different levels: (1) configural invariance where the model configuration is the same for the different groups; (2) factor loading invariance where the magnitude of the factor loadings is equivalent for the different groups (Putnick & Bornstein, 2016). The second level of invariance was compared with the previous level to test for changes in the goodness of fit. The comparison was made using chi-square difference tests with a criterion of a $-.01$ change in CFI (Chen, 2008).

3. Results

3.1. Confirmatory Factor Analysis Results

The 30 items four-factor model (Pinto et al., 2019) adjusted to a sample of 226 primiparous mothers and fathers after bootstrap revealed an initial poorly fitted model. The theoretical model tested was composed of four latent factors (Coparenting Support, Coparenting Conflict, Coparenting Disagreement, Coparenting Undermining) and the respective manifest variables (30 items/ observed indicators) specified as belonging to a single factor without crossed loadings. The initial model (*Model 1*) presented weak adjustment quality indices, since the values deviate from the reference ranges [$N = 226$; $\chi^2(399) = 758.97$; $\chi^2/df = 1.90$; CFI = .86; GFI = .82; RMSEA = .06; $p[\text{rmsea} \leq .05] = .001$; MECVI = 4.05], please refer to Table 3.

By examining the factor loadings of the items, we found 3 items with factor loadings below .40 (item 5 “My partner will play with our child and leave dirty work to me”, item 12 “My partner will not trust my abilities as a parent” and item 19 “My partner will undermine my parenting”).

The modification indices (MI) were analyzed in order to specify the initial model and thereby find a better adjusted model for the present sample. The analysis of the regression weights for modification indices suggested that item 12 would be better suited for factor Undermining, rather than under factor Disagreement (Pinto et al., 2019), were the item is located in the original postnatal scale (Feinberg et al., 2012), therefore a causal relationship between Undermining and item 12 was established. The item had a modification index of 8.93. The *Model 2* obtained still presented poor adjustment indices [$N = 226$; $\chi^2(399) = 745.59$; $\chi^2/df = 1.87$; CFI = .87; GFI = .83; RMSEA = .06; $p[\text{rmsea} \leq .05] = .002$; MECVI = 3.99].

Further analysis of the regression weights for modification indices pointed to item 5 being more appropriately placed under factor Undermining and since that change was supported theoretically in a previous empirical study (Leal, 2022), a causal relationship between Undermining and item 5 was made. The item had a modification index of 6.17. Slight changes in adjustment indices could be seen for *Model 3* [$N = 226$; $\chi^2(399) = 738.86$; $\chi^2/df = 1.85$; CFI = .87; GFI = .83; RMSEA = .06; $p[\text{rmsea} \leq .05] = .004$; MECVI = 3.96].

Since CFI and RMSEA were still far from acceptable, we then inspected the modification indices pertaining to error correlations. With a modification index of 25.03 the

correlation between errors from item 9 and 24 was first established (*Model 4*) [$N = 226$; $\chi^2(398) = 711.44$; $\chi^2/df = 1.79$; CFI = .88; GFI = .84; RMSEA = .06; $p[\text{rmsea} \leq .05] = .018$; MECVI = 3.85]. These two items concur to determine the same dimension Support, which allowed the relationship of errors between the two observed variables. Subsequently, the errors from item 23 and 24, modification index of 18.22., were correlated (*Model 5*). [$N = 226$; $\chi^2(397) = 691.53$; $\chi^2/df = 1.74$; CFI = .89; GFI = .84; RMSEA = .06; $p[\text{rmsea} \leq .05] = .045$; MECVI = 3.78].

The final specification referred to the correlation between errors from item 9 and 22 (MI=14.27). Other modification indices suggested paths that didn't make sense from a substantive point of view and therefore, no further specifications were taken into consideration. The final *Model 6* presented overall appropriate fit, despite not being thoroughly good, [$N = 226$; $\chi^2(396) = 675.59$; $\chi^2/df = 1.71$; CFI = .89; GFI = .84; RMSEA = .06; $p[\text{rmsea} \leq .05] = .086$; MECVI = 3.71]. The Bollen–Stine bootstrap (Bollen & Stine, 1993) for the final model, with the generated adjusted p values for model test statistics, displayed a chi-square value of 527.39 ($\Delta \chi^2 = 148.2$) and the normed ratio of chi-square per degrees of freedom of 1.33 ($\Delta \chi^2/df = .38$).

Moreover, it is relevant to note that a second-order model where Coparenting was a latent variable presented a slightly better but similar fit, $\chi^2(398) = 675.60$; $\chi^2/df = 1.70$; CFI = .90; GFI = .84; RMSEA = .06; $p[\text{rmsea} \leq .05] = .098$.

After the model specification, it was necessary to calculate the parameter estimates, the statistics of the initial and the final first-order specified model (see Table 3 for all models' estimates and Appendices for through label on each model).

As can be seen in Table 3, the chi-square per degrees of freedom (χ^2/df) presented a value inferior to 2 (1.71 or 1.33 when considering Bollen-Stine values), indicating an acceptable adjustment when comparing the differences between the matrix predicted by the statistical program and the real matrix.

The CFI compares the discrepancy between the data and the more restrictive hypothetical model. Ideally, the index value should be greater than 0.90, and in the present study the CFI value was 0.89, indicating a nearly good adjustment of the data to the model.

All the estimated factor loadings were significant at $p < .01$. ranging from .30 to .83.

After the factor analysis, the results of the internal consistency analysis are presented next. Cronbach's alpha (Cronbach, 1951) in the total sample ($N = 226$) for the entire CRS-PV was .63. Cronbach's α coefficients for the four factors ranged from .59 to .91, as presented in Table 6. Three subscales scored above the widely accepted cut-off value of .70., however the

Coparenting Undermining subscale had a lower coefficient. A deletion of item 5 would translate to an increase in the alpha coefficient to .67, still below the ideal cut-off.

The subscales presented satisfactory composite reliability values with the exception of the Coparenting Undermining subscale (Coparenting Support = .91; Coparenting Conflict = .88; Coparenting Disagreement = .72; Coparenting Undermining = .65). The Average Variance Extracted (Fornell & Larcker, 1981) was problematic in 3 of the 4 factors, as only factor Conflict presented a value above .50. Displaying that the variables in Support, Disagreement and Undermining did not correlate well with each other within their factor.

Regarding Maximum Shared Squared Variance (MSV; Hair et al. 2010) all values were lower than the AVE, suggesting good discriminant validity.

Additionally, item-total scale correlations (see Table 5 for details) for all of the items ranged from .21 to .82, most exceeded .40, indicating good homogeneity with the exception of items 5, 12 and 19 that exhibited correlations of .21, .25 and .29 respectively (Field, 2005; Nunnally & Bernstein, 1994).

Table 3.

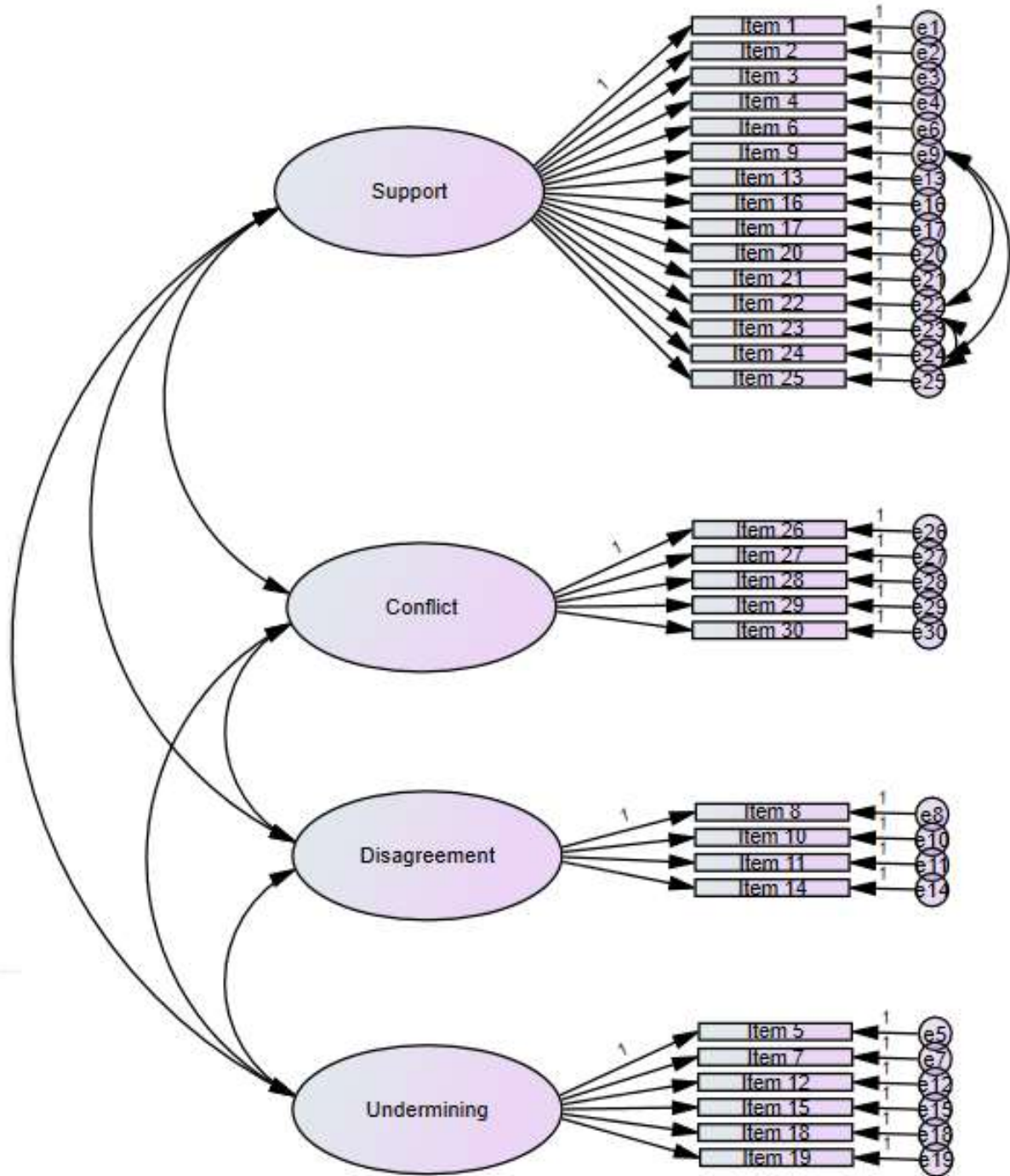
Results of confirmatory factor analysis for the measurement models

	$\chi^2(df)$	χ^2/df	CFI	GFI	RMSEA	p [rmsea ≤.05]	MECVI
<i>Model 1*</i>	758.97 (399)	1.90	.86	.82	.06	.001	4.05
<i>Model 2</i>	745.59 (399)	1.87	.87	.83	.06	.002	3.99
<i>Model 3</i>	738.86 (399)	1.85	.87	.83	.06	.004	3.96
<i>Model 4</i>	711.44 (398)	1.79	.88	.84	.06	.018	3.85
<i>Model 5</i>	691.53 (397)	1.74	.89	.84	.06	.045	3.78
<i>Model 6</i>	675.59** (396)	1.71**	.89	.84	.06	.086	3.71

Note. χ^2 = Chi square; *df* = Degrees of freedom; CFI = Comparative Fit Index; GFI= Goodness of Fit Index; RMSEA = Root Mean Square Error of Approximation; MECVI= Maximum Likelihood Expected Cross-Validation Index; ** Model 6 with Bollen-Stine Bootstrap:($\chi^2= 527.39$) ($\chi^2/df=1.33$).
*Explanation on each model specification available in the Appendices

Fig. 1

Four Factor Model of Prenatal Coparenting Relationship



3.2. Measurement Invariance Across Gender

As it concerns gender invariance, configural invariance was achieved as shown by the following model's adjustment. The unconstrained model had tolerable fit in both male ($n = 77$) and female ($n = 149$) sub-samples, suggesting configural invariance between men and women, $\chi^2(792) = 1371.85$; $\chi^2/df = 1.73$; CFI = .80; GFI = .74; RMSEA = .06; $p[\text{rmsea} \leq .05] = .011$, despite showing some bad adjustment indices (CFI and GFI). A table with the mean and standard deviation values according to gender and factor can be found in the Appendices (Table 8).

To test for factor loading invariance all the factor loadings were made equivalent for the two groups. Each factor had one indicator parameter fixed at one, namely items 1, 7, 8 and 30. The model presented poor adjustment: $\chi^2(818) = 1437.75$; $\chi^2/df = 1.76$; CFI = .79; RMSEA = .06; $p[\text{rmsea} \leq .05] = .004$, see Table 4.

Since we had a significant chi-square invariance test, we needed to appraise which indicators were differing across the groups. At first, we assessed the full model with four factors. Factor Support had four items that presented gender invariance; Factor Conflict had two invariant items, all items of factor Disagreement were invariant and factor Undermining showed three invariant items.

With the aim of gaining some statistical power we examined gender invariance for each factor separately: Factor Support continued to present four invariant items: item 2 "My relationship with my partner will be stronger after we had a child"; item 3 "My partner will ask my opinion on issues related to parenting"; item 16 "My partner will have a lot of patience with our child" and item 25 "Parenting will give us a focus for the future". For more information, please refer to Table 9.

Using this approach, factor Conflict presented two additional invariant items (27 and 29), totaling four items, making all items in the factor invariant. Factor Disagreement also presented gender invariance for all items.

Factor Undermining had four invariant items, one additional item in respect to those already found invariant in the full model (18): item 5 "My partner will play with our child and leave dirty work to me"; item 12 "My partner will not trust my abilities as a parent"; item 15 "My partner will try to show that she or he is better than me at caring for our child" and item 18 "When all three of us will be together, my partner sometimes will compete with me for our child's attention".

According to Hair et al. (2019), it could be considered that partial invariance was found, since two parameters per construct were found to be invariant. An assertion supported by taking into account that the commonly used criterion $\Delta CFI \leq 0.01$ (Cheung & Rensvold, 2002) has not been breached. However, the factor loading invariance model did not display an acceptable adjustment to the data, therefore these findings provide acceptable evidence for configurable invariance of the CRS-PV across gender.

Table 4.

Quality of model assessment according to gender and measurement invariance across gender

	$\chi^2(df)$	<i>p</i>	χ^2/df	<i>CFI</i>	<i>RMSEA</i>	<i>p</i>	$\Delta \chi^2$	ΔCFI	$\Delta RMSEA$
<i>Men</i> (<i>n</i> =77)	731.06 (396)	.00	1.85	.66	.11	.00	-	-	-
<i>Women</i> (<i>n</i> =149)	639.09 (396)	.00	1.61	.88	.06	.01	-	-	-
<i>Configural invariance</i>	1371.85 (792)	.00	1.73	.80	.06	.01	-	-	-
<i>Factor loading invariance</i>	1437.75 (818)	.00	1.76	.79	.06	.004	65.9	.01	.00

Note: χ^2 = Chi square; *df* = Degrees of freedom; *CFI* = Comparative Fit Index; *RMSEA* = Root Mean Square Error of Approximation.

4. Discussion

The aim of the present study was to examine the psychometric characteristics of the prenatal version of the Coparenting Relationship Scale, which was based on prior research conducted by Pinto and colleagues (2019), as well as Feinberg and colleagues (2012), in a sample of Portuguese primiparous mothers and fathers. By doing so, we aimed to refine and

contribute to a more comprehensive adaptation of the scale to the specificities of the prenatal stage.

For the most part, we successfully replicated Pinto and colleagues' structure (2019) with a sample of both expecting mothers and fathers. We maintained the four-factor structure: coparenting support, coparenting conflict, coparenting disagreement, and coparenting undermining.

The only changes made refer to the reallocation of items 5 and 12. Item 5 “My partner will play with our child and leave dirty work to me” was originally placed in Disagreement, a factor characterized by the divergences the dyad may face regarding parenting stances and practices. According to the data the item would be more congruent in factor Undermining, the sentence’s content does imply a sense of hindrance of the partner’s parenting by choosing not to partake in sharing childrearing responsibilities. Leal and colleagues (2022) also placed the item under Undermining in the version for sexual minority persons and eliminated it in the version for heterosexual persons because of low loadings. In our study it was the item with the lowest loading. The deletion of the item by previous studies (Costa et al., 2020; Lamela et al., 2018; Leal et al., 2022) and the deliberation to remove it from our study seems to underline its poor reliability, suggesting that the inclusion of the item in further analyses should be done with caution.

Similarly, item 12 “My partner will not trust my abilities as a parent” that belonged in Disagreement was moved to Undermining, depicting devaluation as a covert undermining of parental authority. Although the item did not make it to either of Leal et al.’s versions due to low communality values, it belonged to factor Undermining in the original CRS scale as well. It is worth noting that this item, along with item 5 and item 19, yielded loadings below .40.

The last change made to the model pertained to the error correlations between items 9-24, 23-24 and 9-22. These items fell within the same dimension of Coparenting Support and were correlated since their content was linked to the same topics: providing extra parenting support when needed, and demonstration of parenting validation and appreciation. We are familiar with the discussion of whether it is pertinent to covary errors (Hermida, 2015), and in this particular case we opted in favor of including them, as the content of the items were interrelated.

Since we have respecified the model, we have moved from model verification to exploration, therefore it should be noted that further studies will undoubtedly be needed to verify the respecified model.

All things considered, only a few alterations were made to the model by Pinto and fellow researchers. The differences encountered may be explained by the fact that the scale was developed as a measure of prenatal coparenting for fathers only and our sample also, and mainly, included mothers. Additionally, gestational age may also play a significant role as CRS-FPV recruited fathers in the first trimester of pregnancy (until the 14th week), contrasting with our average of 32 weeks, a rather more advanced stage of pregnancy. As gestation is punctuated by various constant changes on many levels, we propose that assessments separated by months may evaluate different phases of prenatal coparenting. Possibly later assessments would encounter couples confronted with a more imminent postpartum reality.

During the whole process of elaborating this work it became clear that there is still a number of concerns with the CRS scale for the perinatal period, hinting that perhaps the factors do not adequately explain variance in the indicators, as such, the adaptation to the perinatal period may require a different set of factors (e.g., supported by convergent validity scores). It may be worth paying particular attention to the Undermining scale that has been consistently demonstrating low(er) reliability across studies. Possibly, one reason why the Undermining scale does not have the same expression in the anticipation of coparenting could pertain to the reality that it would not be very adaptive for expecting parents to be considering that their partner will sabotage their parental work. Overall, our findings align with the recent work of Leal et al. (2022) in the sense that they bring to light the need to further reconsider and improve certain aspects of the CRS scale in the prenatal period. Since the cultural context for Pinto et al.'s (2019), Leal et al.'s (2022), and the present study is quite similar, comparisons are more easily drawn.

The lack of gender invariance (other than configural) in our data suggests that mothers and fathers appear to be interpreting and valuing items differently, in particular when it comes to supporting or undermining the partner's coparenting. This divergence seems especially prevalent in the Support domain, as the vast majority of the affirmations was different, while only one item differed in the Undermining domain.

The results of this study substantiate the idea that the extent to which one perceives their partner to be supporting the coparenting role differs between mothers and fathers. This aligns with other studies that have also found differential levels of parental support across gender (Murphy et al., 2017; Schoppe-Sullivan et al., 2008) where fathers showed higher instances of support for their partners than mothers did. Moreover, as there has been some evidence that mothers and fathers demonstrate support for each other in distinct ways, parents may need to actively recognize their partners' support and determine the type of aid that will

be personally most helpful to them, in order to better enhance coparenting success (Sheedy & Gambrel, 2019).

4.1. Implications, Limitations and Future Studies

The findings of this study have important implications especially for parenting programs: as researchers gain a deeper understanding of how parents experience this dyadic process, clinicians are able to tailor the preventative interventions to better address any specific challenges, and to highlight the valuable skills shared by first-time parents who are actively negotiating the coparenting relationship. As the sensitive years of a child's life overlap with the stresses of the family formation period, and the prenatal relationship outlines the contours of future coparenting, early coparenting preventive interventions are vital (Feinberg, 2002; Kuersten-Hogan, 2017). Thus, all research on the prenatal period provides essential insights into the actual needs of mothers and fathers.

Additionally, this self-report measure also constitutes a helpful tool for practitioners as a complement to therapeutic practice by allowing a multidimensional assessment of coparenting during pregnancy that can help support new parental dyads in working together as a team and identify early on areas that could benefit from improvement.

Despite the contributions mentioned above, this study has several limitations that should be considered when interpreting the results. First, a convenience sample was used through an online questionnaire, which may reduce the possibility of generalizing the results. Second, the sample was also heavily composed of participants with high levels of education, and it is also important to account for the significant discrepancy between the number of mothers ($n= 149$) and fathers ($n = 77$), close to half the ratio with fathers being under-represented. Third, the number of parents who did not intend on getting pregnant was rather low (16%), far from being an accurate depiction of current societal reality (39%) (Rodrigues et al., 2014). This may entail implications for the assessment of coparenting, as it is possible that couples who are still accommodating to the idea of pregnancy may have not had as much opportunity to explore coparental dynamics. In the future, it could be pertinent to consider this variable and attempt to mirror a closer- to- reality ratio.

Another distinct limitation was that our sample, due to the inclusion of nested data and due to its sample size did not allow for us to randomly split and cross-validate our analyses as it would be desired, consequently future replication of the model is indispensable.

During the study of invariance, it became evident that additional qualitative research would be a helpful contribution to the scale's refinement as to provide guidance on how to interpret the results of the scale according to parent gender. In our viewpoint, the understanding of relational phenomena, especially inherently complex ones as is the case for families, benefits from a combination of observational and self-report measures as they complement one another in assessing intricate interpersonal dynamics.

Another limitation of our study concerns the method of estimation used, as our data revealed evidence of substantial multivariate kurtosis, in such cases it is likely more appropriate for researchers to use alternative methods of estimation to the Maximum Likelihood estimator, such as the asymptotic distribution-free estimation (Browne, 1984) for huge sample sizes or the Satorra and Bentler correction procedure (1988). Unfortunately, neither option was plausible for the present research as the latter was not available on our SEM software of choice. However, having said that, bootstrapping is yet another valid option in the testing of models based on nonnormal data, but it is essential to be aware of preferred approaches.

We believe future studies should comparatively assess the degree of stability of the measure in the pre and postnatal period by resorting to a longitudinal design. In addition, future research on the scale should also analyse the relationship between mothers' and fathers' assessment of coparenting in the same coparenting dyad, as well as test its associations with other psychological constructs, using instruments currently validated for the Portuguese population. We opted to not include further validity tests as the structure of the scale was already quite fragile on its own. Furthermore, the field would benefit from an increase in the sociodemographic variability among participants in order to confirm the validity of CRS, for example by using multi-group confirmatory analyses.

Despite the existing limitations, this study preliminarily demonstrates that the Portuguese version of the CSR-PV meets a few psychometric quality indicators and may be used in research settings. A cautious use of the CRS-PV in clinical settings is recommended until further studies confirm its factor structure.

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Appendices

Table 3.

Label:

Model 1- Initial model;

Model 2- Item 12 moved to Undermining;

Model 3- Item 5 moved to Undermining;

Model 4- Correlation between errors from item 9 and 24 was established;

Model 5- Correlation between errors from item 23 and 24 was established;

Model 6- Correlation between errors from item 9 and 22 was established.

Table 5.

Descriptive statistics of the CRS-PV

	Mean	Standard Deviation	Item-total scale		
			correlations	Skewness	Kurtosis
Support					
1	5.81	0.50	.54	-2,78	7.93
2	4.84	1.37	.55	-1,21	1.11
3	5.73	0.72	.50	-3,26	11.50
4	5.73	0.66	.65	-2,96	10.21
6	5.12	1.02	.49	-1,22	1.46
9	5.08	1.20	.68	-1,41	1.46
13	5.45	1.10	.49	-2,89	9.93
16	4.97	1.32	.50	-1,22	0.76
17	5.39	1.01	.68	-1,76	2.58
20	5.40	1.14	.71	-2,45	6.41
21	5.66	0.69	.64	-2,4	6.65
22	5.49	0.93	.78	-2,12	4.72
23	5.32	1.13	.75	-2,26	5.40
24	5.31	1.10	.82	-1,87	3.23
25	4.95	1.44	.47	-1,51	1.78
Conflict					

26	1.49	1.60	.58	1.01	0.16
27	0.70	0.98	.72	1.76	4.37
28	0.45	0.82	.70	2.25	6.08
29	0.47	0.76	.68	2.19	7.01
30	0.42	0.76	.70	2.47	8.30
Disagreement					
8	1.61	1.60	.49	0.83	-0.32
10	1.58	1.65	.57	0.86	-0.39
11	1.30	1.65	.41	1.30	0.88
14	1.63	1.54	.59	0.85	-0.08
Undermining					
5	2.26	2.11	.21	0.53	-1.01
7	0.61	1.25	.44	2.61	6.86
12	0.57	1.34	.25	2.95	8.34
15	0.48	1.10	.54	3.17	11.06
18	0.41	0.92	.48	3.11	11.48
19	0.40	1.22	.29	3.50	11.77

Table 6.

Confirmatory Factor Analysis' Factor Bootstrap Loadings

Item	Factor Loadings			
	1	2	3	4
Coparenting support ($\alpha = .91$)				
1	.50			
2	.55			
3	.46			
4	.64			
6	.47			
9	.70			
13	.51			
16	.50			

17	.70	
20	.72	
21	.67	
22	.81	
23	.77	
24	.82	
25	.50	
Coparenting conflict ($\alpha = .83$)		
26	.62	
27	.79	
28	.83	
29	.78	
30	.80	
Coparenting disagreement ($\alpha = .72$)		
8	.56	
10	.70	
11	.52	
14	.74	
Coparenting undermining ($\alpha = .59$)		
5		.30
7		.49
12		.34
15		.71
18		.72
19		.32
Coparenting Relationship Scale—Prenatal Version ($\alpha = .63$)		

Table 7.*Correlations between CRS-PV dimensions*

	1.	2.	3.	4.
1. Support	-			
2. Conflict	-.37**	-		
3. Disagreement	-.34**	.47**	-	
4. Undermining	-.31*	.42**	.39**	-

Significant at $p < .001$ *Significant at $p < .01$ **Table 8.*Means and Standard Deviations according to gender and factor*

	Support		Conflict		Disagreement		Undermining	
Men	5.48	0.89	0.58	0.86	1.56	1.66	0.98	1.44
Women	5.28	1.07	0.76	1.03	1.51	1.59	0.75	1.29

Table 9.*Quality of model assessment according to factor*

Factor	
Support	$\chi^2 (207) = 493.99$; $\chi^2/df = 2.39$; CFI = .82; GFI = .84; RMSEA = .08; $p [rmsea \leq .05] < .01$; MECVI = 2.88
Conflict	$\chi^2 (20) = 65.49$; $\chi^2/df = 3.27$; CFI = .92; GFI = .90; RMSEA = .08; $p [rmsea \leq .05] = .001$; MECVI = 0.39
Disagreement	$\chi^2 (7) = 6.47$; $\chi^2/df = 0.93$; CFI = 1.00; GFI = .99; RMSEA = .00; $p [rmsea \leq .05] = .783$; MECVI = 0.15
Undermining	$\chi^2 (23) = 44.68$; $\chi^2/df = 1.94$; CFI = 0.88; GFI = .94; RMSEA = .07; $p [rmsea \leq .05] = .180$; MECVI = 0.38