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# Differential parenting and children's social understanding

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## Abstract

In the current study, a curvilinear association was examined between differential parenting and children's social understanding as measured using standardized assessments and behavioral observations. Social understanding was comprised of theory-of-mind and behavior indicating understanding of others' minds (i.e., cognitive sensitivity and internal state talk and reasoning during sibling interactions). Data came from a community sample of 372 children (51.6% males; *M* age = 5.57, SD = 0.77), their younger siblings (*M* age = 3.14, SD = 0.27), and their mothers who were observed in their homes. We hypothesized that in families with higher levels of differential parenting, both favored and disfavored older siblings would display poorer social understanding, but that disfavored children would be more negatively impacted. Results from a hierarchical regression analysis indicated an inverse linear effect, rather than a curvilinear relationship, between being favored by mother and siblings' social understanding. Specifically, disfavored older children showed higher levels of social understanding when interacting with their favored younger sibling. This relationship remained significant after controlling for variables such as age, SES, and language. Findings suggest that differential parenting plays a role in children's ability to understand others.

**KEYWORDS**
parent-child relations, social cognition, theory of mind

## 1 | INTRODUCTION

### 1.1 | The impact of differential parenting on children and sibling relationships

Differential parenting refers to the degree to which parents display unequal treatment toward their children in terms of the amounts of negativity, control, sensitivity, and warmth they direct to each child (Baker & Daniels, 1990; Plomin, 2011). Differential parenting has been researched extensively since Plomin and Daniels (1987) suggested that siblings

The current research has been conducted in accordance with guidelines on the ethics of research such as those published by the American Psychological Association and the British Psychological Society.

  

are more different than similar to one another, as a result of nonshared experiences in their environment. In the current study, we focused on differential sensitivity, operationalized as the difference in the amount of warmth, positivity, and sensitivity that parents direct to each child. This is one aspect of siblings' nonshared environment.

Research suggests that differential treatment may be driven both by child factors such as gender, age, and temperament, as well as parent factors such as social disadvantage and parental personality traits (Browne, Meunier, O'Connor, & Jenkins, 2012; Jenkins, McGowan, & Knafo-Noam, 2015; Jenkins, Rasbash, & O'Connor, 2003). Moderate amounts of differentiation may reflect sensitive parenting, as the parent adjusts his or her treatment of each child based on the child's distinctive needs (Kowal & Kramer, 1997; Meunier, Bisceglia, & Jenkins, 2012). However, higher levels of differential parenting can be problematic for children's development (Tamrouti-Makkink, Dubas, Gerris, & van Aken, 2004).

Findings regarding whether differential parenting negatively impacts the favored, disfavored or all children in the family have been inconsistent. Some studies show that children who are disfavored display more externalizing and internalizing behavior, as well as lower self-esteem (Dunn, Stocker, & Plomin, 1990; McHale, Updegraff, Jackson-Newson, Tucker, & Crouter, 2000; Scholte, Engels, de Kemp, Harakeh, & Overbeek, 2007). Disfavored siblings who engage in social comparisons with their favored siblings are likely to experience negative self-evaluation, which may lead to suboptimal functioning and compromised sibling relationships (Festinger, 1954; Shanahan, McHale, Crouter, & Osgood, 2008). Additionally, a few researchers report positive outcomes for favored siblings. For example, in a large adolescent twin and step-families study, Reiss and colleagues (1995) found that in families where one child received greater amounts of negativity, the favored sibling presented with less antisocial behavior. In families in which greater amounts of warmth were directed to one child, the sibling presented with more depressive symptoms. These authors named this phenomenon the "sibling barricade." Other studies have suggested that differential parenting may result in negative outcomes for *all* siblings in the family (Boyle et al., 2004; Meunier, Boyle, O'Connor, & Jenkins, 2013; Meunier et al., 2012). Authors explained these findings using the theory of distributive justice (Deutsch, 1985) proposing that both favored and disfavored children in a family may experience a negative emotional reaction when an inequality that is perceived as unjust occurs (Kowal, Kramer, Krull, & Crick, 2002). Indeed, siblings who received differential parental affection, regardless of being favored or disfavored, have been shown to have higher rates of interpersonal difficulty (i.e., romantic relationship stress and insecure attachment styles) throughout the lifespan (Rauer & Volling, 2007). These findings are consistent with Zervas and Sherman's (1994) conclusion that individuals who are treated equally within a family present enhanced self-esteem compared with those who are being either favored or disfavored. However, it should be noted that differential parenting does not appear to impact all children in a family equally. Specifically, Meunier and colleagues (2012) found that in families with high rates of differential treatment, all children were more likely to display oppositional behavior, but disfavored children were more oppositional than their favored siblings. That is, a curvilinear relationship of an asymmetrical U-shaped function between differential parenting and children's outcomes was evident, with a steeper slope for the disfavored child (Meunier et al., 2012).

In addition to impacting children's socioemotional outcomes, differential parenting has also been shown to influence how siblings treat one another (e.g., Volling & Belsky, 1992). In keeping with Social Learning Theory, parents and older siblings are most likely to be imitated if they are perceived as powerful and competent (Bandura, 1977). A child who consistently witnesses his or her parent directing high levels of negativity toward his or her sibling might replicate this harsh behavior when interacting with that sibling. This is consistent with Perlman and Ross's (1997) finding that children model parental control strategies during sibling conflicts. Thus, part of the erosion of the sibling relationship quality that is associated with differential parenting may be the result of children imitating their parents' maladaptive interactions. In the current study, the relationship between differential parenting and children's social understanding was examined in two different settings: an individual task and a collaborative task within the context of a sibling interaction.

## 1.2 | Differential parenting and social understanding

Advanced social cognitive skills such as understanding others' emotions and perspective-taking predict children's later social competence (Denham et al., 2003; Fenning, Baker, & Juvonen, 2011), whereas deficits in social cognition have

been found to be correlated with externalizing behavior (Denham et al., 2002) and peer rejection (Deković & Gerris, 1994).

Children's social cognitive skills are at least partially constructed through accumulated social experiences, specifically through parent–child interactions. To this end, Vygotsky (1931/1997) posited that children's cognitive abilities develop through an *internalization* process that results from multiple different social exchanges. Children are better able to internalize input from their social partners if it is tailored to their level of functioning. Such cognitively attuned input supports a broadening of children's social understanding (Fernyhough, 2008). Indeed, numerous studies demonstrate a link between parental sensitivity and children's sociocognitive development (e.g., Laranjo, Bernier, Meins, & Carlson, 2010). However, to our knowledge, no work has been done on differential parenting and children's social cognition. In the current study, we investigated the link between differential parenting and a global construct of social understanding. To do this, we focused on the following aspects of social cognition: (1) theory-of-mind, (2) cognitive sensitivity, and (3) internal state talk and reasoning skills. Theory-of-mind is a complex skill of understanding and predicting another's psychological state (e.g., feelings, beliefs, and desires; Premack & Woodruff, 1978). Advanced theory-of-mind capacity in children has been linked to social competence (Astington & Jenkins, 1995), whereas deficits in theory-of-mind are associated with psychopathology including autism and schizophrenia (Baron-Cohen, Leslie, & Frith, 1985). Cognitive sensitivity captures an individual's ability to correctly assess and respond to the knowledge and state of mind of their partner while working to reach a shared goal (Prime, Perlman, Tackett, & Jenkins, 2014b). Cognitive sensitivity is made up of behaviors that index building mutuality, mind-reading, and communicative clarity. Specifically, this is a measure of the extent to which children are sensitive to their partners' cues, provide positive feedback and promote turn-taking, and use verbal and nonverbal communication to provide the sibling with cognitively meaningful directions. Finally, internal state talk and reasoning reflect the child's ability to understand that they must explain, justify, and elaborate their responses to their interaction partner. This can occur as children play together, for example, when a child's request for blocks from their siblings is accompanied by *reasoning*: "I need this block because without it my castle will collapse." *Internal state talk* was also utilized in this sentence as the child expressed a desire (i.e., I *need*) and a statement of ownership (i.e., *my* castle; see Ruffman, Slade, & Crowe, 2002 for more examples).

There is documented overlap between the above three skills. For instance, internal state talk is associated with children's theory-of-mind development (Dunn, Brown, Slomkowski, Tesla, & Youngblade 1991; Ruffman et al., 2002). Additionally, children's theory-of-mind abilities have been linked to their use of scaffolding strategies and level of cognitive sensitivity (Davis-Unger & Carlson, 2008; Prime, Pauker, Plamondon, Perlman, & Jenkins, 2014a). Given the overlap between these constructs, and their dependence on understanding others' mental states, we explored whether theory-of-mind, cognitive sensitivity and internal state talk and reasoning were best represented as one overarching factor of "social understanding."

## 1.3 | The current study

The goal of the current study was twofold. First, we wanted to explore whether the three variables, theory-of-mind, cognitive sensitivity and internal state talk and reasoning, in fact represent one overarching latent factor (i.e., social understanding). Based on past evidence of overlap between these aspects of social cognition, we expected that they would form a single construct. Second, we were interested in examining whether differential parenting predicted, at a single time-point, children's social understanding, above and beyond covariates. Consistent with growing evidence suggesting that differential parenting negatively affects *all* children in a family, and disfavored children in particular (Boyle et al., 2004; Meunier et al., 2012; Meunier, Boyle, O'Connor, & Jenkins, 2013), an asymmetric U-shaped curvilinear association was hypothesized. Specifically, in families with higher rates of differentiation, we expected that all children would present lower levels of social understanding, with more negative effects for disfavored children. A number of covariates were included in the models to control for other aspects of the children's environments (e.g., SES) that are known to be associated with the development of social cognition (Astington & Jenkins, 1999; Holmes, Black, & Miller, 1996; Cutting & Dunn, 1999).

## 2 | METHOD

### 2.1 | Participants

The current study is part of a larger longitudinal birth-cohort study of genetic and environmental influences on children's socio-emotional development using a sibling design. Participants were recruited through the *Healthy Babies Healthy Children* program, run by Toronto and Hamilton Public Health, which contacts the parents of all newborn babies within several days of the newborn's birth. To be eligible, families had to have a newborn child (younger sibling) with a birth-weight over 1,500 g, a sibling who was less than 4-years-old (older sibling), an English-speaking mother and consent for videotaped observations in the home. Five-hundred and one families were enlisted. Using 2006 Canada Census Data, the sample was similar to the general population in terms of number of persons in the household and personal income, but had a lower proportion of non-intact families, fewer immigrants, and more educated mothers (Meunier et al., 2013).

Families were followed initially when the newborn child was 2 months old (first wave), again at 18 months (second wave), and at 3 years (third wave). Data from the third wave of data collection were used for the current study, which included 372 older siblings (called "target" children from this point forward; *M* age = 5.57 years, SD = 0.77, range 4–7.67) and their younger siblings (*M* age = 3.14 years, SD = 0.27, range 2.5–4.5). Approximately half (51.6%) of the target children were male. Data were gathered through use of parent-reported questionnaires and videotapes of mother-child (for each sibling) and sibling interactions. The age range of the older siblings represents a sensitive developmental period in theory-of-mind, whereas the younger siblings were at an age where theory-of-mind is not yet achieved by many children (Wellman, Cross, & Watson, 2001). As such, the older siblings were the focus of our study of individual differences in social understanding in relation to differential parenting.

### 2.2 | Measures

#### 2.2.1 | Social understanding

The following three outcome measures, theory-of-mind, cognitive sensitivity, and internal state talk and reasoning, represent independent but related aspects of social cognition. A factor analysis, described in the data analysis section below, was carried out to examine whether they are better represented individually or by one overarching factor.

#### 2.2.2 | Theory-of-mind

The Wellman and Liu (2004) scale was used to capture theory-of-mind understanding. This scale includes a series of tasks ordered in terms of difficulty with items targeting diverse desires and beliefs, knowledge and ignorance false-belief, belief-based emotion, and real-apparent emotion. Additionally, we included a second-order belief question (Astington, Pelletier, & Homer, 2002) to capture variability in children's performance at the top end of the age scale. Testing was stopped when children failed two consecutive tasks on the scale. All theory-of-mind tasks were administered during the home visit and were presented through stories that were enacted for children with the use of puppets and props (or pictures, i.e., second-order false-belief). For example, for a *contents-based false-belief task* a child was asked what he/she thinks was inside a Band-Aid box. Then the RA opened the box to show that it contains a pig figurine. Next, the child was shown a boy figurine and was told that this boy has never seen the contents of the box. The child was then asked: (1) "what does the boy think is inside the box, Band-Aids or a pig?" and (2) "did the boy see the contents of the box?" To receive credit the child needed to answer both questions correctly. For each of the tasks (12 in total), the child was given a score of 0 (fail) or 1 (pass). A mean was taken across tasks and the internal consistency of the scale was $\alpha = 0.81$. Higher scores on this scale reflect a more complex theory-of-mind.

Cognitive sensitivity and internal state talk and reasoning were coded based on the videotaped sibling interactions described next. Sibling pairs were filmed engaging in a cooperative building task (Aguilar, O'Brien, August, Aoun, & Hektner, 2001) during the home visit. Other members of the family were asked to allow the sibling dyads to interact independently. One stationary camera was used to film the interaction. Dyads were instructed to sit on a yoga mat

and use Duplo building blocks to build a model based on a design in 5 min. They were each only allowed to touch two of the four available colors of blocks to ensure collaboration for completion. There were more than 20 blocks in total. Children were permitted to touch more than one piece of their allocated color at a time. Interviewers were present in the room with the dyads during the task, but did not provide instructions beyond explaining the protocol. When the interviewers finished giving task instructions, they asked children to point to their assigned colors to ensure understanding. Interviewers were allowed to clarify the task instructions only once more in case of error. If children finished the design before 5 min had elapsed, they were given a second model, of similar complexity, to build. All children were stopped after five minutes, regardless of completion. The majority of dyads were engaged with the task for 80% or more of the five minutes. Cognitive sensitivity and internal state talk and reasoning were coded by two sets of independent coders based on children's behaviors during the completion of this task. All coders were blind to the hypotheses of the study.

### 2.2.3 | Cognitive sensitivity

The cognitive sensitivity measure (Prime, Perlman, et al., 2014) is made up of eleven items addressing three linked capacities of mutuality, mind-reading, and communicative clarity. Coders watched the 5-min film clip in its entirety and then rated the older sibling on a 5-point likert scale, ranging from "Not at all true" (1) to "Very true" (5) on each of eleven cognitive sensitivity statements. Items started with "This person is . . ." and examples included: sensitive to what his/her partner knows and/or understands; good at rephrasing what his/her partner does not understand; gives positive feedback to reinforce his/her partner; clear in his/her requests for help. The mean was taken across the 11 items and internal consistency of the composite was high ($\alpha = 0.89$). Coders included a mix of undergraduate and graduate students who were trained by an expert coder. Inter-rater reliability was tested by double-coding 10% of the interactions and reliability checks were carried out throughout the coding period to minimize drift. Inter-rater reliability on the composite score was good, $\alpha = 0.72$ and post-reliability scores were calculated by taking a mean of the coders' judgments.

### 2.2.4 | Internal state talk and reasoning

Using the videotaped interactions from the sibling interaction that are described above, a separate set of coders rated the target child's internal state talk and reasoning ability using an interval coding scheme similar to work done by Howes and Matheson (1992), Perlman and Fletcher (2012), and Volling, McElwain, and Miller (2002). Coders rated the presence (1) or absence (0) of internal state talk (i.e., desire, emotion, belief, and statement of ownership) and reasoning (e.g., justification, explanations) expressed by the child in each of fifteen 20-s snapshots. Scores were summed across variables (internal state talk [emotion, belief, desire, statement of ownership] and reasoning) and snapshots to yield one final score. However, due to a zero-inflated distribution, the final variable score was dichotomized (1 = presence, 0 = absence of any internal state talk and reasoning language). Because of the binary nature of all variables included in the internal state talk and reasoning construct, a polychoric factor analysis was conducted in Stata (SE 12.0 version) to measure the construct's internal consistency. Initial eigenvalues showed that the internal state talk and reasoning factor explained 82.0% of the variance. All five variables that comprise the internal state talk and reasoning construct showed factor loadings ranging between 0.37 and 0.7. Inter-rater reliability was assessed through double-coding 10–15% of total interactions (Kappa values = 0.86).

### 2.2.5 | Maternal sensitivity

Mothers were videotaped during the home-visit interacting with each child separately engaging in the 5-min building task described above, as well as in a 5-min free play period. Thus, differential sensitivity scores were calculated based on a total of 20 min of observation, 10 min per child. In the building task, children were assigned one of two models, which varied in complexity depending on children's age. Children older than 4.5 years were assigned a model comprised of Lego blocks rather than the Duplo blocks that were given to younger participants. The task rules and timeframe remained identical. Both the free play and the building interactions occurred before the sibling task took place, and younger siblings' interactions with mother always occurred prior to the interactions between the older sibling and

mother. During free play, mother and child were instructed to sit in front of the camera on a yoga mat and play as they normally would with no toys (Aguilar et al., 2001). The two interactions were coded using a scale integrating the Coding of Attachment-Related Parenting (CARP; Matias, Scott, & O'connor, 2006) measure, and the Parent Child Interaction System (PARCHISY; Deater-Deckard, Pylas, & Petrill, 1997), assessing three domains of responsivity (i.e., sensitivity, mutuality, and positive control). The sensitivity code (CARP) evaluated the extent to which mothers promoted their children's autonomy, showed warmth, provided appropriate verbal and non-verbal feedback, and were able to take their children's perspectives. The mutuality code (CARP) targeted the mother-child dyad and assessed reciprocity in the dyad dialogue, affect sharing, joint engagement in the task, and open body posture. The positive control code (PARCHISY) was indexed by the mother's ability to direct her child through the task using praise, open-ended questions and clarifications. Each of these codes was rated on a 7-point-likert scale with a higher score indicating higher levels of the targeted behavior. A final maternal sensitivity score was computed by calculating the mean for all three measures across the two tasks with each child (composite internal consistency $\alpha = 0.79$). Reliability was assessed through double-coding of 10–25% of total interactions (composite $\alpha = 0.90$). The validity of this measure is supported by its previous use in several other studies (e.g., Prime et al., 2015; Meunier et al., 2013; Wade, Moore, Astington, Frampton, & Jenkins, 2015).

### 2.2.6 | Differential sensitivity

The differential sensitivity variable was derived from the maternal sensitive responding composites for each child described above. A previous study by Jenkins and colleagues (2003) found age to be a strong predictor of differential parenting, with age differences between children in a family explaining 24% of the variance in differential treatment. To partial out the effect of age on differential sensitivity, a multilevel regression was performed using a 2-level model in Stata (SE 12.0 version) with maternal sensitivity (raw score) as the dependent variable and with children's age as the predictor. Regression residuals were then saved and represented the amount of maternal sensitivity directed to each child after accounting for the effects of age. Next, younger siblings' residual values were subtracted from those of the older siblings to produce the older siblings' differential sensitivity score, after accounting for the effects of age. Higher scores on this measure represent that the older sibling is favored (and younger sibling is disfavored).

### 2.2.7 | Curvilinear effect—differential sensitivity quadratic term

A quadratic term for differential parenting was computed by squaring each child's differential sensitivity score. To reduce multicollinearity between the linear and the quadratic differential sensitivity terms (Aiken & West, 1991), the quadratic term was computed using centered differential sensitivity values.

### 2.2.8 | Independent control variables

#### Demographics

Child gender (with boys as the reference category), age (measured in years), sibling age gap (measured in years), socioeconomic status, and mother's education level were included as covariates. Socioeconomic status was comprised of household income and assets. To assess assets, the following questions were used: "how many rooms do you have in your house"; "do you own or co-own this home/apartment/unit, even if still making payments"; "do you own or co-own a car, even if still making payments." Household annual income was also reported ($M$ = \$65,000–\$74,999). Assets and income items were standardized and a mean was computed ($\alpha = 0.79$) with higher scores indicating higher socioeconomic status. Mothers' education level was measured using self-reports on the number of years of education completed, including secondary and post-secondary education. The mean education level was 15.53 years (SD = 2.47, range 10–22). Child language ability was also included in the model, measured using the Peabody Picture Vocabulary Test, Third Edition (PPVT-III; Dunn & Dunn, 1997). This standardized test of receptive language skills asks children to identify an orally presented word by pointing to the corresponding picture out of four available options. An overall standardized score was generated for each child according to his/her age ($M$ = 107.1, SD = 13.47).

## 2.3 | Data analysis

An exploratory factor analysis was performed to test whether there is an underlying latent construct (i.e., social understanding) for theory-of-mind, cognitive sensitivity and internal state talk and reasoning. Next, a hierarchical regression was conducted to examine the relationship between differential parenting and the social understanding construct. In step 1, the following variables were entered in the model: gender, age, age-gap, mother education level, socioeconomic status, child language, and maternal sensitivity toward target child. In step 2, differential sensitivity was added as a predictor. In step 3, the quadratic term for differential sensitivity was entered in the model to test for a curvilinear relationship between the predictor and outcome variable.

## 2.4 | Missing data

Missing data on mothers' reports, observational, and child testing measures ranged from 0 to 17%. Multiple imputation analysis was conducted to avoid loss of participants (Rubin, 2003) and to reduce bias in the estimates of parameters (Allison, 2003). Multiple imputation analysis was performed using SPSS (version 23) and generated five complete data sets that included the covariates, predictors and outcome variables. Each hierarchical regression analysis was run across all five data sets and produced pooled estimates for all coefficients. Pooled R-square values that were not computed by the software were averaged across the imputed data sets (Schlomer, Bauman, & Card, 2010).

# 3 | RESULTS

## 3.1 | Preliminary analyses

Differential sensitivity scores showed that older siblings were disfavored in 47% of cases. Variable means, standard deviations, bivariate pearson, and point biserial coefficients are presented in Table 1. Pearson, point biserial, and phi coefficient values present weak to moderate correlations and ranged from −0.10 to 0.78 between all variables included in the analysis. Bivariate associations showed that the social understanding composite was related to children's age, age gap, language skills, mother's years of education, socioeconomic status, and differential sensitivity. Specifically, older children, siblings who had a larger age gap, children with more advanced language skills, children whose mothers had more years of education, children who came from higher socioeconomic background, and disfavored children were more likely to demonstrate better social understanding skills. Similar patterns of correlations, although of different strengths, were found for theory-of-mind, cognitive sensitivity and internal state talk and reasoning. The exception is that sibling internal state talk and reasoning had fewer significant correlations. Theory-of-mind, cognitive sensitivity and internal state talk and reasoning were significantly correlated with correlations ranging from $.23^{**} \leq r \leq .4^{**}$ ($p < .01$).

## 3.2 | Latent social understanding construct

A factor analysis was conducted to test whether the three social cognition variables (theory-of-mind, cognitive sensitivity, internal state talk and reasoning) were independent or made up a single factor. Prior to entering them into the factor analysis, they were first standardized due to their different nature (internal state talk and reasoning is categorical and the other two variables are continuous). An exploratory factor analysis was performed in SPSS (Version 21). Kaiser-Meyer-Olkin measure of sampling adequacy was at the recommended value of 0.6, and Bartlett's test of sphericity was significant ($\chi^2$ (3) = 94.82, $p < .001$). The diagonals of the anti-image correlation matrix were all above 0.5, supporting the inclusion of each item in the factor analysis. Finally, the communalities were between 0.15 and 0.57. Maximum likelihood extraction method was utilized. Initial eigenvalues indicated a one-factor solution that explained 35.6% of the variance with factor loading ranging between $0.45 \leq r \leq 0.74$. These results support the aggregation of theory-of-mind, cognitive sensitivity, and internal state talk and reasoning to create the social understanding factor score.

**TABLE 1** Bivariate pearson/point biserial/Phi correlations, means, and standard deviations

| Measures | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | *M* | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Child age | – | | | | | | | | | | | | | 5.57 | 0.77 |
| 2. Age gap | .94** | – | | | | | | | | | | | | 2.45 | 0.72 |
| 3. Child gender | .08 | .06 | – | | | | | | | | | | | – | – |
| 4. Child language | −.02 | −.02 | −.02 | – | | | | | | | | | | 107.51 | 13.44 |
| 5. Mother education | .01 | .01 | −.03 | .29** | – | | | | | | | | | 15.56 | 2.48 |
| 6. SES (assets, income) | −.07 | .03 | .15 | .4** | .88** | – | | | | | | | | 0.03 | 0.71 |
| 7. Mother sensitivity | −.10* | −.10 | .06 | .38** | .33** | .41** | – | | | | | | | 4.25 | 0.85 |
| 8. Differential sensitivity | −.13* | −.07 | .12* | .06 | .02 | .06 | .55** | – | | | | | | 0.07 | 0.43 |
| 9. Cognitive sensitivity | .28** | .21** | −.1* | .15** | .18** | .21** | .12* | −.17** | – | | | | | 2.58 | 0.71 |
| 10. Sibling internal state talk and reasoning | .16** | .12* | −.04 | .17** | .06 | .09 | .08 | −.11* | .40** | – | | | | 0.86 | 0.35 |
| 11. Theory-of-mind | .47** | .47** | .01 | .32** | .14* | .20** | .15** | −.04 | .32** | .23** | – | | | 4.54 | 2.09 |
| 12.Social understanding standardized composite | .42** | .36** | −.02 | .26** | .14* | .23** | .15** | −.15* | .78** | .75** | .71** | – | | −0.01 | 0.75 |
| 13 Differential sensitivity-quadratic term | −.06 | .00 | .11* | 01 | .05 | .04 | −.00 | −.06 | −.06 | −.03 | −.02 | −.05 | – | 0.76 | 1.04 |

*$p < .05$, **$p < .01$.

**TABLE 2** Summary of hierarchical regression analysis examining the role of differential sensitivity in predicting social understanding

| Social understanding | *B* | $SE_B$ | $\beta$ |
|---|---|---|---|
| Covariates | | | |
| Child gender | −0.063 | 0.033 | −0.080 |
| Child age | 0.357 | 0.098 | 0.417** |
| Age gap | −.002 | 0.100 | −0.002 |
| Mother education | 0.003 | 0.037 | 0.004 |
| Socioeconomic status | 0.063 | 0.042 | 0.084 |
| Child language skills | 0.126 | 0.038 | 0.169*** |
| Maternal sensitivity | 0.164 | 0.045 | 0.220*** |
| Predictor | | | |
| Differential sensitivity | −0.178 | 0.041 | −0.240*** |
| Curvilinear effect | | | |
| Differential sensitivity-quadratic term | −0.026 | 0.034 | −0.035 |

**$p < .01$; ***$p < .001$.

### 3.3 | Effects of differential parenting on social understanding

Results for the hierarchical regression examining the relationship between differential sensitivity and social understanding can be found in Table 2. In the first step, the covariates accounted for a significant amount of the variance in the model, $R^2 = .27$. Being older and having stronger language skills were associated with higher scores on the social understanding composite. In step 2, entering differential sensitivity explained an additional 3.8% of the variance in the model, $R^2$ *change* = .038. Results showed that the more an older sibling was disfavored, the higher their levels of social understanding. In addition, with differential sensitivity included in the model, the maternal sensitivity covariate became statistically significant. That is, children who received higher levels of maternal sensitivity showed higher levels of social understanding. Lastly, in step 3, the differential sensitivity quadratic term did not explain any additional variance in the model, $R^2$ *change* = .001. These results suggest that differential sensitivity does not have a curvilinear effect on children's social understanding. The above findings indicate that disfavored older siblings display higher levels of social understanding when interacting with their favored younger sibling. In comparison, favored older siblings, display lower social understanding skills when interacting with their disfavored younger sibling.

## 4 | DISCUSSION

Using a large sample of Canadian children ages 4–7 years, this study explored whether theory-of-mind, cognitive sensitivity and internal state talk and reasoning form a single, latent construct. This included theory-of-mind tasks as well as two observational measures that were administered during sibling interactions. Thus, this study employed a multiple-measure approach to evaluating social understanding in a large sample of children. We also set out to examine the relationship between differential parenting and children's social understanding. To date, no other research in the differential parenting literature has addressed this relationship.

We found that our three measures of social cognition formed a single construct, best characterized as child social understanding. Our results indicated that differential parenting contributed to differences in children's social understanding skills above and beyond child characteristics (i.e., age, gender, language), siblings' age-gap, socio-economic status, and child-specific maternal sensitivity. Specifically, older disfavored children showed better social understanding when interacting with their younger favored siblings. However, older favored children displayed poorer social

understanding skills while interacting with their younger disfavored siblings. Below we describe several mechanisms that may underlie the relationship between differential parenting and this latent structure.

Consistent with Distributive Justice Theory (Deutsch, 1985), we expected that higher rates of differential parenting would be detrimental for social understanding of both the favored and disfavored children. Our results did not confirm this expectation. Although differential parenting predicted lower social understanding for favored children, this was not the case for disfavored children, who showed *higher* rates of social understanding. Such findings can be explained through the lens of Social Learning Theory (Bandura, 1977). Perhaps when parents are more sensitive to their younger child, the older sibling models this behavior by directing higher levels of social understanding toward the favored younger sibling.

These findings are also consistent with the presence of a *partner effect*, wherein an individual elicits certain types of responses from different interaction partners (Kenny & La Voie, 1984). Among other factors, differential parenting has been found to be child driven. For example, children who are more negative, aggressive and irritable are more likely to receive more negative treatment from their partners (Pike, McGuire, Hetherington, Reiss, & Plomin, 1996; Jenkins, McGowan, & Knafo-Noam, 2016). Disfavored older siblings may elicit less sensitive behavior from their mothers and less social understanding from their younger siblings. Favored younger siblings may pull for more sensitive responding, both from their mothers and older siblings. Future research should consider examining a wider array of children's characteristics, such as internalizing and externalizing behavior, to further explore potential "partner effects" in explaining this pattern of results.

Another explanation for the current findings may relate to disfavored children's exposure to talk about the mind. Hughes, Jaffee, Happe, Taylor, Caspi, and Moffitt (2005) found that children from families with differential parenting are likely to engage in conflicts and discussions regarding preferred treatment. Such discussions have been linked to accelerated theory-of-mind ability (Dunn & Slomkowski, 1992). Further support for this process is provided by studies that demonstrate an association between exposure to family members' internal state-talk as well as emotional discourse and children's social cognitive abilities (Dunn et al., 1991; LaBounty, Wellman, Olson, Lagattuta, & Liu, 2008). Thus, disfavored children may have more opportunities to engage in linguistic exchanges (e.g., conflicts, discussions regarding preferred treatment) that elicit internal state-talk. Repeated opportunities for such discussions may better attune children to others' states of mind, and may help explain our finding that disfavored older siblings are better at understanding others than favored older siblings, who may have fewer opportunities for engaging in mind-related talk.

Results from this study are consistent with previous research findings of key predictor variables of social cognition. For instance, the observed link between maternal sensitivity and children's social understanding adds to previous research demonstrating the role of mother's mind-mindedness in children's social cognition (e.g., Meins et al., 2002). Consistent with past research (e.g., Wellman et al, 2001), age was the strongest predictor of social understanding, accounting for 14% of its variance. This may be driven by the complex task demands of social understanding, which requires integration of several prosocial skills (see Prime, Pauker, et al., 2014a). Further, child language skills were shown to predict older siblings' social understanding. Language has previously been shown to play a central role in the development of theory-of-mind (Astington & Jenkins, 1999). Additionally, adequate language skills are required to score well on both theory-of-mind tasks and our internal state talk and reasoning measure. Finally, child gender was found to be a significant predictor with girls showing higher skills in this domain than boys. This is consistent with past findings (e.g., Bosacki, 2000; Walker, 2005).

## 5 | LIMITATIONS

Given the cross-sectional and correlational nature of our data, we are unable to draw conclusions regarding directionality of the relationship between differential parenting and social understanding. Moreover, due to age constraints in our sample, we were only able to explore the social understanding of older siblings, so our results cannot be generalized to younger siblings.

Due to resource constraints, we were not able to observe all children within each family, nor were we able to observe fathers' interactions with their children. This restricts our ability to speak to the family dynamics in larger families (>2 children). This may be an important avenue to explore, as larger households have been associated with enhanced theory-of-mind skills (Jenkins & Astington, 1996). In addition, to contain costs and burden for families, cognitive sensitivity and internal state talk and reasoning were collected based on brief 5-min interactions between siblings.

Nevertheless, the observed social interactions in our study were structured and standardized and based on work by previous researchers that has linked performance on these tasks to more generalized skills (Prime et al., 2015; Meunier, Boyle, O'Connor, & Jenkins, 2013; Wade et al., 2015). For example, in a study conducted by Prime, Pauker, et al. (2014) the observational measure of cognitive sensitivity was used to show the relationship between sibship size and children's vocabulary ability as a function of sibling relationship quality. Thus, our results can provide useful information about family dynamics, individual differences in behaviors within the family, and children's development.

Despite these limitations, the current study provides useful insights about the relationships between different aspects of social cognition and the role of differential parenting in children's social understanding. Interestingly, for this ability, being favored by mother is associated with worse outcomes for children. This contributes yet another piece of evidence about the complexity of the role of differential parenting in children's wellbeing.

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