

**Parents' Perceptions of their Children's Lie Telling in the Context of Sibling Relationships**

by

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Parents' Perceptions of their Children's Lie Telling in the Context of Sibling Relationships

An oral defense of this thesis took place on July 16<sup>th</sup>, 2021 in front of the following examining committee:

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The above committee determined that the thesis is acceptable in form and content and that a satisfactory knowledge of the field covered by the thesis was demonstrated by the candidate during an oral examination. A signed copy of the Certificate of Approval is available from the School of Graduate and Postdoctoral Studies.

**ABSTRACT**

Familial influences on children's deception are understudied. This thesis examined children's lie telling in the context of sibling relationships by surveying parents on the types of lies told by children in the sibling context (e.g., pro- and antisocial), the quality of the sibling relationship, and parent socialization (e.g., encouragement and punishment) of lie telling. Children's lies were "rare" in the sibling context, and antisocial lies were more frequent than prosocial lies. Sibling Conflict was positively and significantly predictive of pro- and antisocial lies in the sibling context; Sibling Warmth was not a significant predictor of either lie type. Parent encouragement was "very rare", and punishment was "occasional." Parent encouragement and punishment were significant, positive predictors of pro- and antisocial lies in the sibling context. These findings highlight how siblings and parents can potentially influence children's lie telling.

**Keywords:** lie telling; siblings; sibling lie telling; developmental psychology; social development

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## **STATEMENT OF CONTRIBUTIONS**

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“Long story short, I survived” –T.S.

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## Parents' Perceptions of their Children's Lie Telling in the Context of Sibling Relationships

### CHAPTER 1. INTRODUCTION

Research has demonstrated that most children grow up with at least one sibling (Statistics Canada, 2017) and that siblings spend more time with one another than with any other family member, including parents (Dunn, 2002; McHale, Updegraff, & Whiteman, 2012). Furthermore, siblings have been shown to be advantageous for children's development in several ways (see White & Hughes, 2017, for a review). For example, having a sibling can be a buffer against both internalizing and externalizing disorders in childhood (Buist, Dekovič, & Prinzie, 2013). However, research has also demonstrated that siblings can act as models of antisocial behaviour (e.g., Jones, Offord, & Abrams, 1980) and thus have negative effects on child development.

Although not always antisocial in nature, lying is often considered one of the earliest antisocial behaviours to emerge (Evans & Lee, 2013; Loeber, Green, Lahey, Christ, & Frick, 1992). The cognitive and, to a lesser extent, social correlates of children's lie telling have been the subject of much empirical research (e.g., Talwar, 2018). However, only two studies to date have examined the influence of siblings on children's lie telling (Nagar, Williams, & Talwar, 2018; O'Connor & Evans, 2018). Furthermore, these studies merely examined the *existence* of a sibling on one sibling's lie telling behaviour in an experimental task investigating antisocial lies to protect oneself. As such, prior studies have been severely limited in investigating potential sibling influences on children's lie-telling. What is needed is a much broader picture of lie telling in the context of sibling relationships – one that considers different types of lies (e.g., antisocial, prosocial), as well as aspects of the sibling relationship and family more generally (e.g., sibling relationship quality, parent socialization of lie telling). Therefore, the current thesis addressed the following research questions: (1) How common is lie telling, and what types of lies do children

tell in the context of sibling relationships?; (2) Is sibling relationship quality associated with children's lie telling in the context of sibling relationships?; and (3) How often and how do parents socialize children's lie telling in the context of sibling relationships, and is parent socialization associated with children's lie telling in the sibling context? These questions were addressed by surveying parents of at least two children between the ages of 5 and 12. Next, the background literature on this topic is reviewed, including the development of lie telling in children, the relatively limited research on lie telling in the context of the sibling relationships, and evidence concerning parent socialization of lie telling in children.

### **1.1. The Development of Lie Telling in Children**

Research indicates that children's lie telling changes as they develop in terms of its frequency, the underlying motivation for their lies (e.g., antisocial, prosocial), and its sophistication. Early research on children's deception has demonstrated that children as young as 3-years-old are capable of telling lies to protect themselves following a transgression (Lewis, Stanger, & Sullivan, 1989). Indeed, a large body of research indicates that children's earliest lies are antisocial in nature, such as those that are told in order to conceal wrongdoing (e.g., Evans & Lee, 2013; Williams, Leduc, Crossman, & Talwar, 2017). This antisocial lie telling tends to develop alongside various cognitive abilities, such as theory of mind and executive functioning (e.g., Leduc, Williams, Gomez-Garibello, & Talwar, 2017). Therefore, the onset of antisocial lie telling among children is widely considered to be a developmental milestone (Talwar, 2018). However, Talwar and Crossman (2011) explain that antisocial lies do not increase throughout *all* of development; rather, antisocial lie telling peaks during adolescence and declines afterward in adulthood.

Although antisocial lies appear to be the first type of lie that children tell, research suggests that very young children also tell prosocial lies (sometimes known as “white lies”), which are typically told to be polite or to protect someone’s feelings. For example, Talwar, Murphy, and Lee (2007) examined prosocial lie telling among 3- to 11-year-olds. They found that children’s age was a significant predictor of prosocial lie telling, such that as age increased, the tendency to tell a prosocial lie also increased. However, a large majority (72%) of the preschool aged-children (i.e., 3- to 5-year-olds) were able to tell a prosocial lie. This finding suggests that, while antisocial lies might develop first, prosocial lies develop shortly thereafter with many children beginning to tell them in their preschool years.

In addition to the general frequency with which children lie, there also appear to be age-related changes in children’s lies to protect someone else, a lie type that may be particularly relevant in the sibling context. For example, Bottoms, Goodman, Schwartz-Kenney, and Thomas (2002) examined secrecy in the context of mother-child relationships among 3- to 6-year-olds. They found that older children (5 to 6-year-olds) were more likely than younger children (3 to 4-year-olds) to withhold information about playing with a toy when they were asked by their mother to do so. Another study by Tye, Amato, Honts, Devitt, and Peters (1999) examined 6- to 10-year-olds’ willingness to explicitly lie for a parent. Tye et al. observed that 69% of children falsely accused a research assistant of theft at the instruction of their parent. Furthermore, 56% of children in a different experimental condition falsely accused a research assistant of theft at the instruction of their parent even after they observed their parent committing the theft. These findings suggest that older children are more likely than younger children to lie or omit information to protect another person, including family members. However, there is no empirical research on lie telling to protect a sibling specifically. This is something worthy of investigation

because the ages at which lie sophistication improves is similar to the ages at which children begin to understand family loyalty (Leibig & Green, 1999). Therefore, questions about lying to protect a sibling were included in the current study, and both antisocial and prosocial lie telling was examined.

The sophistication with which children lie also improves with development (Talwar, 2018). More precisely, children learn how to *maintain* their lies when asked follow-up questions about their initial lies. For example, O'Connor and Evans (2018) found that, among 80 3- to 8-year-olds, 62% were able to successfully maintain their lie when asked a follow-up question in an experimental paradigm. That is, as children's age increased, they were more likely to conceal a toy's identity when asked follow-up questions about their peeking behaviour. Studies have generally found that children's lie maintenance sophistication (often called "semantic leakage control") sees significant improvements around 7 years of age (Talwar & Crossman, 2011). Among younger children (3- to 4-year-olds), however, Bender, O'Connor, and Evans (2017) found that only 40% of the children who lied about peeking at a toy were able to successfully maintain their lie when asked a follow up question (i.e., "What do you think the toy under the box is?").

In sum, as children age, they are better able to tell *and* maintain multiple types of lies, developments that are often attributed to improvements in their cognitive functioning (e.g., executive functioning, theory of mind; Leduc et al., 2017; Williams, Moore, Crossman, & Talwar, 2016). Antisocial lie telling appears to develop slightly earlier than prosocial lie telling. There is a great deal of research on the cognitive correlates of children's lie telling. However, as reviewed next, empirical research on the social correlates of children's lie telling is relatively

sparse by comparison. The purpose of this study is to build on the current literature by providing new information on a potentially important social influence on children's lie telling – siblings.

## **1.2. Social Influences on Children's Lie Telling**

Lie telling is a social skill (Lee, 2013). And yet, comparatively few studies have investigated the potential social influences on children's lie telling. Furthermore, much of the extant literature on social influences focuses on parental influences such as the role of parenting style on children's lie telling (e.g., Ma, Evans, Ying, Xianming, & Fen, 2015; Popliger, Talwar, & Crossman, 2011).

**1.2.1. Parent influences on children's lie telling.** Parental “influences” on children's lie telling are conceptualized differently depending on the source. For example, in one study on parental influences of children's lie telling, the researchers used the term *socialization*, which was further conceptualized as and measured via parent's beliefs about and punishment of lie telling (Lavoie, Leduc, Crossman, & Talwar, 2016). In another study by Malloy, Mugno, Waschbusch, Pelham, and Talwar (2019), parent influence was operationalized as both *encouragement* and *punishment* of lie telling. In line with both Lavoie et al. and Malloy et al.'s operational definitions, parent influences on children's lie telling is broadly referred to as “socialization” throughout this thesis. Furthermore, in the current study, “socialization” was broken down into more specific categorizations of parent *encouragement* and *punishment* of lie telling in the sibling context. This will be discussed in greater detail later; next, an overview on the existing literature on parent socialization of children's lie telling is provided.

Lavoie et al. (2016) examined how parents' beliefs and punishment of lying behaviour related to their children's lie telling. Parents of 3- to 6-year-olds completed a survey concerning their moral judgements of lie telling, what they verbalize to their children regarding lie telling,

and the degree to which they think lie telling is acceptable. The researchers separated parents' beliefs and socialization practices into two different categories: (1) that lying is acceptable some of the time, or (2) that lying is never acceptable. The frequency of children's lie telling was measured using an observational method; namely, parents recorded the lies they caught their children telling over a 2-week period in a journal. Lavoie et al. found that children whose parents endorsed lying some of the time told a greater frequency of lies than children whose parents believed lying to never be acceptable. In their study, parents rarely endorsed punishing their children's lies. These findings led the researchers to conclude that parents' beliefs about and socialization of lie telling are a type of social influence on children's lie telling.

In another study, Malloy et al. (2019) surveyed 96 parents of 5- to 10-year-olds, half of whom had been diagnosed with a Disruptive Behaviour Disorder (DBD). Results revealed a number of differences in how parents of typically developing (TD) children and parents of children with a DBD reported encouraging and punishing their children's lie telling. For example, they found that parents of TD children reported being (1) *more* likely to encourage dishonesty and (2) *less* likely to punish lie telling than parents of children with a DBD. However, parental tendencies to encourage dishonesty or punish lie telling did not differ based on children's age. These findings suggest that parents may alter the messages they convey about honesty and dishonesty to their children based on children's individual characteristics, although surprisingly age was not one of these characteristics. Their findings concerning punitive responses to children's lie telling are noteworthy because other research has found that punitive environments may foster dishonesty in children (e.g., in school; Talwar & Lee, 2011). Thus, it seems plausible that parent punishment of lie telling may be associated with an increase in children's lies in the sibling context, a hypothesis that will be tested in the current thesis.

However, previous research has generally only focused on relations between punitive environments and antisocial lies and has not focused on children's lies in the sibling context specifically.

Dykstra, Willoughby, and Evans (2020) surveyed parent-child dyads about honesty-targeted parenting strategies (e.g., discussing the benefits of honesty and the consequences of dishonesty with their children), parental modeling of dishonesty, and children's and adolescents' self-reported antisocial and prosocial lying behaviours. The researchers found that neither parenting strategies nor parent modeling predicted youths' self-reported lie telling. That is, neither discussing the positive aspects of honesty or consequences of dishonesty, nor parents' own lie telling tendencies, were significantly related to children's and adolescents' antisocial, prosocial, or overall frequency of lie telling. However, Dykstra et al. only examined parents' perceptions of their children's pro- and antisocial lying in general; they did not examine lie telling in the sibling context. Furthermore, the lies examined were adolescents' self-reported lies rather than parent-reported lies, with the latter being the focus of the current study.

Taken together, the research on parent influences on children's lie telling indicates that parents indeed attempt to socialize children's honesty and dishonesty and that this socialization may affect children's lying behaviour, at least in some circumstances. These findings also highlight, more generally, the potential role of familial influences as a type of social influence on children's lie telling. Very little research has examined another potentially important familial influence on children's lie telling – that of siblings. It is critical to examine the role of sibling influences on children's lie telling including how often and what types of lies children tell in the context of sibling relationships, whether sibling relationship quality is associated with children's lies in the sibling context, and how parents may socialize dishonesty in the context of their

children's sibling relationship (e.g., by encouraging one child to lie to the other about the existence of a fictional character like the Tooth Fairy or to avoid revealing that one child had a special treat and the other did not). The contexts and situations in which parents may socialize lie telling among siblings specifically have yet to be examined empirically. The current study aims to bridge this gap by surveying parents about how they socialize their children's lie telling, and how this may be associated with lie telling in the sibling context. In doing so, one of the goals of the current study was to help inform future research in this area and to help inform parents about their children's development.

**1.2.2. Sibling influences on children's lie telling.** Sibling relationships are experienced by a large majority of children (Statistics Canada, 2017) and appear to be an important social influence on child development in general (McHale et al., 2012). Sibling relationships are unique because they share elements of peer relationships in the sense that they can be egalitarian in nature but also involve some hierarchical elements (e.g., between older and younger siblings), thus making them particularly interesting as contexts for studying social and moral behaviours like lie telling (Dunn, 1983). Yet, lie telling has been surprisingly neglected in the sibling literature, with much focus instead on tattling, a form of truth-telling in which children report minor rule violations (Ingram & Bering, 2010; Ross & Den Bak-Lammers, 1998; Yucel & Vaish, 2018).

To date, only two studies have focused specifically on sibling influences on children's lie telling (Nagar et al., 2019; O'Connor & Evans, 2018). Both of these correlational studies examined whether the existence of a sibling affected whether young children (2- to 5-year-olds and 3- to 8-year-olds, respectively) lied to protect themselves after breaking a study rule (peeking at a toy after being told not to) and their skill at maintaining these lies in response to

follow-up questions. Nagar et al. (2019) found that having an older (but not younger) sibling predicted children's tendency to lie after transgressing on this laboratory task. However, the existence of a sibling was unrelated to lie maintenance. O'Connor and Evans (2018) found that having a younger sibling predicted whether children peeked at the toy (i.e., whether they transgressed in the first place) but not whether they lied about it subsequently. Although whether children lied was unrelated to having a sibling in their study, children who had a younger sibling were better able to *maintain* their lies in response to follow-up questions.

Both studies demonstrate that siblings may be an important influence on children's lie-telling, but limitations must be noted. For example, the researchers failed to consider aspects of the sibling relationship (e.g., relationship quality), family functioning (e.g., how parents socialize dishonesty), or contextual factors (e.g., the underlying motivation for the lie such as whether it was antisocial or prosocial) that may affect lie telling, particularly in the sibling context. Additionally, both studies focused solely on children's antisocial lies about their own transgressions using one particular experimental paradigm – the temptation resistance paradigm. More research on sibling influences on children's lie telling is sorely needed to better understand potential sibling influences on children's lie telling specifically and the development of children's deception more generally. This thesis will build on current literature by considering these important contextual factors, and by measuring parents' perceptions of the different *types* of lies that their children tell in the sibling context (i.e., pro- and antisocial lies). Ultimately, bridging these gaps will help to contribute to future research (e.g., by helping to design experimental paradigms of children's lie telling) and will help to inform parents about their children's development (e.g., by beginning to determine a 'baseline' for children's lie telling in the sibling context).

**1.2.3. Sibling relationship quality.** As previously mentioned, siblings can act as a model for antisocial behaviour (Jones et al., 1980). For example, Criss and Shaw (2005) found that older siblings sometimes engaged in ‘deviancy training’ with their younger siblings, which in turn increased the younger siblings’ antisocial behaviours. In the same study, Criss and Shaw also found that greater sibling conflict was a positive and significant correlate of antisocial behaviour. Bank, Burraston, and Snyder (2004) examined sibling relationship quality as a predictor of antisocial behaviour and peer difficulties among adolescent boys. They found that higher levels of sibling conflict amplified the boys’ risk for antisocial behaviour, but not for peer difficulties. Furthermore, a meta-analysis by Buist et al. (2013) revealed that having a high-quality sibling relationship was associated with fewer internalizing and externalizing problems, but low levels of sibling relationship quality were associated with increased internalizing and externalizing problems among youth.

Overall, given that there is research evidence suggesting that sibling relationship quality can affect children’s and youths’ antisocial behaviour, it seems reasonable to expect that sibling relationship quality may also influence lie-telling, which is generally considered to be an undesirable – and sometimes an antisocial – behaviour (Rowe, 2014), in the sibling context. However, potential links between sibling relationship quality and lie telling in the sibling context, a focus of the current study, have yet to be examined empirically.

### **1.3. The Current Study**

The purpose of the current study was to examine children’s lie telling in the context of sibling relationships. This thesis addressed the following research questions: (1) How common is lie telling in the sibling context, and what types of lies do children tell in the context of sibling relationships?; (2) Is sibling relationship quality associated with children’s lie telling in the

context of sibling relationships?; and (3) How often and how do parents socialize children's lie telling in the context of sibling relationships, and is parent socialization associated with children's lie telling in the sibling context? These questions were addressed by surveying parents about their children's lie telling behaviours in the sibling context, their children's sibling relationship quality, and how they socialized their children's lie telling in the sibling context. To test the study's hypotheses, several questionnaires online were administered to parents of multiple children between the ages of 5 and 12.

First, it was hypothesized that parents would report the frequency of their children's lie telling as rare to occasional in the sibling context and that parents would report prosocial lies as being more frequent than antisocial lies in this context (H1). This hypothesis was based, in part, on Malloy et al.'s (2019) finding that parents reported their children's lie telling as "just a little" frequent on a scale from 1 (Not at all frequent) to 4 (Very much frequent). Therefore, it can be argued that "rare" to "occasional" on the 6-point scale from the current study was the equivalent to "just a little" from Malloy et al.'s 4-point scale. In addition, Malloy et al. also found that parents of typically-developing children reported that their children told a greater frequency of prosocial lies (in comparison to antisocial lies), and Talwar et al. (2016) found that 6- to 12-year-olds evaluated prosocial lies significantly less negatively than antisocial lies. Therefore, it was reasonable to predict that parents would report a greater frequency of prosocial lie telling in the sibling context based on this previous research.

Second, it was hypothesized that parents' reports of the sibling relationship quality would be a significant predictor of lie telling in the context of sibling relationships. More specifically, a lower sibling relationship quality (as measured by greater Sibling Conflict) would positively predict antisocial lie telling (H2a) and negatively predict prosocial lie telling in the sibling

context (H2b; Criss & Shaw, 2005). Furthermore, a higher sibling relationship quality (as measured by greater Sibling Warmth) would negatively predict antisocial lie telling (H2c) and positively predict prosocial lie telling in the sibling context (H2d).

Finally, and similar to H1, it was expected that parent socialization (i.e., punishment and encouragement) of lie telling would be rare to occasional in frequency (H3a). It was also expected that *both* parent punishment *and* encouragement of lie telling would be positively predictive of pro- and antisocial lie telling in the sibling context (H3b). Both hypotheses 3a and 3b are based on previous research that has demonstrated that parents generally teach their children that lying is never acceptable, but that prosocial lies, such as lies to protect other people, are sometimes acceptable (Lavoie et al., 2016). Hypothesis 3b is also based on previous work from Talwar and Lee (2011) which suggests that a punitive environment might increase children's lie telling. Therefore, it seemed reasonable to predict that *both* encouragement and punishment would be associated with more lie telling in the sibling context.

## 2. METHOD

### 2.1 Participants

Parent/legal guardian participants in the United States and Canada ( $n = 433$ , hereafter referred to as “parents”) completed several questionnaires using the Qualtrics online survey administrator. Parents were recruited using several different methods. First, invitations to participate were emailed (Appendix A) to parents who had previously expressed interest in participating in research studies at Brock University (i.e., Growing with Brock Lab) or Ontario Tech University (i.e., Development, Context, and Communication Lab). Parents who were recruited through these university laboratories comprised of 11.5% of the entire sample ( $n = 50$ ). Second, participants were recruited via social media postings on Facebook and Twitter ( $n = 55$ ; 12.7% of the sample). Third, participants were recruited using Amazon’s Mechanical Turk platform (MTurk;  $n = 328$ ; 75.8% of the sample).

Eligible parents had at least two children (i.e., siblings) who were both between the ages of 5 and 12-years-old. This range was chosen because lie telling becomes considerably more frequent during these ages, and children’s lies also become more complex and difficult to detect (Evans & Lee, 2011; Talwar & Lee, 2002). Furthermore, in this age range, children develop a better understanding of family loyalty (Leibig & Green, 1999), trust, and secret keeping within the context of relationships (Rotenberg, 1991), and learn to understand the consequences associated with disclosing someone else’s wrongdoing (Lyon, Ahern, Malloy, & Quas, 2010; Malloy, Quas, Lyon, & Ahern, 2014). Taken together, these developments make it particularly interesting to study lie telling within the context of sibling relationships among 5- to 12-year-olds.

For the purposes of this study, siblings were defined as children who primarily lived in the same home on a full-time basis (i.e., most of the time). If parents had more than two children who fit the eligibility criteria, they filled out the survey according to their two *oldest* children between the ages of 5 and 12. There were no other eligibility criteria related to demographic information (e.g., race, socio-economic status, gender, etc.). Among participants who were recruited through the university laboratory databases, a reminder email was sent to parents 17 days after the original invitation to participate.

**2.1.1. Participant inclusion/exclusion criteria.** In addition to the required age range across all three samples, additional participation requirements for MTurk workers were applied to help ensure high quality data. More specifically, participation required that all MTurk workers had a minimum of 500 previously approved Human Intelligence Tasks (HITs) and a minimum of a 95% HIT approval rating from other MTurk requesters. These particular participation requirements have been outlined in previous published papers (e.g., Robinson, Rosenzweig, Moss, & Litman, 2019).

Although data were collected from 433 parents, not all of these responses were included in the final data set. For inclusion in the final data set, participants had to correctly answer at least three of four attention check questions that were embedded throughout the survey (e.g., “Select ‘4’ for this item”) and complete at least 80% of the survey. Three-hundred and sixty-three participants met these criteria (83.8% of the total sample). According to a power analysis using 90% power, an alpha of .05, and a predicted medium effect size ( $d = 0.46$ ; Malloy et al., 2019), this study required at least 360 participants to reach statistical significance. This power analysis was conducted with the G\*Power software (Faul, Erdfelder, Lang, & Buchner, 2007),

with an *a priori* power analysis for a repeated measures ANOVA (with 4 groups) and a linear bivariate regression. Therefore, the final sample size of 363 was sufficient.

**2.1.2. Description of the final sample.** The final sample ( $n = 363$ ) included  $n = 41$  (11.3%) for the university lab sample (all Canadian parents);  $n = 15$  (4.13%) for Canadian social media participants;  $n = 12$  (3.31%) for American social media participants;  $n = 284$  (78.24%) for American MTurk participants; and  $n = 11$  (3.03%) for Canadian MTurk participants.

On average, the older sibling was 9.46 years old ( $SD = 2.06$ ;  $n = 210$ , 57.9% boys), and the younger sibling was 6.85 years old ( $SD = 1.87$ ;  $n = 183$ , 50.4% boys; Table 1). The average age gap between the siblings in years – as measured by the older child’s age minus the younger child’s age – was approximately two and a half years ( $M = 2.59$ ,  $SD = 1.57$ ). With regards to the sibling *dyad*, 185 (51%) of the pairs were boy/girl gender pairs, 74 (20.4%) were girl/girl pairs, and 104 (28.7%) were boy/boy pairs. A large proportion of the older ( $n = 268$ , 73.8%) and younger ( $n = 265$ , 73%) siblings were White (Table 1). The nature of the sibling relationship was overwhelmingly full siblings of different ages ( $n = 297$ , 81.8%), with smaller proportions who were half siblings ( $n = 26$ , 7.2%) twins ( $n = 23$ , 6.3%), or step siblings ( $n = 4$ , 1.1%). Most of the older ( $n = 270$ , 70.3%) and younger ( $n = 291$ , 77.4%) siblings had no special needs. However, among both the older ( $n = 52$ , 13.5%) and younger ( $n = 33$ , 8.8%) siblings who had special needs, Behavioural/Emotional disorders (e.g., ADHD) were the most common (see Table 1).

Parent participants were primarily female ( $n = 227$ , 62.5%;  $n = 135$ , 37.2% male;  $n = 1$ , 0.3% other) and White ( $n = 285$ , 78.5%), and many were between the ages of 36-40 years old ( $n = 129$ , 35.5%; see Table 2). Most of the participants were the children’s mother ( $n = 231$ , 63.6%;  $n = 128$ , 35.3% father;  $n = 4$ , 1.1% other relationship). Parents also reported their employment status both before and after COVID-19 lockdown restrictions were put in place (Table 2).

Table 1  
*Older Sibling (OS) and Younger Sibling (YS) Characteristics*

Characteristics	Older sibling		Younger sibling	
	<i>n</i>	%	<i>N</i>	%
Age				
5	13	3.6	129	35.5
6	21	5.8	63	17.4
7	48	13.2	46	12.7
8	35	9.6	38	10.5
9	46	12.7	45	12.4
10	61	16.8	31	8.5
11	65	17.9	9	2.5
12	74	20.4	2	0.6
Ethnicity				
Arab	1	0.3	1	0.3
Asian	24	6.6	21	5.8
Black	29	8	27	7.4
Indigenous	1	0.3	1	0.3
Latin American	5	1.4	9	2.5
Mixed Race	35	9.6	39	10.7
White (Caucasian)	268	73.8	265	73
Special needs				
None	270	70.3	291	77.4
Physical	15	3.9	21	5.6
Developmental	24	6.3	21	5.6
Behavioural/Emotional	52	13.5	33	8.8
Sensory-impaired	9	2.3	3	0.8
Autoimmune disorder	8	2.1	3	0.8
Other	6	1.6	4	1.1

Table 2  
*Parent Demographic Characteristics*

Characteristics	<i>n</i>	%
Parent age		
20-25	6	1.7
26-30	34	9.4
31-35	84	23.1
36-40	129	35.5
41-45	66	18.2
46+	44	12.1
Parent ethnicity		
Arab	1	0.3
Asian	28	7.7
Black	31	8.5
Indigenous	0	0
Latin American	9	2.5
Mixed Race	9	2.5
White (Caucasian)	285	78.5
Parent employment status – Pre- COVID-19 lockdown		
Employed full time, primarily outside the home	254	70.0
Employed full time, primarily work from home	39	10.7
Employed part time, primarily outside the home	19	5.2
Employed part time, primarily work from home	16	4.4
Not employed	27	7.4
Other	8	2.2
Parent employment status – Post COVID-19 lockdown		
Employed full time, primarily outside the home	134	36.9
Employed full time, primarily work from home	146	40.2
Employed part time, primarily outside the home	11	3.0
Employed part time, primarily work from home	26	7.2
Not employed	36	9.9

Other	10	2.8
Parent education level		
No certificate/no high school diploma	1	0.3
High school graduate	17	4.7
Partial college	33	9.1
Standard college or university graduation	208	57.3
Graduate or professional training	102	28.1
Income category		
Less than \$15,000	6	1.7
\$15,000 to \$25,000	8	2.2
\$25,000 to \$35,000	24	6.6
\$35,000 to \$45,000	36	9.9
\$45,000 to \$55,000	42	11.6
\$55,000 to \$75,000	70	19.3
\$75,000 to \$100,000	75	20.7
Over \$100,000	102	28.1

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Parents were primarily working full time outside of the home *prior* to COVID-19 ( $n = 254$ , 70%) but full time from home once COVID-19 restrictions were put in place ( $n = 146$ , 40.2%). The sample was highly educated, with 57.3% ( $n = 208$ ) of participants being a college or university graduate and 28.1% ( $n = 102$ ) having graduate or professional training (Table 2). Nearly one-third of the sample had an annual household income of over \$100,000 ( $n = 102$ , 28.1%; see Table 2).

## 2.2. Procedure

Parent participants first provided informed consent by agreeing to continue to the online survey after reading the consent form (Appendix B). Participants then provided basic demographic information (Appendix C) about themselves and their two children. Next, parents completed three questionnaires: (1) a modified version of the Attitudes about Honesty and Dishonesty Scale (Malloy et al., 2019), (2) a modified version of the Sibling Relationship Questionnaire (Furman & Buhrmester, 1985), and (3) questions concerning their children's antisocial behaviours (Appendices D, E, and F). Upon completion of the study, parents were thanked and debriefed (Appendix G). Participants who were recruited from the laboratory databases and social media platforms had the opportunity to enter into a drawing for one of two \$50 Amazon gift cards. Both American and Canadian participants who were recruited via MTurk were paid \$2 USD for their participation.

## 2.3. Materials

**2.3.1. Demographic questionnaire.** Parents provided information about their gender, relationship to the children for whom they were answering the survey about (e.g., mother, father), racial/ethnic background, age, education level, occupation, employment status, and combined household income. Parents also provided demographic information about their

children. Specifically, parents provided the genders, ages, birthdays (year and month), and racial/ethnic backgrounds for each child. Additionally, parents indicated the nature of the sibling relationship between their two children (e.g., twins, full siblings, stepsiblings, etc.). The full demographic questionnaire is in Appendix C.

**2.3.2. Attitudes about Honesty and Dishonesty.** Parents also completed a modified version of the Attitudes about Honesty and Dishonesty Scale (AHDS; Malloy et al., 2019). The original AHDS is a 68-item measure that examines parents' lie telling behaviours, their attitudes and beliefs about lie telling in general and in relation to their child, and parents' perceptions of their children's lie telling. The AHDS also asks parents questions about secret keeping, poses open-ended questions, and asks parents to state their opinions on a series of hypothetical vignettes that contain different scenarios of sibling lie telling. However, for the purpose of this study, lie telling was the sole focus; the open-ended questions, items concerning secret keeping, and vignettes were not considered. These items and questions can be viewed in Appendices H and I.

Several ADHS items were added or adapted to capture lie telling within the specific context of sibling relationships. Parents responded to each item on a 6-point Likert scale (1 = Never; 2 = Very Rarely; 3 = Rarely; 4 = Occasionally; 5 = Frequently; and 6 = Very Frequently). Parents were allowed to select "prefer not to answer" as a response to each item. As a result, this thesis included a modified 94-item measure of the original AHDS. However, only a subset of the items was of interest for the thesis and are described in detail next.

***Parents' perceptions of their children's lie telling in the sibling context.*** These items concerned parents' perceptions of the frequency and types of lies their children tell in the sibling context. For many of these items, parents responded twice – once for each child in the sibling

dyad. More specifically, parents responded to items about different lie types and how frequently they observe their children telling these types of lies in the context of sibling relationships.

Parents were given the following instructions: “On a scale from 1 (Never) to 6 (Very Frequently), how often do [Child 1] / [Child 2] tell the following types of lies in the context of their sibling relationship?”. Parents then responded to the following types of lies: to be polite to their sibling, to spare their sibling’s feelings, to protect their sibling from harm/getting into trouble, to avoid conflict in the family, to prevent their sibling from learning information (for example, about the Tooth Fairy or that they missed out on a treat), to protect him/herself from harm/getting into trouble, to trick or manipulate their sibling, to harm their sibling/get their sibling in trouble, to obtain a reward (for example, money, toys), to make a good impression on their sibling, and lies of omission (i.e., lies that leave out the “full story”, also known as part truths).

Mean prosocial sibling and mean antisocial sibling lie scores were calculated separately for the older sibling (OS) and younger sibling (YS). With regards to *prosocial* sibling lies, the following items were averaged: lies to be polite to their sibling, lies to spare their sibling’s feelings, lies to protect their sibling from harm/getting into trouble, lies to avoid conflict in the family, and lies to prevent their sibling from learning information (for example, about the Tooth Fairy or that they missed out on a treat) (Malloy et al., 2019). Outcome measures included: (1) ***older sibling’s (OS’s) mean prosocial sibling lies***; (2) ***younger sibling’s (YS’s) mean prosocial sibling lies***; and (3) a ***mean prosocial score of the sibling dyad***, which averaged the responses to the above items for *both* the OS *and* YS. Each of these composite measures showed high levels of internal consistency ( $\alpha = .86$ ,  $\alpha = .88$ , and  $\alpha = .92$ , respectively).

With regards to *antisocial* sibling lies, the following items were averaged separately for the OS and YS: lies to protect him/herself from harm/getting into trouble, lies to trick or manipulate their sibling, lies to harm their sibling/get their sibling in trouble, lies to obtain a reward (for example, money, toys), lies to make a good impression on their sibling, and lies of omission (i.e., lies that leave out the “full story”, also known as part truths). Outcome measures included: (1) *OS’s mean antisocial sibling lies*; (2) *YS’s mean antisocial sibling lies*; and (3) a *mean antisocial score of the sibling dyad*, which averaged the responses to the above items for *both* the OS *and* YS. Each of these composite measures also demonstrated high levels of internal consistency ( $\alpha = .88$ ,  $\alpha = .87$ , and  $\alpha = .93$ , respectively).

***Parent socialization of lie telling in the sibling context.*** Parents also responded to items concerning their socialization of lie telling in the sibling relationship. These items inquired generally about how they socialize lie telling with their children (i.e., parents did *not* answer these items separately for each child). Parents responded, on a scale from 1 (Never) to 6 (Very Frequently), to the following socialization items: “I encourage my children to lie in some situations”, “I encourage my children to tell the truth”, “I speak to my children about the importance of honesty”, and “I punish my children if I catch them lying to me”.

Parent socialization of lie telling included scores concerning ***parent encouragement of lie telling*** and ***parent punishment of lie telling*** (Malloy et al., 2019). Regarding parent encouragement of lie telling, the following items were averaged to create a mean score of parent encouragement of lie telling: “I encourage my children to lie in some situations”, “I encourage my children to tell the truth”, and “I speak to my children about the importance of honesty,” with the latter two items reverse coded. Higher scores indicated a greater frequency of parent encouragement of lie telling. Reliability analyses indicated that this composite measure showed

an acceptable level of internal consistency ( $\alpha = .62$ ). The parent punishment of lie telling score consisted of a single item: “I punish my children if I catch them lying to me” (Malloy et al., 2019).

**2.3.3. Sibling Relationship Questionnaire (SRQ).** In order to examine whether sibling relationship quality influenced lie telling in the sibling context, parents completed a modified version of the Sibling Relationship Questionnaire (SRQ; Furman & Buhrmester, 1985). The original SRQ is a 42-item measure that asks *children* about the quality of the relationship with their sibling. Some sample items include, for example: “How much do you and this sibling tell each other everything?”, “How much do you admire and respect this sibling?”, “How much do you and this sibling disagree and quarrel with each other?”. In the original SRQ, children provide their responses on a 5-point Likert scale (1 = Hardly at all, 2 = Not too much, 3 = Somewhat, 4 = Very much, 5 = Extremely much). For the current thesis, each item was re-worded so that parents answered the items about their children (e.g., “How much do your children tell each other everything?”, “How much do your children admire and respect each other?”, “How much do your children disagree and quarrel with each other?”). Parents provided their responses using the same 5-point Likert scale as in the original SRQ.

There is varying evidence regarding the number of factors that derive from the SRQ. Derkman, Scholte, Van der Veld, and Engels (2010) examined the factorial and construct validity of the SRQ and found that two factors emerged: warmth/closeness and conflict. However, an earlier study by Kramer and Baron (1995) identified three factors within the SRQ: warmth, agonism, and competition/rivalry. Although it appears that a different number of factors can emerge from the SRQ, it is evident that warmth and conflict are the two most commonly found factors (e.g., Buist & Vermande, 2014; Kouvava & Antonopoulou, 2020). The *warmth*

scale concerns the extent to which siblings have a caring and loving relationship with one another. It includes 13 items: “pride, protectiveness, comfort, loyalty, help, kindness, respect, affection, sharing worries, talking to each other, playing together, sharing, and teaching” (Kramer & Baron, 1995, p. 97). This scale has been shown to have strong internal consistency ( $\alpha = .86$ ; Kramer & Baron, 1995). The *conflict* scale measures how often siblings fight, argue, and express hostile emotions towards one another. It consists of 8 items: “fighting over objects, fighting over territory, arguing, aggression, anger, threats, unresolved conflicts, and issuing prohibitions to control the sibling’s behavior” (Kramer & Baron, 1995, p. 97). This scale has also been shown to have strong internal consistency after averaging items ( $\alpha = .84$ ; Criss & Shaw, 2005).

**Factor analysis.** Given the inconsistencies in the number of factors that have emerged from the SRQ in previous research, an exploratory factor analysis was conducted to assess which factors emerged in the data. Since this factor analysis used a Principal Components Analysis, a Varimax rotation was used to help classify the SRQ data. First, the factorability of all 33 SRQ items were analysed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. The KMO measure was .92, which exceeds the standard accepted value of .50 (Kaiser, 1974). Second, the factorability of the SRQ items were also analysed using Bartlett’s Test of Sphericity, which was significant ( $\chi^2(528) = 6806.1, p < .001$ ). Taken together, these factorability assessments provided strong evidence that a factor analysis was appropriate for all 33 items.

Next, a principal component analysis revealed, using an eigenvalue cut-off of one (Samuels, 2016), that the first five factors accounted for 30.52%, 19.1%, 5.43%, 3.53%, and 3.22% of the variance, respectively. However, because the third, fourth, and fifth factor only had eigenvalues of just over one (1.79, 1.17, and 1.06, respectively), the scree plot was also

examined (see Figure 1). The scree plot clearly demonstrated that the point of inflection levelled off at the third component number, thus indicating that two factors should be retained for further analyses. This observation, coupled with the fact that the eigenvalues for the third, fourth, and fifth factor were only marginally above a value of one, is why two factors were retained from the SRQ for the primary analyses (Buist & Vermande, 2014; Kouvava & Antonopoulou, 2020).

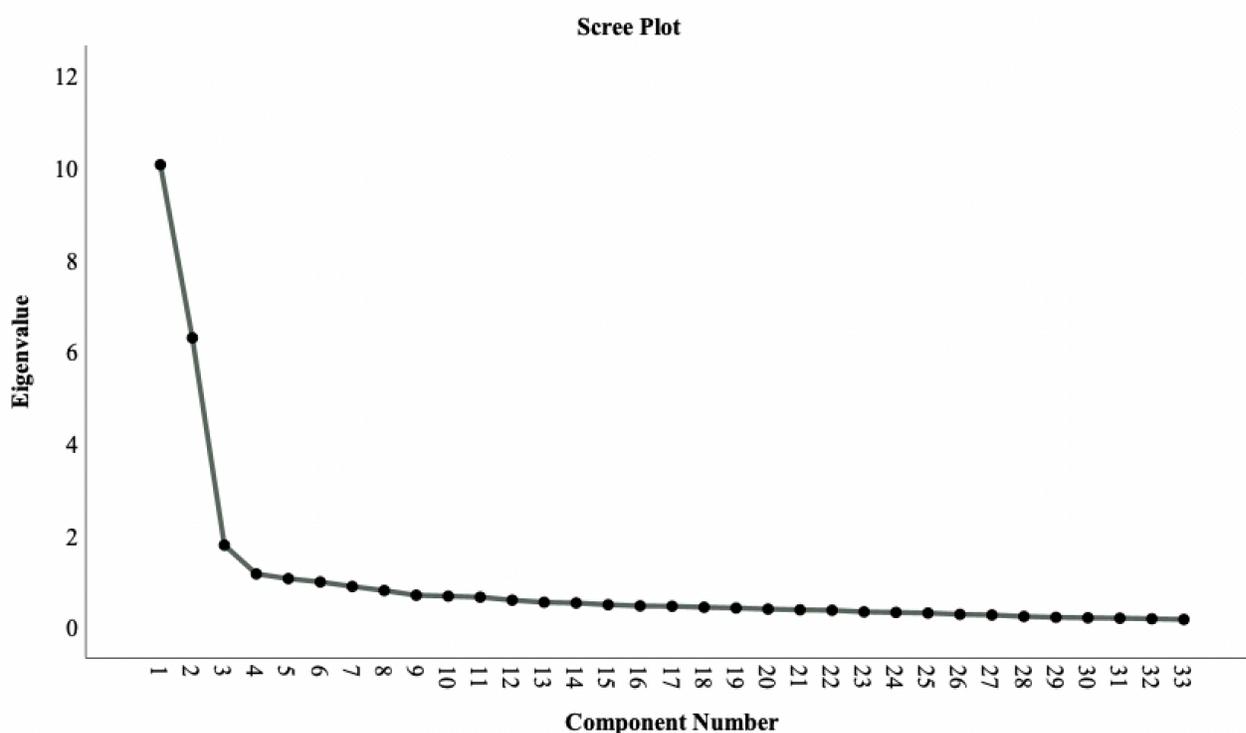


Figure 1. *Scree Plot for SRQ Factor Analysis.*

Based on a minimum factor loading value of  $\geq .32$  (Tabachnick & Fidell, 2014), 16 items loaded onto the first factor (i.e., **Sibling Warmth**) and 11 items loaded onto the second factor (i.e., **Sibling Conflict**; Derkman et al., 2010; Kramer & Baron, 1995; see Table 3). Mean scores for Sibling Warmth and Sibling Conflict were then created by averaging the appropriate 16 and 11 items, respectively. These factors showed strong internal consistency (Sibling Warmth Factor  $\alpha = .943$ , Sibling Conflict Factor  $\alpha = .897$ ).

Table 3  
*Factor Loadings for Sibling Relationship Questionnaire (SRQ) Items*

Item	Factor	
	1 – Warmth	2 – Conflict
How often do your children do nice things for each other?	.673	
How much do your children show one another things that one of them doesn't know how to do?	.629	
How much do your children tell one another what to do?		.623
How much do your children care about each other?	.806	
How much do your children do things together?	.657	
How much do your children insult and call each other names?		.696
How much do your children tell each other everything?	.534	
How much do your children try to out-do each other at things?		.625
How much do your children admire and respect each other?	.716	
How much do your children disagree and quarrel with each other?		.725

How much do your children cooperate with each other?	.600	
How much do your children help each other with things that one of them doesn't know how to do by him or herself?	.583	
How much do your children make each other do things?		.675
How much do your children love each other?	.848	
How often do your children play around and have fun with each other?	.698	
How much are your children mean to each other?		.574
How much do your children look up to and feel proud of each other?	.736	
How much do your children get mad at and in arguments with each other?		.818
How much do your children share with each other?	.579	
How much do your children teach each other things that one of them doesn't know how to do?	.641	
How much do your children order each other around?		.785
How much is there a strong feeling of affection (love) between your children?	.822	

How much free time do your children spend with each other?	.617	
How much do your children bug and pick on each other in mean ways?		.736
How much do your children try to do things better than each other?		.609
How highly do your children think of each other?	.799	
How much do your children argue with each other?		.803

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**2.3.4. Questions about children’s antisocial behaviour.** A greater tendency to engage in antisocial behaviour may lead to more opportunities for lie telling (Ostrov, 2006). Thus, to potentially control for differences in children’s antisocial behaviour, parents responded to 19 items about their children’s antisocial behaviours. These items were selected from the widely used Child Behaviour Checklist (CBCL; Achenbach, 1991) and the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Goodman, Meltzer, & Baily, 1998), both of which were too lengthy to administer in their entirety. Parents responded to these items *separately* for each child. Items selected from the CBCL included, for example, “Child 1 [2] is mean to or bullies others”, “Child 1 [2] destroys things belonging to his/her family or others”, “Child 1 [2] breaks rules at home, school, or elsewhere.” Parents responded to these items using the following 3-point scale: 0 = Not true (as far as you know), 1 = Somewhat or sometimes true, and 2 = Very true or often true. Items selected from the SDQ included, for example, “Child 1 [2] breaks the rules”, “Child 1 [2] misbehaves at home”, “Child 1 [2] engages in problematic behaviours.” These responses were also on a 3-point scale: 0 = Never, 1 = Sometimes, and 2 = All the time. Appendix F lists the complete set of items that inquired about children’s antisocial behaviours.

Two separate total scores were created for the OS’s and YS’s antisocial behaviours. These total scores were created by summing (i.e., adding together) all items that inquired about children’s behavioural tendencies. Higher scores indicated a greater tendency to engage in antisocial behaviour.

## **2.4. Analysis Plan**

First, preliminary analyses are presented (e.g., on whether children’s antisocial behaviours or demographic characteristics of parents/children were related to their lie telling in the sibling context). Second, the primary analyses are presented, which consisted of mixed model

ANOVAs and regressions, as appropriate, addressing the study's three main research questions and associated hypotheses.

### 3. RESULTS

#### 3.1. Preliminary Analyses

First, *t*-tests and a one-way ANOVA determined whether children's genders (OS gender, YS gender, and the gender composition of the sibling dyad) were significantly associated with the dependent and independent variables of interest including: (1) the six dependent variables, (2) parent encouragement of lie telling, (3) parent punishment of lie telling, (4) Sibling Conflict, and (5) Sibling Warmth. Second, bivariate correlations assessed potential relations between children's age (i.e., OS's age, YS's age, and the age gap of the sibling dyad), children's antisocial behaviours, as well as SES (parent education and household income) and: (1) the six dependent variables of interest, (2) parent encouragement of lie telling, (3) parent punishment of lie telling, (4) Sibling Conflict, and (5) Sibling Warmth.

**3.1.1. Children's genders.** Due to the number of *t*-tests and ANOVAs that were conducted, a Bonferroni correction of .005 was used (Agresti & Finlay, 1997; Keppel, 1991) to help prevent any Type I errors. Therefore, significant results are presented here using a *p*-value of .005. First, the YS's gender was unrelated to any of the independent or dependent variables (all *ps* > .005; Table 4). Second, the gender composition of the sibling dyad did not significantly differ among any of the independent or dependent variables (all *ps* > .005; Table 5). Third, the OS's gender was significantly related to only one of the variables examined – their own antisocial sibling lies,  $t(361) = -2.82, p = .005$  (Table 5). Thus, child gender was not considered further.

**3.1.2. Children's ages.** Due to the number of correlations that were conducted concerning children's age, a Bonferroni correction was used to help prevent Type I errors (Curtin & Schulz, 1998). Therefore, significant results are presented here using a *p*-value of .004. First,

the OS's age was significantly correlated with parent encouragement of lie telling,  $r(363) = -.17$ ,  $p = .002$  (Table 6).

Table 4  
*Means, Standard Deviations, and t-tests Examining OS's and YS's Gender and Key Independent and Dependent Variables*

Variable	Gender	Older sibling					Younger sibling				
		<i>n</i>	M (SD)	<i>t</i>	<i>df</i>	<i>p</i>	<i>n</i>	M (SD)	<i>t</i>	<i>df</i>	<i>p</i>
OS's prosocial sibling lies	Girl	152	2.99 (1.15)	-1.00	359	.316	180	3.12 (1.15)	0.89	359	.374
	Boy	209	3.12 (1.20)				181	3.01 (1.21)			
YS's prosocial sibling lies	Girl	152	2.66 (1.12)	-0.53	359	.594	180	2.82 (1.12)	1.83	359	.069
	Boy	209	2.73 (1.20)				181	2.59 (1.21)			
OS's antisocial sibling lies	Girl	153	2.81 (1.14)	-2.82*	361	.005	180	3.08 (1.12)	0.88	361	.379
	Boy	210	3.17 (1.21)				183	2.97 (1.26)			
YS's antisocial sibling lies	Girl	152	2.79 (1.07)	-1.45	359	.148	180	2.98 (1.09)	1.53	359	.126
	Boy	209	2.96 (1.20)				181	2.79 (1.21)			
Sibling dyad prosocial lies	Girl	152	2.83 (1.09)	-0.81	359	.418	180	2.97 (1.07)	1.43	359	.154
	Boy	209	2.93 (1.14)				181	2.80 (1.15)			
Sibling dyad antisocial lies	Girl	153	2.79 (1.05)	-2.38	361	.018	180	3.03 (1.01)	1.24	352.58	.215
	Boy	210	3.07 (1.14)				183	2.88 (1.19)			
Parent punishment	Girl	152	4.07 (1.33)	0.06	358	.954	179	3.96 (1.34)	-1.51	358	.130

	Boy	208	4.06 (1.32)				181	4.17 (1.29)			
Parent encouragement	Girl	153	1.78 (0.83)	-2.52	354.43	.012	180	1.97 (0.96)	1.12	361	.266
	Boy	210	2.02 (0.99)				183	1.87 (0.89)			
Sibling Warmth	Girl	153	3.79 (0.69)	1.68	361	.094	180	3.66 (0.72)	-1.69	361	.092
	Boy	210	3.67 (0.74)				183	3.78 (0.72)			
Sibling Conflict	Girl	153	2.97 (0.82)	-1.61	361	.109	180	2.96 (0.72)	-2.19	353.49	.029
	Boy	210	3.10 (0.77)				183	3.14 (0.85)			

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\*Indicates that the *t*-test was significant at the .005 level.

Table 5  
*Means, Standard Deviations, and F-tests Examining the Sibling Dyad Gender Composition and Key Independent and Dependent Variables*

		<i>n</i>	<i>M</i> ( <i>SD</i> )	<i>F</i>	<i>p</i>
OS's prosocial sibling lies	Boy/Girl	184	3.04 (1.19)	0.143	.867
	Both girls	74	3.10 (1.09)		
	Both boys	103	3.10 (1.23)		
YS's prosocial sibling lies	Boy/Girl	184	2.69 (1.21)	0.445	.641
	Both girls	74	2.81 (1.02)		
	Both boys	103	2.64 (1.21)		
OS's antisocial sibling lies	Boy/Girl	185	2.97 (1.17)	1.100	.334
	Both girls	74	2.93 (1.17)		
	Both boys	104	3.16 (1.09)		
YS's antisocial sibling lies	Boy/Girl	184	2.85 (1.29)	0.191	.826
	Both girls	74	2.94 (1.29)		
	Both boys	103	2.92 (1.28)		
Sibling dyad prosocial lies	Boy/Girl	184	2.87 (1.15)	0.170	.844
	Both girls	74	2.95 (0.99)		
	Both boys	103	2.87 (1.15)		
Sibling dyad antisocial lies	Boy/Girl	185	2.91 (1.09)	0.597	.551
	Both girls	74	2.91 (0.97)		
	Both boys	104	3.05 (1.11)		
Sibling Warmth	Boy/Girl	185	3.69 (0.72)	0.272	.762
	Both girls	74	3.75 (0.71)		
	Both boys	104	3.75 (0.74)		
Sibling Conflict	Boy/Girl	185	2.99 (0.73)	4.395	.013
	Both girls	74	2.93 (0.81)		
	Both boys	104	3.24 (0.85)		
Parent Encouragement	Boy/Girl	185	1.89 (0.93)	0.552	.576
	Both girls	74	1.88 (0.88)		
	Both boys	104	2.00 (0.97)		
Parent Punishment	Boy/Girl	183	4.03 (1.31)	0.588	.556

Both girls	74	3.97 (1.38)
Both boys	103	4.17 (1.32)

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Table 6  
*Correlation Analyses Examining OS's age, YS's age, and Age Gap with Key Independent and Dependent Variables*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. OS's age	–												
2. YS's age	.69*	–											
3. Age gap	.49*	-.30*	–										
4. OS's prosocial sibling lies	-.09	-.05	-.06	–									
5. YS's prosocial sibling lies	-.08	.04	-.15*	.80*	–								
6. OS's antisocial sibling lies	-.11	-.08	-.05	.75*	.68*	–							
7. YS's antisocial sibling lies	-.05	-.01	-.05	.64*	.74*	.76*	–						
8. Sibling dyad prosocial lies	-.09	-.01	-.11	.95*	.95*	.76*	.73*	–					
9. Sibling dyad antisocial lies	-.09	-.05	-.06	.74*	.76*	.94*	.94*	.79*	–				
10. Parent punishment	.08	.03	.07	.09	.11*	.20*	.16*	.10	.19*	–			
11. Parent encouragement	-.17*	.00	-.22*	.44*	.45*	.47*	.44*	.47*	.48*	-.14	–		
12. Sibling Warmth	-.12	-.15*	.02	-.07	-.09	-.23*	-.19*	-.08	-.22*	.05	-.33*	–	
13. Sibling Conflict	-.07	-.08	-.00	.34*	.35*	.47*	.51*	.37*	.51*	.22*	.13	-.02	–

\*Indicates  $p < .005$ .

Accordingly, the OS's age was entered as a covariate whenever parent encouragement was used as an independent variable. Second, the YS's age was significantly correlated with Sibling Warmth,  $r(363) = -.150, p = .004$  (Table 6). As such, the YS's age was entered as a covariate whenever Sibling Warmth was used as an independent variable. Third, the sibling age gap – as measured by the OS's age in years minus the YS's age in years – was significantly correlated with the YS's prosocial sibling lies,  $r(361) = -.151, p = .004$ , and parent encouragement of lie telling,  $r(363) = -.221, p < .001$  (Table 6). Therefore, the sibling age gap was entered as covariates into analyses concerning YS's prosocial sibling lies and parent encouragement of lie telling.

**3.1.3. Children's antisocial behaviours.** As previously discussed, a greater tendency to engage in antisocial behaviour may lead to more opportunities for lie telling (Ostrov, 2006). Therefore, correlation analyses helped determine whether the OS's and YS's antisocial behaviours were associated with the six dependent variables and four independent variables. The OS's scores ranged from 0 ( $n = 27, 8.4\%$ ) to 30 ( $n = 1, 0.3\%$ ;  $M = 8.07, SD = 6.85$ ). The YS's scores ranged from 0 ( $n = 25, 7.5\%$ ) to 28 ( $n = 1, 0.3\%$ ;  $M = 8.83, SD = 6.92$ ). To control for the number of correlations conducted, a Bonferroni correction of  $p = .005$  was used to help prevent Type I errors (Curtin & Schulz, 1998). First, the OS's antisocial behaviours were significantly correlated with all six of the dependent variables and all four of the independent variables (all  $ps < .001$ ; see Table 7). Second, the YS's antisocial behaviours were also significantly correlated with all six of the dependent variables and all four of the independent variables, (all  $ps \leq .005$ ; Table 7). Therefore, both the OS's and YS's antisocial behaviours were entered as covariates in all of the primary analyses.

Table 7  
*Correlation Analyses Examining OS's and YS's Antisocial Behaviours with Key Independent and Dependent Variables*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. OS's antisocial behaviours	–											
2. YS's antisocial behaviours	.642*	–										
3. OS's prosocial sibling lies	.427*	.387*	–									
4. YS's prosocial sibling lies	.479*	.392*	.801*	–								
5. OS's antisocial sibling lies	.665*	.465*	.752*	.683*	–							
6. YS's antisocial sibling lies	.565*	.606*	.640*	.741*	.764*	–						
7. Sibling dyad prosocial lies	.477	.410*	.949*	.949*	.756*	.728*	–					
8. Sibling dyad antisocial lies	.655*	.570*	.742*	.758*	.942*	.938*	.790*	–				
9. Sibling Warmth	-.241*	-.153*	-.070	-.088	-.228*	-.187*	-.083	-.216*	–			
10. Sibling Conflict	.476*	.484*	.341*	.353*	.468*	.506*	.365*	.506*	-.023	–		
11. Parent punishment	.199*	.165*	.091	.105	.200*	.163*	.103	.189*	.045	.218*	–	
12. Parent encouragement	.422*	.381*	.443*	.454*	.466*	.439*	.473*	.476	-.327*	.128*	-.142	–

\*Indicates  $p < .005$ .

**3.1.4. SES (household income and education).** A composite measure of SES was created using the combined household income and parent education reported by parents. Household income was coded as follows: 1 = Less than \$15,000 a year; 2 = \$15,000 to \$25,000 a year; 3 = \$25,000 to \$35,000 a year; 4 = \$35,000 to \$45,000 a year; 5 = \$45,000 to \$55,000 a year; 6 = \$55,000 to \$75,000 a year; 7 = \$75,000 to \$100,000 a year; and 8 = Over \$100,000 a year. Furthermore, parents were required to select an education level from the following list: “No degree, certificate, or diploma; High school graduate; High school graduate, some post-secondary; Post-secondary certificate or diploma; University degree; Master’s degree; PhD; MD; or JD”. To avoid weighting one type of graduate or professional degree higher than another, parent education level was categorized using the Hollingshead Four-Factor Index of Socioeconomic Status (Hollingshead, 1975). As such, parent education was coded as follows: 1 = No certificate/no high school diploma; 2 = High school graduate; 3 = Partial college; 4 = Standard college or university graduation; and 5 = Graduate or professional training. To create a composite measure of SES, participants’ household income was multiplied by their re-coded education level. Using this method, scores ranged from 2 ( $n = 2$ , 0.6%) to 40 ( $n = 35$ , 9.7%;  $M = 25.12$ ,  $SD = 9.09$ ). This multiplied value was used in the preliminary analyses.

Bivariate correlations assessed potential relations between SES, the six dependent variables of interest, and the four independent variables of interest. Using a Bonferroni correction of  $p = .005$  (Curtin & Schulz, 1998), only parent encouragement was a significant but negative correlate,  $r(361) = -.159$ ,  $p = .002$ , of SES (see Table 8). Because this was the only significant correlation to emerge – and because the correlation itself was relatively weak – SES was not considered further in the primary analyses.

Table 8  
*Correlation Analyses Examining Socioeconomic Status with Key Independent and Dependent Variables*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Socioeconomic status	–										
2. OS's prosocial sibling lies	-.067	–									
3. YS's prosocial sibling lies	-.061	.801*	–								
4. OS's antisocial sibling lies	-.096	.752*	.683*	–							
5. YS's antisocial sibling lies	-.097	.640*	.741*	.764*	–						
6. Sibling dyad prosocial lies	-.067	.949*	.949*	.756*	.728*	–					
7. Sibling dyad antisocial lies	-.100	.742*	.758*	.942*	.938*	.790*	–				
8. Sibling Warmth	.043	-.070	-.088	-.228*	-.187*	-.083	-.216*	–			
9. Sibling Conflict	.008	.341*	.353*	.468*	.506*	.365*	.506*	-.023s	–		
10. Parent punishment	-.019	.091	.105	.200*	.163*	.103	.189*	.045	.218*	–	
11. Parent encouragement	-.159*	.443*	.454*	.466*	.439*	.473*	.476*	-.327*	.128	-.142	–

\*Indicates  $p < .005$ .

### **3.2. How common is lie telling, and what types of lies do children tell in the context of sibling relationships?**

On average, parents reported that older siblings told prosocial ( $M = 2.98$ ,  $SD = 1.17$ ) and antisocial ( $M = 2.93$ ,  $SD = 1.19$ ) lies “rarely” in the sibling context. Parents’ reports of the younger siblings’ prosocial sibling lies ( $M = 2.62$ ,  $SD = 1.19$ ) and antisocial sibling lies ( $M = 2.82$ ,  $SD = 1.16$ ) fell in between “very rare” and “rare” in frequency. Therefore, the hypothesis (H1) that sibling lie telling would be “rare” to “occasional” (Malloy et al., 2019) was partially supported, as the frequency of lies was “rare”, but not “occasional”.

A 2 (sibling birth order: older sibling v. younger sibling) by 2 (lie type: prosocial v. antisocial) mixed-model ANOVA examined children’s mean lie telling scores with sibling birth order varied between subjects and lie type varied within subjects. Given the inclusion of birth order as a variable of interest, identical and fraternal twins ( $n = 22$ ) were excluded from this analysis. Due to their association with outcome measures in the preliminary analyses, OS’s antisocial behaviour, YS’s antisocial behaviour, and the sibling age gap were included as covariates. There was no significant main effect of sibling birth order,  $F(1, 295) = 1.36$ ,  $p = .244$ , partial  $\eta^2 = .005$ , 95% CI [2.85-3.06]. There was a significant main effect of lie type,  $F(1, 295) = 12.53$ ,  $p < .001$ ; however, the magnitude of the effect was small, partial  $\eta^2 = .041$ , 95% CI = [2.78-2.97]. Contrary to Hypothesis 1, parents reported that antisocial lies ( $M = 2.87$ ,  $SE = .05$ ) were significantly more frequent than prosocial lies ( $M = 2.79$ ,  $SE = .06$ ) in the sibling context. The sibling birth order X lie type interaction was not significant,  $F(1, 295) = 0.28$ ,  $p = .600$ , partial  $\eta^2 = .001$ , 95% CI = [2.86-3.10].

### **3.3. Is sibling relationship quality associated with lie telling in the context of sibling relationships?**

On average, parents reported that the sibling relationship appeared to be “Somewhat” to “Very Much” Warm ( $M = 3.72$ ,  $SD = 0.72$ ), and had Conflict “Somewhat” ( $M = 3.05$ ,  $SD = 0.79$ ). Two linear regression analyses examined whether sibling relationship quality – as conceptualized by the mean Sibling Warmth and mean Sibling Conflict scores on parent’s SRQ responses – predicted children’s lie telling in the sibling context. One regression analysis predicted sibling dyad antisocial lies, and one regression analysis predicted sibling dyad prosocial lies. The dyad variables of pro- and antisocial sibling lie telling were used for these analyses (rather than the OS’s and YS’s individual scores) because the SRQ asked parents about the quality of their children’s sibling relationship as a whole; the survey did not ask parents about the quality of the sibling relationship on behalf of each sibling individually. Furthermore, based on the results of the preliminary analyses, these analyses controlled for both the OS’s antisocial behaviours, the YS’s antisocial behaviours, and the YS’s age by manually entering them into the first step of the regression.

First, and consistent with the study’s hypotheses, the linear regression analysis predicting children’s mean antisocial lies in the sibling context revealed that Sibling Conflict (manually entered in Step 2) was a significant and positive predictor,  $t = 5.36$ ,  $p < .001$ , 95% CI = [.22-.47], (H2a). That is, for every one unit increase in Sibling Conflict, there was a corresponding .35 increase in children’s mean antisocial lies in the sibling context. Although Sibling Warmth (manually entered in Step 2) did not emerge as a significant predictor of antisocial lies in the sibling context, ( $t = -1.24$ ,  $p = .218$ , 95% CI = [-.22-.05]), the relationship was negative as predicted (H2c; see Table 9). The OS’s and YS’s antisocial behaviours were both significant and positive predictors of children’s mean antisocial lies in the sibling context (all  $ps \leq .001$ ); the YS’s age did not emerge as a significant predictor on either step (see Table 9).

Table 9  
*Regression Model for SRQ Warmth, Conflict, and Antisocial Lies of the Sibling Dyad*

		Unstandardized coefficients		Standardized coefficient		
		B	Standard Error	Beta	<i>t</i>	<i>p</i>
Step 1	(Constant)	1.655	.193		8.587*	.000
	OS's Antisocial Behaviour	.079	.009	.487	9.034*	.000
	YS's Antisocial Behaviour	.042	.009	.264	4.887*	.000
	YS's Age	.031	.024	.054	1.290	.198
Step 2	(Constant)	1.189	.384		3.095*	.002
	OS's Antisocial Behaviour	.066	.009	.409	7.545*	.000
	YS's Antisocial Behaviour	.028	.009	.179	3.300*	.001
	YS's Age	.024	.024	.041	1.000	.318
	Sibling Warmth	-.083	.068	-.051	-1.235	.218
	Sibling Conflict	.345	.064	.251	5.356*	.000

\*Indicates  $p < .005$ .

Second, and in contrast to Hypothesis 2b, a linear regression analysis predicting children's mean prosocial lies in the sibling context revealed that Sibling Conflict (manually entered in Step 2;  $t = 2.49, p = .013, 95\% \text{ CI} = [.04-.36]$ ) positively and significantly predicted children's prosocial lies in the sibling context. Similar to children's antisocial lies in the sibling context, for every one unit increase in Sibling Conflict, there was a corresponding .20 increase in children's mean prosocial lies in the sibling context. Although Sibling Warmth (manually entered in Step 2) did not significantly predict children's prosocial lies in the sibling context ( $t = 1.37, p = .172, 95\% \text{ CI} = [-.05-.28]$ ), the direction of the relationship was positive, as predicted (H2d; see Table 10). The OS's and YS's antisocial behaviours were significant and positive predictors of children's prosocial lies in the sibling context in the full model (i.e., Step 2, both  $p \leq .042$ ); the YS's age did not emerge as a significant predictor in the full model (see Table 10).

Table 10

*Regression Model Examining Sibling Warmth, Sibling Conflict, and Prosocial Lies of the Sibling Dyad*

		Unstandardized coefficients		Standardized coefficient		
		B	Standard Error	Beta	<i>t</i>	<i>p</i>
Step 1	(Constant)	1.707	.232		7.354*	.000
	OS's Antisocial Behaviour	.058	.010	.358	5.593*	.000
	YS's Antisocial Behaviour	.030	.010	.189	2.941*	.004
	YS's Age	.053	.029	.090	1.811	.071
Step 2	(Constant)	.716	.479		1.496	.136
	OS's Antisocial Behaviour	.055	.011	.339	5.090*	.000
	YS's Antisocial Behaviour	.022	.011	.136	2.040*	.042
	YS's Age	.058	.029	.098	1.966	.050
	Sibling Warmth	.115	.084	.070	1.368	.172
	Sibling Conflict	.203	.081	.145	2.493*	.013

\*Indicates  $p < .05$ .

### **3.4. How often and how do parents socialize lie telling in sibling relationships, and is parent socialization associated with children's lie telling in the sibling context?**

Parent socialization of lie telling in the sibling context was operationalized as parent encouragement of lie telling in the sibling context and parent punishment of lie telling in the sibling context. Parent encouragement of lie telling was, on average, “very rarely” endorsed by parents ( $M = 1.92, SD = .93$ ). Parent punishment of lie telling was reported as “occasional” on average ( $M = 4.06, SD = .32$ ). Therefore, the hypothesis (H3a) that parent socialization would be “rare” to “occasional” in frequency (Lavoie et al., 2016) was partially supported, as the frequency of parent punishment and encouragement was “occasional” and “very rare”, respectively, but not “rare”.

Two linear regression analyses examined whether parent socialization of children's lie telling predicted children's lie telling in the sibling context. One regression analysis predicted sibling dyad antisocial lies in the sibling context, and one regression analysis predicted sibling dyad prosocial lies in the sibling context. Like the first two regression analyses, the pro- and antisocial dyad variables were used for these analyses rather than the children's individual scores because parents were asked about how they socialized their children in general, not as individuals. Based on the results of the preliminary analyses, these analyses controlled for both the OS's antisocial behaviours, the YS's antisocial behaviours, and the OS's age by manually entering them into the first step of the analysis.

First, the linear regression analysis predicting children's mean antisocial lies in the sibling context) revealed that both parent encouragement of lie telling (manually entered in Step 2;  $t = 5.85, p < .001, 95\% CI = [.23-.47]$ ) and parent punishment of lie telling (manually entered in Step 2;  $t = 3.24, p = .001, 95\% CI = [.04-.18]$ ) were significant predictors of children's mean

antisocial lies in the sibling context. Consistent with Hypothesis 3b, both variables were positive predictors. That is, for every one unit increase in parent encouragement of lie telling scores, there was a corresponding .35 increase in children's mean score concerning their antisocial lies in the sibling context. Similarly, for every one unit increase in parent punishment of lie telling scores, there was a corresponding .11 increase in children's mean antisocial lies in the sibling context scores (see Table 11). The OS's and YS's antisocial behaviours were both significant and positive predictors of children's mean antisocial lies in the sibling context in the full model (i.e., Step 2, both  $ps < .001$ ); the OS's age did not emerge as a significant predictor in the full model (see Table 11).

Table 11  
*Regression Model Examining Parent Punishment and Encouragement of Lie Telling and Antisocial Lies of the Sibling Dyad*

		Unstandardized coefficient		Standardized coefficient		
		B	Standard Error	Beta	<i>t</i>	<i>p</i>
Step 1	(Constant)	1.765	.236		7.488*	.000
	OS's Antisocial Behaviour	.079	.009	.486	8.986*	.000
	YS's Antisocial Behaviour	.041	.009	.259	4.800*	.000
	OS's Age	.012	.023	.022	.528	.598
Step 2	(Constant)	.797	.279		2.861*	.005
	OS's Antisocial Behaviour	.063	.009	.390	7.281*	.000
	YS's Antisocial Behaviour	.032	.009	.200	3.847*	.000
	OS's Age	.021	.022	.038	.958	.339
	Parent Punishment	.113	.035	.134	3.239*	.001
	Parent Encouragement	.352	.060	.264	5.850*	.000

\*Indicates  $p < .05$ .

Second, and as predicted (H3b), the linear regression analysis examining children's mean prosocial lies in the sibling context revealed that parent encouragement of lie telling (manually entered in Step 2;  $t = 6.31, p < .001, 95\% \text{ CI} = [.31-.59]$ ) was a significant and positive predictor of prosocial lie telling (see Table 12). For every one unit increase in parent encouragement of lie telling scores, there was a corresponding .46 increase in children's mean score concerning their prosocial lies in the sibling context. In addition, parent punishment of lie telling was not a significant predictor of children's prosocial sibling lie telling ( $t = 1.95, p = .052, 95\% \text{ CI} = [-.00-.16]$ ). The OS's antisocial behaviour was a significant predictor in the full model (i.e., Step 2,  $p < .001$ ); the YS's antisocial behaviour was not a significant predictor in the full model (i.e., Step 2,  $p = .077$ ); and the OS's age was not a significant predictor in the full model (see Table 12).

Table 12

*Regression Model Examining Parent Punishment and Encouragement of Lie Telling and Prosocial Lies of the Sibling Dyad*

		Unstandardized coefficient		Standardized coefficient		
		B	Standard Error	Beta	<i>t</i>	<i>p</i>
Step 1	(Constant)	2.147	.284		7.550*	.000
	OS's Antisocial Behaviour	.057	.011	.352	5.465*	.000
	YS's Antisocial Behaviour	.029	.010	.178	2.770*	.006
Step 2	OS's Age	-.005	.027	-.010	-.201	.841
	(Constant)	1.088	.334		3.255*	.001
	OS's Antisocial Behaviour	.039	.010	.240	3.777*	.000
	YS's Antisocial Behaviour	.018	.010	.110	1.775	.077
	OS's Age	.011	.026	.019	.408	.683
	Parent Punishment	.082	.042	.096	1.949	.052
	Parent Encouragement	.455	.072	.338	6.311*	.000

\*Indicates  $p < .05$

#### 4. DISCUSSION

The purpose of the current study was to examine children's lie telling in the sibling context by surveying parents of multiple children between the ages of 5- to 12-years-old. Siblings were the social influence of focus in the present research, as previous research on the factors that influence children's lie telling has been limited in scope and has primarily focused on cognitive influences (Leduc et al., 2017; Talwar, 2018) or on parents as a social influence (Dykstra et al., 2020; Lavoie et al., 2016; Malloy et al., 2019). The current study sought to create a broader picture of lie telling in the sibling context by examining multiple types of lies (i.e., prosocial and antisocial) and the family context more generally by examining the sibling relationship quality and parent socialization of lie telling. It was hypothesized that: (1) parents would report the frequency of their children's lie telling as rare to occasional in the sibling context and that parents would report their children telling more prosocial lies than antisocial lies in this context, (2) sibling relationship quality – as reported by parents – would be a significant predictor of parents' perceptions of lie telling in the context of sibling relationships, and (3) parents' self-report of socialization (i.e., punishment and encouragement) of lie telling would be rare to occasional in frequency. It was also expected that *both* parent punishment *and* encouragement of lie telling would be positively predictive of pro- and antisocial lie telling in the sibling context, according to parents' reports.

First, and consistent with Hypothesis 1, parents reported that their children's lie telling in the sibling context was "very rare" to "rare" in frequency. However, parents also reported that antisocial sibling lies were significantly more common overall than prosocial sibling lies, which is opposite to what was predicted (H1). Second, the effects of sibling relationship quality on lie telling in the sibling context differed depending on which dimension of the sibling relationship

was considered. That is, parent's perceptions of Sibling Warmth were not associated with either antisocial or prosocial lie telling in the sibling context, but the direction of the associations were negative and positive – respectively – as predicted (H2c, H2d). Furthermore, parents' perceptions of Sibling Conflict were positively associated with a greater frequency of *both* pro- and antisocial lies in the sibling context, which was consistent with Hypothesis 2a (that Conflict would predict antisocial sibling lies), but not Hypothesis 2b (that Conflict would negatively predict prosocial sibling lies). Finally, parent encouragement of lie telling was “very rare” and parent punishment of lie telling was “occasional,” according to parents' reports. This finding partially supported Hypothesis 3a, as it was hypothesized that lie telling would be “rare” to “occasional” (rather than “very rare”). However, both parent punishment and encouragement were associated with parents' perceptions of more pro- and antisocial lies in the sibling context, as predicted (H3b).

The finding that parents reported lies in the sibling context as “very rare” to “rare” in frequency was consistent with the present study's hypotheses and with past research from Malloy et al. (2019), who found that parents reported their children's lie telling as being “just a little” frequent on a scale from 1 (“Not at all” frequent) to 4 (“Very much” frequent). This finding builds on previous research by further demonstrating that lie telling is relatively normal among developing children. However, it was surprising that parents reported antisocial lies in the sibling context as more frequent than prosocial lies in the sibling context, since previous research found that (1) parents reported prosocial lies as more frequent than antisocial lies (Malloy et al., 2019) and (2) prosocial lies were evaluated more positively by children than antisocial lies (Talwar et al., 2016). As a result, this finding adds some nuance to what is understood about the

different types of lies that children tell, at least within the sibling context specifically and when it comes to parents' observations and reports of such lies.

One possible explanation for this finding could be the relatively unique nature of sibling relationships, as sibling relationships share elements of peer relationships (e.g., play), but can also be hierarchical in nature (e.g., between older and younger siblings). For instance, sibling rivalry is common, as siblings must often compete for resources, including both tangible resources (e.g., toys, treats) and intangible resources (e.g., parents' affection; see Recchia, 2010). Sibling conflict is also common; in fact, one observational study by Dunn and Munn (1986) found that sibling conflict occurred up to 8 times per hour. While there might be certain situations where siblings will tell prosocial lies to one another (e.g., to protect the other's feelings) or where they might lie together as a "team" (e.g., to avoid getting in trouble from parents), there are also instances in which siblings might lie *to* or *about* each other when competing for resources or in conflict with one another. Due to the dynamic nature of sibling relationships, as well as the large amounts of time that siblings spend together (Statistics Canada, 2017) perhaps it makes sense that pro- and antisocial lies are told at similar frequencies in the sibling context. Future research should continue to examine this issue through observational methods (e.g., Dunn & Munn) and/or children's own self-reporting.

The pattern of findings regarding parent reports of Sibling Warmth and Sibling Conflict could be a result of examining lie telling as a function of pro- and antisocial lies in the sibling context *separately*. More specifically, it seems possible that higher levels of Conflict in the sibling relationship are predictive of *overall* lie telling, rather than pro- and antisocial lie telling separately. Similarly, it seems as though Warmth scores are not predictive of lie telling at all, especially given that Warmth scores did not significantly predict prosocial lies in the sibling

context. This rationale is consistent with previous findings from Criss and Shaw (2005), who examined sibling relationship quality and antisocial behaviour. They found that Sibling Warmth was not significantly correlated with antisocial behaviour, but Sibling Conflict was. Therefore, it seems as though Conflict scores – but not Warmth scores – might be predictive of different types of antisocial behaviours. Given that lie telling is often, though not always, considered by many as a form of antisocial behaviour (Rowe, 2014), it seems possible that (1) greater levels of conflict in the sibling relationship are predictive of a greater frequency of lie telling overall, and (2) that these frequencies of lying do not differ as a function of pro- or antisocial lies in the sibling context. Therefore, future studies should continue to examine the association between sibling relationship quality and sibling lie telling using different methods, including prospective longitudinal designs and having children, rather than parents, report on their sibling relationships and lie telling behaviours.

The findings that emerged regarding parent socialization of lie telling are consistent with recent research (e.g., Malloy et al., 2019). More specifically, and in line with the study’s hypothesis, parent punishment of lie telling was “occasional” and encouragement of lie telling was “very rare”. These findings build upon those of Malloy et al. who found that, among parents of 5- to 10-year-olds, parent encouragement of lie telling was “not at all” to “just a little” frequent, and parent punishment was “just a little” to “quite a bit” frequent. Therefore, the findings from this thesis contribute to a small but growing body of literature that demonstrates that parents attempt to socialize their children’s lie telling.

While these results are consistent with the findings from the relatively limited previous research, it is possible that the parents in the current study (and those in previous research that involved surveying parents) responded with a social desirability bias due to the nature of the

questions. Indeed, previous work from Fu, Lee, Cameron, and Xu (2001) has demonstrated how – in many instances – lying is considered an antisocial behaviour. Therefore, it may only be that when parents are asked about specific scenarios, such as in hypothetical vignettes, that they are more willing to endorse encouraging children’s lie telling (e.g., Malloy et al., 2019). Future analyses will involve examining the hypothetical vignettes that were also administered to parents (Appendix I).

In addition, the findings that parent encouragement and punishment of lie telling were significant and positive predictors of children’s lie telling were also consistent with past research on children’s deception. For example, regarding the encouragement of lie telling, Lavoie et al. (2016) found that children of parents who taught that “lying is sometimes acceptable” told a greater frequency of lies than children of parents who taught that “lying is never acceptable”. Given what previous research shows about parent encouragement of children’s behaviours being subsequently predictive of those same behaviours (e.g., healthy-active living; Nicholls, 2014), it makes logical sense that parent encouragement of lie telling would predict children’s lie telling. As a result, these findings build upon previous work to highlight that parent socialization of lie telling can potentially later influence their children’s lie telling in the sibling context specifically. However, future studies should examine parent encouragement and punishment of different *types* of lies (e.g., lies to be polite to siblings, lies to trick or manipulate siblings) rather than considering these constructs more generally.

Regarding the punishment of lie telling, Talwar and Lee (2011) have theorized that harsher environments might foster dishonesty in children. In line with this theory, research has found that authoritarian parenting styles can be associated with children’s general behavioural problems (Gershoff, 2002), and that children who attend physically punitive schools are indeed

better lie tellers (Talwar & Lee, 2011). Therefore, the finding from the current study that parent punishment was positively associated with children's lie telling in the sibling context could be due to a cycle of punishment that occurs whereby more punishment leads to more lie telling, which subsequently leads to even more lie telling. Future research should elaborate upon this theory to determine whether harsher *parent* punishment increases the likelihood that children will lie in different situations, particularly those involving their siblings or other family members.

#### **4.1. Limitations and Future Directions**

Several limitations from the current study must be noted. First, this study was correlational in nature. As such, the directions of the findings cannot be determined, nor can causal relationships between the variables be concluded. For instance, do sibling conflict scores predict lie telling in the sibling context? Or does a greater amount of lie telling among siblings lead to higher levels of conflict in the sibling relationship? Future research should use longitudinal designs to help determine causality between factors such as child age, lie frequency, sibling relationship quality, and parent socialization. In fact, the results from the current study will be used to help develop these prospective longitudinal studies – as well as experimental paradigms – to help fill this gap in the field.

Second, this study used a measure of parents' perceptions of children's lie telling and sibling relationship quality. As a result, perhaps parents' *perceptions* of lie telling behaviour and sibling relationship quality were different than their *reality*. For example, parents' reports of the frequency of children's lie telling might have been limited to lies that are observed only in the home and excluded children's lies in other contexts, such as lies told at school/daycare or in the neighbourhood. Similarly, parents of older children or children who are particularly skilled at lie

telling might have underestimated the frequency of their children's lies due to their children's greater lie telling sophistication. It is also possible that parents may have been reluctant – or unable – to report the true nature of the sibling relationship quality if (1) the sibling dyad did not get along, or (2) if the parent did not know the *true* nature of the sibling relationship. To address these issues, future research should include self-reporting of lie telling behaviour and relationship quality from children and adolescents directly. Children's self-report was not used for the current study because parent-response was more consistent with previous research, thus allowing for a better comparison of results across studies (Lavoie et al., 2016; Malloy et al., 2019). In addition, future research should use experimental paradigms of sibling lie telling that allow for the examination of objectively verifiable but spontaneous lies. Using these different methods will help to capture a more accurate picture of the frequency and types of lying that occur in the sibling context.

Finally, this study measured parents' perceptions of different *types* of children's lies in the sibling context (e.g., lies to be polite to each other, lies to trick each other, etc.) and then categorized these types of lies as “pro-” or “antisocial”. However, when it came to measuring parent socialization of lie telling, the same categorization of encouragement and punishment of lies was not used. That is, parents were not asked about their encouragement and punishment of prosocial versus antisocial lies separately and whether, for example, encouragement of prosocial lies is associated with more prosocial, but not antisocial, lies. In future studies, it is imperative to test these potential relationships by inquiring about parent socialization of different types of lies separately and then examining their associations with children's lie telling behaviour.

In addition to the future directions discussed above, other avenues of research to consider include more fully considering demographic variables – such as the gender composition of the

sibling dyad and the age gap of the dyad – and their potential influence on lie telling in the sibling context. Several of the preliminary analyses suggest that children’s gender and the children’s age gap may play a role in their lies in the sibling context. However, in the current study, participants were not recruited with a particular gender or age gap in mind. Future research should continue to explore these demographic factors as potential influences on children’s lie telling in the sibling context by testing larger samples of children and considering the gender composition of the sibling dyad and how age may matter on its own or in conjunction with other variables (e.g., in a boy-girl sibling dyad, does it matter whether the older sibling is a boy or a girl?).

#### **4.2. Conclusion**

Overall, this study found that: (1) parents perceived children’s lie telling in the sibling context to be “rare” in frequency and that antisocial lies were more frequent than prosocial lies, (2) parent’s perceptions of Sibling Conflict significantly and positively predicted parents’ reports of pro- and antisocial lies in the sibling context – but their perceptions of Sibling Warmth did not, and (3) parents’ reports of their punishment and encouragement of lie telling in the sibling context both positively predicted their perceptions of their children’s lies in the sibling context, although punishment was not a significant predictor of their perceptions of prosocial lies in the sibling context. This study serves as a step forward in filling in the gaps in the literatures concerning children’s lie telling as well as sibling relationships and provides a broader picture of lie telling in the sibling context by considering different types of lies (i.e., pro- and antisocial lies), aspects of the sibling relationship (i.e., sibling relationship quality), and family factors (i.e., parent socialization of children’s lie telling). Insights from this survey of over 350 parents of

multiple 5- to 12-year-old children can be used to design further inquiries into children's lie telling in the context of sibling relationships.

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## Appendix A – Email Invitation to Participate in a Research Study

Hello parent/guardian,

We are pleased to invite you to participate in a study with the Development, Context, and Communication Lab (run by Dr. Lindsay Malloy at Ontario Tech University) and the Social-Cognitive Development Lab (run by Dr. Angela Evans at Brock University)! You are being contacted regarding this study because you have previously expressed interest in participating in our research studies. This study is looking for participants **who have at least two children living primarily in the same household between the ages of 5 and 12.**

### **About the Study:**

We are looking at children's truth and lie-telling behaviours and how siblings can influence lie-telling. Should you choose to participate, you would be invited to fill out a survey concerning your lie-telling, both of your children's lie telling, your children's relationship, and your children's behaviours more generally. The survey will take approximately 30 minutes to complete, and your name will be entered in a draw to win one of two \$50 Amazon gift cards upon completion.

### **How to participate:**

If this sounds like a study you would like to participate in, please click the link below and you will be redirected to the study:

[https://uoitsocialscience.eu.qualtrics.com/jfe/form/SV\\_79FSKGtRFLWfaMI](https://uoitsocialscience.eu.qualtrics.com/jfe/form/SV_79FSKGtRFLWfaMI)

This study has been reviewed by the Ontario Tech University Research Ethics Board #15774 on April 7<sup>th</sup>, 2020.

Thank you for your time and please let us know if you have any questions at all!

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Development, Context, and Communication Lab

Faculty of Social Sciences and Humanities

Ontario Tech University\*

905-721-8668 ext. 8341

\*"Ontario Tech" is the brand name used to refer to the University of Ontario Institute of Technology

Social Cognitive Lab

Department of Psychology

Brock University

905-688-5550 ext. 3773

## Appendix B1 – Consent Form: Brock & Ontario Tech Recruitment

### Consent Form to Participate in a Research Study

**Title of Research Study:** Parents' Perceptions of Their Children's Honesty and Dishonesty

**Name of Principal Investigator (PI):** Dr. Lindsay Malloy

**PI's contact number(s)/email(s):** (905) 721-8668 ext. 5965; lindsay.malloy@ontariotechu.ca

**Faculty Supervisor:** Dr. Lindsay Malloy (Lindsay.malloy@ontariotechu.ca)

**Student Lead:** Daniella Filoso (Daniella.filoso@ontariotechu.ca)

**Co-Investigator:** Dr. Angela Evans (aevans@brocku.ca)

**Departmental and institutional affiliation(s):** Faculty of Social Science and Humanities,  
Ontario Tech University

**External Funder/Sponsor:** None

#### **Introduction**

You are being asked to take part in a research study entitled, "Parents' perceptions of their children's honesty and dishonesty." Please read the information about the study presented in this form. The form includes details on the study's procedures, risks, and benefits that you should know before you decide if you would like to take part. You should take as much time as you need to make your decision. Participation in this study is voluntary.

This study has been reviewed by the University of Ontario Institute of Technology (Ontario Tech University) Research Ethics Board #15774 on April 7th, 2020.

#### **Purpose and Procedure:**

You have been invited to participate in this study because our team is investigating how parents perceive their children's honesty and dishonesty. Should you choose to participate, you will be one of approximately 400 participants participating in the study. If you participate in the study, you will be asked to read a questionnaire that asks about both you and your children's honest and dishonest behaviours (e.g., lying, secret keeping). You will also read some brief stories, answer questions about your children's sibling relationship, and your children's general behavioural patterns. This study will take approximately 30 to 45 minutes to complete.

#### **Potential Benefits:**

There are no direct benefits to participating. However, you will benefit society by contributing to the advancement of knowledge on children's honesty and dishonesty.

**Potential Risk or Discomforts:**

Although this study involves no more than minimal risk, you will be asked to read questions pertaining to your and your children's dishonest behaviours and might find it uncomfortable to answer some of these questions (e.g., How often does your child lie?). However, you can stop participating in the study at any time. You can also skip any questions that you do not wish to answer by selecting the "choose not to answer" response. At the end of the study, you will be debriefed and information about relevant resources will be provided should you have questions or concerns.

**Use and Storage of Data:**

Basic demographic information and responses to the questionnaires will be collected online via Qualtrics, an online survey platform with its server based in Canada. In any report of the study results, no information will be included that will make it possible to identify you. Electronic files will be stored as encrypted files in a password protected cloud-based storage system which will be accessed via password protected computers. Data will be identified only by a number that is assigned to you. Only the research team will have access to the data, and it will be used to address our research questions. However, your records may be reviewed for audit purposes by authorized University or other agents who will be bound by the same provisions of confidentiality. Anonymized data will be kept indefinitely to potentially allow for follow-up studies and in accordance with the practices of open and transparent science. All information collected during this study, including your personal information, will be kept confidential and will not be shared with anyone outside the study unless required by law. You will not be named in any reports, publications, or presentations that may come from this study.

**Confidentiality:**

You and your child's privacy shall be respected and your responses will be identified only by subject number. Although we will ask for your children's *first* names and your email address, this information will not appear in your responses or our dataset. We are asking for names solely to make some of our questions that ask about individual children easier to understand. Your email address will be collected at the end of the questionnaire in a separate window in order to draw the winner of the gift card(s). No information about you or your child's identity will be shared or published without your permission, unless required by law. Confidentiality will be provided to the fullest extent possible by law, professional practice, and ethical codes of conduct. Please note that confidentiality cannot be guaranteed while data is in transit over the Internet. This research study includes the collection of demographic data which will be aggregated (not individually presented) in an effort to protect your anonymity. Despite best efforts it is possible that your identity can be determined even when data is aggregated.

**Voluntary Participation:**

Your participation in this study is voluntary and you may partake in only those aspects of the study in which you feel comfortable. You may also decide not to be in this study, or to be in the study now, and then change your mind later. You may leave the study at any time and your name will still be entered in the draw for the Amazon gift cards. You may refuse to answer any question you do not want to answer.

**Right to Withdraw:**

If you withdraw from the research project at any time, any data that you have contributed will be removed from the study and you do not need to offer any reason for making this request. Your participation is voluntary, and you can answer only those questions that you are comfortable with answering. The information that is shared will be held in strict confidence and discussed only with the research team. You are free to participate in the study or stop at any time during the study. If you withdraw from this study because it is emotionally upsetting, you can contact the Distress Centre of Durham at (905) 430-2522, or the Distress Centre of Niagara at (905) 688-3711 if you wish. Your withdrawal at any point will not affect any benefits to which you are otherwise entitled. The researcher reserves the right to remove you from the study without your consent at such time that they feel it is in the best interest of you. Results of the analyses of the anonymized data will be published in group/aggregate form, and it will be impossible to identify individual participants and to withdraw results once they have been published or otherwise disseminated (e.g., via presentations). Should you wish to withdraw from the study **as you are completing it**, all you have to do is exit the survey window. Since your data will be incomplete, your responses will be excluded from our analyses. Should you wish to withdraw from the study **after completing the study**, follow the steps outlined below:

1. At the end of the study, a random survey code will be provided to you.
2. We recommend that you make note of your code on your debrief form, or another location you can easily access (ex. Cell phone, post-it note, etc.).
3. If you wish to withdraw your data, you can contact Dr. Malloy using the email or phone number provided on your debrief form/consent form. If you would like to ensure complete anonymity, please call Dr. Malloy using a blocked number. Your email will be deleted following the removal of your data.
4. When contacting Dr. Malloy, please clearly state your intent to withdraw your data, and provide your code.
5. Providing your code will allow for all data collected from you to be identified and destroyed. You do not have to provide a reason for withdrawal. Once you have stated your intent for your data to be withdrawn, it will not be viewed again, even in the process of withdrawal.

If you withdraw from the research project at any time, any data that you have contributed will be removed from the study, up until January 31, 2021, at which point the data will be analyzed and it will no longer be possible to identify your individual responses.

**Conflict of Interest:**

Researchers have an interest in completing this study. Their interests should not influence your decision to participate in this study.

**Compensation, Reimbursement, Incentives:**

At the end of the study, your name will be entered into a draw to win one of two \$50 Amazon gift cards. Your name will be entered into this draw whether or not you withdraw from the study for any reason.

**Dissemination of Results:**

Results will be published in manuscript form. Data will be presented at the group/aggregate level, and it will not be possible to identify individual participants. If you are interested in learning the results of this study, please contact Dr. Malloy at [lindsay.malloy@ontariotechu.ca](mailto:lindsay.malloy@ontariotechu.ca) after January 1, 2021.

**Participant Rights and Concerns:**

Please read this consent form carefully and feel free to ask the researcher any questions that you might have about the study. If you have any questions about your rights as a participant in this study, complaints, or adverse events, please contact the Research Ethics Office at (905) 721-8668 ext. 3693 or at [researchethics@ontariotechu.ca](mailto:researchethics@ontariotechu.ca).

If you have any questions concerning the research study or experience any discomfort related to the study, please contact the researcher, Dr. Malloy, at (905) 721-8668 ext. 5965 or [lindsay.malloy@ontariotechu.ca](mailto:lindsay.malloy@ontariotechu.ca).

By signing this form you do not give up any of your legal rights against the investigators, sponsor or involved institutions for compensation, nor does this form relieve the investigators, sponsor or involved institutions of their legal and professional responsibilities.

**Consent to Participate:**

1. I have read the consent form and understand the study being described.
2. I understand that I am free to ask questions about the study in the future.
3. I freely consent to participate in the research study, understanding that I may discontinue participation at any time without penalty.

I Agree

I Disagree (this study will end for you)

## **Appendix B2 – Consent Form: Social Media Recruitment**

### **Consent Form to Participate in a Research Study**

**Title of Research Study:** Parents' Perceptions of Their Children's Honesty and Dishonesty

**Name of Principal Investigator (PI):** Dr. Lindsay Malloy

**PI's contact number(s)/email(s):** (905) 721-8668 ext. 5965; lindsay.malloy@ontariotechu.ca

**Faculty Supervisor:** Dr. Lindsay Malloy (Lindsay.malloy@ontariotechu.ca)

**Student Lead:** Daniella Filoso (Daniella.filoso@ontariotechu.ca)

**Co-Investigator:** Dr. Angela Evans (aevans@brocku.ca)

**Departmental and institutional affiliation(s):** Faculty of Social Science and Humanities,  
Ontario Tech University

**External Funder/Sponsor:** None

#### **Introduction**

You are being asked to take part in a research study entitled, "Parents' perceptions of their children's honesty and dishonesty." Please read the information about the study presented in this form. The form includes details on the study's procedures, risks, and benefits that you should know before you decide if you would like to take part. You should take as much time as you need to make your decision. Participation in this study is voluntary.

This study has been reviewed by the University of Ontario Institute of Technology (Ontario Tech University) Research Ethics Board #15774 on April 7th, 2020.

#### **Purpose and Procedure:**

You have been invited to participate in this study because our team is investigating how parents perceive their children's honesty and dishonesty. Should you choose to participate, you will be one of approximately 400 participants **from Canada or the United States** participating in the study. If you participate in the study, you will be asked to read a questionnaire that asks about both you and your children's honest and dishonest behaviours (e.g., lying, secret keeping). You will also read some brief stories, answer questions about your children's sibling relationship, and your children's general behavioural patterns. This study will take approximately 30 to 45 minutes to complete.

#### **Potential Benefits:**

There are no direct benefits to participating. However, you will benefit society by contributing to the advancement of knowledge on children's honesty and dishonesty.

**Potential Risk or Discomforts:**

Although this study involves no more than minimal risk, you will be asked to read questions pertaining to your and your children's dishonest behaviours and might find it uncomfortable to answer some of these questions (e.g., How often does your child lie?). However, you can stop participating in the study at any time. You can also skip any questions that you do not wish to answer by selecting the "choose not to answer" response. At the end of the study, you will be debriefed and information about relevant resources will be provided should you have questions or concerns.

**Use and Storage of Data:**

Basic demographic information and responses to the questionnaires will be collected online via Qualtrics, an online survey platform with its server based in Canada. In any report of the study results, no information will be included that will make it possible to identify you. Electronic files will be stored as encrypted files in a password protected cloud-based storage system which will be accessed via password protected computers. Data will be identified only by a number that is assigned to you. Only the research team will have access to the data, and it will be used to address our research questions. However, your records may be reviewed for audit purposes by authorized University or other agents who will be bound by the same provisions of confidentiality. Anonymized data will be kept indefinitely to potentially allow for follow-up studies and in accordance with the practices of open and transparent science. All information collected during this study, including your personal information, will be kept confidential and will not be shared with anyone outside the study unless required by law. You will not be named in any reports, publications, or presentations that may come from this study.

**Confidentiality:**

You and your child's privacy shall be respected and your responses will be identified only by subject number. Although we will ask for your children's first names and your email address, this information will not appear in your responses or our dataset. We are asking for names solely to make some of our questions that ask about individual children easier to understand. Your email address will be collected at the end of the questionnaire in a separate window in order to draw the winner of the gift card(s). No information about you or your child's identity will be shared or published without your permission, unless required by law. Confidentiality will be provided to the fullest extent possible by law, professional practice, and ethical codes of conduct. Please note that confidentiality cannot be guaranteed while data is in transit over the Internet. This research study includes the collection of demographic data which will be aggregated (not individually presented) in an effort to protect your anonymity. Despite best efforts it is possible that your identity can be determined even when data is aggregated.

**Voluntary Participation:**

Your participation in this study is voluntary and you may partake in only those aspects of the study in which you feel comfortable. You may also decide not to be in this study, or to be in the study now, and then change your mind later. You may leave the study at any time and your name will still be entered in the draw for the Amazon gift cards. You may refuse to answer any question you do not want to answer.

**Right to Withdraw:**

If you withdraw from the research project at any time, any data that you have contributed will be removed from the study and you do not need to offer any reason for making this request. Your participation is voluntary, and you can answer only those questions that you are comfortable with answering. The information that is shared will be held in strict confidence and discussed only with the research team. You are free to participate in the study or stop at any time during the study. If you withdraw from this study because it is emotionally upsetting, you can contact the Distress Centre of Durham at (905) 430-2522, or the Distress Centre of Niagara at (905) 688-3711 if you wish. Your withdrawal at any point will not affect any benefits to which you are otherwise entitled. The researcher reserves the right to remove you from the study without your consent at such time that they feel it is in the best interest of you. Results of the analyses of the anonymized data will be published in group/aggregate form, and it will be impossible to identify individual participants and to withdraw results once they have been published or otherwise disseminated (e.g., via presentations). Should you wish to withdraw from the study **as you are completing it**, all you have to do is exit the survey window. Since your data will be incomplete, your responses will be excluded from our analyses. Should you wish to withdraw from the study **after completing the study**, follow the steps outlined below:

1. At the end of the study, a random survey code will be provided to you.
2. We recommend that you make note of your code on your debrief form, or another location you can easily access (ex. Cell phone, post-it note, etc.).
3. If you wish to withdraw your data, you can contact Dr. Malloy using the email or phone number provided on your debrief form/consent form. If you would like to ensure complete anonymity, please call Dr. Malloy using a blocked number. Your email will be deleted following the removal of your data.
4. When contacting Dr. Malloy, please clearly state your intent to withdraw your data, and provide your code.
5. Providing your code will allow for all data collected from you to be identified and destroyed. You do not have to provide a reason for withdrawal. Once you have stated your intent for your data to be withdrawn, it will not be viewed again, even in the process of withdrawal.

If you withdraw from the research project at any time, any data that you have contributed will be removed from the study, up until January 31, 2021, at which point the data will be analyzed and it will no longer be possible to identify your individual responses.

**Conflict of Interest:**

Researchers have an interest in completing this study. Their interests should not influence your decision to participate in this study.

**Compensation, Reimbursement, Incentives:**

At the end of the study, your name will be entered into a draw to win one of two \$50 Amazon gift cards. Your name will be entered into this draw whether or not you withdraw from the study for any reason.

**Dissemination of Results:**

Results will be published in manuscript form. Data will be presented at the group/aggregate level, and it will not be possible to identify individual participants. If you are interested in learning the results of this study, please contact Dr. Malloy at [lindsay.malloy@ontariotechu.ca](mailto:lindsay.malloy@ontariotechu.ca) after January 1, 2021.

**Participant Rights and Concerns:**

Please read this consent form carefully and feel free to ask the researcher any questions that you might have about the study. If you have any questions about your rights as a participant in this study, complaints, or adverse events, please contact the Research Ethics Office at (905) 721-8668 ext. 3693 or at [researchethics@ontariotechu.ca](mailto:researchethics@ontariotechu.ca).

If you have any questions concerning the research study or experience any discomfort related to the study, please contact the researcher, Dr. Malloy, at (905) 721-8668 ext. 5965 or [lindsay.malloy@ontariotechu.ca](mailto:lindsay.malloy@ontariotechu.ca).

By signing this form you do not give up any of your legal rights against the investigators, sponsor or involved institutions for compensation, nor does this form relieve the investigators, sponsor or involved institutions of their legal and professional responsibilities.

**Consent to Participate:**

1. I have read the consent form and understand the study being described.
2. I understand that I am free to ask questions about the study in the future.
3. I freely consent to participate in the research study, understanding that I may discontinue participation at any time without penalty.

I agree

I Disagree (this study will end for you)

## Appendix B3 – Consent Form: MTurk Recruitment

### Consent Form to Participate in a Research Study

**Title of Research Study:** Parents' Perceptions of Their Children's Honesty and Dishonesty

**Name of Principal Investigator (PI):** Dr. Lindsay Malloy

**PI's contact number(s)/email(s):** (905) 721-8668 ext. 5965; lindsay.malloy@ontariotechu.ca

**Faculty Supervisor:** Dr. Lindsay Malloy (Lindsay.malloy@ontariotechu.ca)

**Student Lead:** Daniella Filoso (Daniella.filoso@ontariotechu.ca)

**Co-Investigator:** Dr. Angela Evans (aevans@brocku.ca)

**Departmental and institutional affiliation(s):** Faculty of Social Science and Humanities,  
Ontario Tech University

**External Funder/Sponsor:** American Psychology-Law Society Graduate Student Grand In-Aid

#### **Introduction:**

You are being asked to take part in a research study entitled "Parents' perceptions of their children's honesty and dishonesty." Please read the information about the study presented in this form. The form includes details on the study's procedures, risks, and benefits that you should know before you decide if you would like to take part. You should take as much time as you need to make your decision. Participation in this study is voluntary.

This study has been reviewed by the University of Ontario Institute of Technology (Ontario Tech University) Research Ethics Board #15774 on April 7th, 2020.

#### **Purpose and Procedure:**

You have been invited to participate in this study because our team is investigating how parents perceive their children's honesty and dishonesty. **In order to participate in this study, you must have at least 2 children who are both between the ages of 5 and 12 years old and living primarily in the same household.** Should you choose to participate, you will be one of approximately 400 participants participating in the study. If you participate in the study, you will be asked to read a questionnaire that asks about both you and your children's honest and dishonest behaviours (e.g., lying, secret keeping). You will also read some brief stories, answer questions about your children's sibling relationship, and your children's general behavioural patterns. This study will take approximately 30 to 45 minutes to complete.

#### **Potential Benefits:**

There are no direct benefits to participating. However, you will benefit society by contributing to the advancement of knowledge on children's honesty and dishonesty.

**Potential Risk or Discomforts:**

Although this study involves no more than minimal risk, you will be asked to read questions pertaining to your and your children's dishonest behaviours and might find it uncomfortable to answer some of these questions (e.g., How often does your child lie?). However, you can stop participating in the study at any time. You can also skip any questions that you do not wish to answer by selecting the "choose not to answer" response. At the end of the study, you will be debriefed and information about relevant resources will be provided should you have questions or concerns.

**Use and Storage of Data:**

Basic demographic information and responses to the questionnaires will be collected online via Qualtrics, an online survey platform with its server based in Canada. In any report of the study results, no information will be included that will make it possible to identify you. Electronic files will be stored as encrypted files in a password protected cloud-based storage system which will be accessed via password protected computers. Data will be identified only by a number that is assigned to you, and we will not have access to your personally identifying information (e.g., name). However, please remember that the Amazon Mechanical Turk system for which you signed up has identifying information about you. Only the research team will have access to the data, and it will be used to address our research questions. However, your records may be reviewed for audit purposes by authorized University or other agents who will be bound by the same provisions of confidentiality. Anonymized data will be kept indefinitely to potentially allow for follow-up studies and in accordance with the practices of open and transparent science. All information collected during this study, including your personal information, will be kept confidential and will not be shared with anyone outside the study unless required by law. You will not be named in any reports, publications, or presentations that may come from this study.

**Confidentiality:**

You and your child's privacy shall be respected and your responses will be identified only by subject number. Although we will ask for your children's *first* names and your email address, this information will not appear in your responses or our dataset. We are asking for names solely to make some of our questions that ask about individual children easier to understand. No information about you or your child's identity will be shared or published without your permission, unless required by law. Confidentiality will be provided to the fullest extent possible by law, professional practice, and ethical codes of conduct. Please note that confidentiality cannot be guaranteed while data is in transit over the Internet. This research study includes the collection of demographic data which will be aggregated (not individually presented) in an effort to protect your anonymity. Despite best efforts it is possible that your identity can be determined even when data is aggregated.

**Voluntary Participation and Right to Withdraw:**

Your participation in this study is voluntary and you should answer only those questions that you feel comfortable answering. You can decide to drop out of the study at any time. You will not be able to withdraw your data after you have submitted your survey because we will not be able to identify you. However, you can decide to simply close your browser and not complete the survey.

**Compensation, Reimbursement, Incentives:**

At the end of the study, you will receive an amount of \$2 USD via Amazon Mechanical Turk. However, as is common practice, and to protect the integrity of the data, this payment will not be dispersed if the data are not of reasonable quality (e.g., if you fail multiple simple, straight-forward attention checks such as “Select 2 for this item”) or if you fail to complete the survey. Remember that you can select “prefer not to answer” to any questions that you do not wish to answer.

**Dissemination of Results:**

Results will be published in manuscript form. Data will be presented at the group/aggregate level, and it will not be possible to identify individual participants. If you are interested in learning the results of this study, please contact Dr. Malloy at [lindsay.malloy@ontariotechu.ca](mailto:lindsay.malloy@ontariotechu.ca) after March 31, 2021.

**Participant Rights and Concerns:**

Please read this consent form carefully and feel free to ask the researcher any questions that you might have about the study. If you have any questions about your rights as a participant in this study, complaints, or adverse events, please contact the Research Ethics Office at (905) 721-8668 ext. 3693 or at [researchethics@ontariotechu.ca](mailto:researchethics@ontariotechu.ca).

If you have any questions concerning the research study or experience any discomfort related to the study, please contact the researcher, Dr. Malloy, at (905) 721-8668 ext. 5965 or [lindsay.malloy@ontariotechu.ca](mailto:lindsay.malloy@ontariotechu.ca).

By signing this form you do not give up any of your legal rights against the investigators, sponsor or involved institutions for compensation, nor does this form relieve the investigators, sponsor or involved institutions of their legal and professional responsibilities.

**Consent to Participate:**

1. I have read the consent form and understand the study being described.
2. I understand that I am free to ask questions about the study in the future.
3. I freely consent to participate in the research study, understanding that I may discontinue participation at any time without penalty.

I agree

I disagree (this will end the study for you)

## Appendix C – Demographic Questionnaire

Which country are you from?

- Canada
- United States
- Other

What is your **first** child's name? \_\_\_\_\_

What is [CHILD 1's] date of birth? (Month/Year)

- Month \_\_\_\_\_
- Year \_\_\_\_\_

What is [CHILD 1's] gender?

- Male
- Female
- Other (specify): \_\_\_\_\_

What is your **second** child's name? \_\_\_\_\_

What is [CHILD 2's] date of birth? (Month/Year)

- Month \_\_\_\_\_
- Year \_\_\_\_\_

What is [CHILD 2's] gender?

- Male
- Female
- Other (specify): \_\_\_\_\_

What is the nature of your children's sibling relationship?

- Identical twins
- Fraternal twins
- Full siblings (both children share the same biological parents)
- Half siblings (both children share one biological parent)
- Step-siblings
- Other (specify): \_\_\_\_\_

What is your relationship to the children you are responding about?

- Mother (i.e., biological mother, step mother, foster mother, adoptive mother, etc.)
- Father (i.e., biological father, step father, foster father, adoptive father, etc.)
- Other (specify): \_\_\_\_\_

Please indicate the ethnic background of [CHILD 1 / CHILD 2]. Select all that apply.

- Arab

- Black
- Chinese
- Filipino
- Indigenous (e.g., First Nations, Inuk, Métis)
- Japanese
- Korean
- Latin American
- South Asian (e.g., East Indian, Pakistani, Sri Lankan)
- Southeast Asian (e.g., Vietnamese, Cambodian, Malaysian, Laotian)
- West Asian (e.g., Iranian, Afghan)
- White (Caucasian)
- Other (please specify): \_\_\_\_\_

Please indicate whether [CHILD 1 / CHILD 2] has any special needs. Select all that apply.

- None
- Physical (e.g., asthma, epilepsy, muscular dystrophy, multiple sclerosis, etc.)
- Developmental (e.g., down syndrome, autism, dyslexia, processing disorders, etc.)
- Behavioural/Emotional (e.g., ADHD, bipolar disorder, anxiety disorder, etc.)
- Sensory-impaired (e.g., blind, visually impaired, deaf, hearing-impaired, etc.)
- Autoimmune disorder (e.g., rheumatoid arthritis, lupus, diabetes, inflammatory bowel disease, etc.)
- Other (please specify): \_\_\_\_\_

Do you have any more children in addition to the two you previously told us about?

Yes       No

How many more children do you have?

1     2     3     4     5+

What are their ages (in years)?

- Child 1 \_\_\_\_\_
- Child 2 \_\_\_\_\_
- Child 3 \_\_\_\_\_
- Child 4 \_\_\_\_\_
- Child 5 \_\_\_\_\_

Please indicate **YOUR OWN** ethnic background. Select all that apply.

- Arab
- Black
- Chinese
- Filipino
- Indigenous (e.g., First Nations, Inuk, Métis)
- Japanese

- Korean
- Latin American
- South Asian (e.g., East Indian, Pakistani, Sri Lankan)
- Southeast Asian (e.g., Vietnamese, Cambodian, Malaysian, Laotian)
- West Asian (e.g., Iranian, Afghan)
- White (Caucasian)
- Other (please specify): \_\_\_\_\_

Are you a single parent/caregiver?

Yes       No       Prefer not to answer

Is there someone who usually helps with caregiving responsibilities?

Yes       No       Prefer not to answer

What are your children's current living arrangements? (Select one)

- Both [CHILD 1] and [CHILD 2] live with me on a full time basis
- Only one of [CHILD 1] and [CHILD 2] live with me on a full time basis
- Both of [CHILD 1] and [CHILD 2] live with me on a part time basis
- Only one of [CHILD 1] and [CHILD 2] live with me on a part time basis
- Other (please specify): \_\_\_\_\_

**Before the Coronavirus disruption in our lives**, please indicate your employment status:

- Employed FULL TIME, primarily outside the home
- Employed FULL TIME, primarily work from home
- Employed PART TIME, primarily outside the home
- Employed PART TIME, primarily work from home
- Not employed
- Other (specify): \_\_\_\_\_

Please indicate your employment status as of **TODAY**:

- Employed FULL TIME, primarily outside the home
- Employed FULL TIME, primarily work from home
- Employed PART TIME, primarily outside the home
- Employed PART TIME, primarily work from home
- Not employed
- Other (specify): \_\_\_\_\_

Please indicate the option that best describes your former/current occupation category:

- Management occupations (e.g., manager, director, etc.)
- Business, finance, and administrative occupations (e.g., accountant, banker, administrative assistant, etc.)

- Natural and applied sciences and related occupations (e.g., physicist, chemist, biologist, engineer, etc.)
- Health occupations (e.g., doctor, dietician, physiotherapist, nurse, etc.)
- Occupations in social science, education, government service, and religion (e.g., lawyer/judge, social worker, counsellor, clergy, analyst, program officer, professor, teacher, etc.)
- Occupations in art, culture, recreation, and sport (e.g., librarian, conservator/curator, writer/journalist, performing artist, photographer, broadcaster, etc.)
- Sales and service occupations (e.g., retail, food service, housekeeping, cashier, police officer, firefighter, military personnel, flight attendant, real estate agent, etc.)
- Trades, transport, and equipment operators and related occupations (e.g., contractor, carpenter, electrician, plumber, construction worker, mechanic, etc.)
- Occupations unique to primary industry (e.g., farmer, oil/gas drillers, fishers, etc.)
- Occupations unique to processing, manufacturing, and utilities (e.g., machine operators, inspectors, motor vehicle assembler, etc.)
- Other (please specify): \_\_\_\_\_

When you (parent) were under the age of 18, did you live with a sibling or siblings at least some of the time?

Yes       No

How many siblings did you have when you were under the age of 18?

1     2     3     4     5     6     7     8     9+

Are you presently in contact with any of your siblings?

Yes       No

Please indicate **YOUR** gender

- Male
- Female
- Other (specify): \_\_\_\_\_

Please indicate **YOUR** age category:

20-25       26-30       31-35       36-40       41-45       46 or over

Please indicate **YOUR** highest degree received (select all that apply)

- No degree, certificate, or diploma
- High school graduate
- High school graduate, some post-secondary
- Post-secondary certificate of diploma
- University Degree
- Master's Degree
- Ph.D.
- MD
- JD

Please indicate, if applicable, the highest degree received of your children's **OTHER** parent/guardian (select all that apply)

- No degree, certificate, or diploma
- High school graduate
- High school graduate, some post-secondary
- Post-secondary certificate of diploma
- University Degree
- Master's Degree
- Ph.D.
- MD
- JD
- Not Applicable

Combined household income (yearly)

- Less than \$15,000
- \$15,000 to \$25,000
- \$25,000 to \$35,000
- \$35,000 to \$45,000
- \$45,000 to \$55,000
- \$55,000 to \$75,000
- \$75,000 to \$100,000
- Over \$100,000



Lies to obtain a reward (for example, money)  
 Lies to make a good impression on others  
 Lies of omission (i.e., lies that leave out the "full story", also known as part truths)  
 Lies to avoid conflict in the family  
 Lies to prevent one or both of your children from learning information (for example, about the Tooth Fairy or that they missed out on a treat)  
 Lies to keep your own secrets  
 Lies to keep other people's secrets

On a scale from 1 (Never) to 6 (Very Frequently), how often do you ask one or both of your children to tell the following types of lies **in the context of their sibling relationship?**

<b>Prefer not to answer</b>	<b>Never (1)</b>	<b>Very Rarely (2)</b>	<b>Rarely (3)</b>	<b>Occasionally (4)</b>	<b>Frequently (5)</b>	<b>Very Frequently (6)</b>
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Lies to be polite to their sibling  
 Lies to spare their sibling's feelings  
 Lies to protect him/herself from harm/getting into trouble  
 Lies to protect their sibling from harm/getting in trouble  
 Lies to trick or manipulate their sibling  
 Lies to harm their sibling/get their sibling in trouble  
 Lies to obtain a reward (for example, money, toys)  
 Lies to make a good impression on their sibling  
 Lies of omission (i.e., lies that leave out the "full story", also known as part truths)  
 Lies to avoid conflict in the family  
 Lies to prevent their sibling from learning information (for example, about the Tooth Fairy or that they missed out on a treat)  
 Lies to keep his/her own secrets  
 Lies to keep their sibling's secrets

Please indicate the frequency with which [CHILD 1] and [CHILD 2] do each of the following **in general** on a scale from 1 (Never) to 6 (Very Frequently)

<b>Prefer not to answer</b>	<b>Never (1)</b>	<b>Very Rarely (2)</b>	<b>Rarely (3)</b>	<b>Occasionally (4)</b>	<b>Frequently (5)</b>	<b>Very Frequently (6)</b>
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Is convincing when he/she lies  
 Finds it difficult to tell a lie  
 Feels guilty when he/she lies  
 Tells the truth  
 Is convincing when he/she tells the truth  
 Values honesty in others  
 Thinks that it is okay to lie in some situations  
 Is an honest person

Catches me lying to him/her  
 Is good at sticking to his/her lies over time  
 Is good at keeping secrets  
 Knows when I am telling the truth or not  
 Exaggerates stories  
 Thinks that it is okay to keep secrets in some situations

Please indicate the frequency with which [CHILD 1] does each of the following **in general** on a scale from 1 (Never) to 6 (Very Frequently).

<b>Prefer not to answer</b>	<b>Never (1)</b>	<b>Very Rarely (2)</b>	<b>Rarely (3)</b>	<b>Occasionally (4)</b>	<b>Frequently (5)</b>	<b>Very Frequently (6)</b>
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How often does [CHILD 1] lie?  
 It is difficult for [CHILD 1] to tell the truth  
 When recounting stories about his/her experiences/activities, [CHILD 1] confuses fantasy and reality  
 How often does [CHILD 1] lie *to* [CHILD 2]?  
 How often does [CHILD 1] lie *about* [CHILD 2]?  
 How often does [CHILD 1] truthfully tell you about [CHILD 2]'s wrongdoings? (That is, how often does [CHILD 1] tattle on [CHILD 2]?)  
 How often do [CHILD 1] and [CHILD 2] lie to you together?  
 How often does [CHILD 1] keep secrets from you?  
 How often does [CHILD 1] keep secrets from [CHILD 2]?

Please indicate the frequency with which [CHILD 2] does each of the following **in general** on a scale from 1 (Never) to 6 (Very Frequently).

<b>Prefer not to answer</b>	<b>Never (1)</b>	<b>Very Rarely (2)</b>	<b>Rarely (3)</b>	<b>Occasionally (4)</b>	<b>Frequently (5)</b>	<b>Very Frequently (6)</b>
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How often does [CHILD 2] lie?  
 It is difficult for [CHILD 2] to tell the truth  
 When recounting stories about his/her experiences/activities, [CHILD 2] confuses fantasy and reality  
 How often does [CHILD 2] lie *to* [CHILD 1]?  
 How often does [CHILD 2] lie *about* [CHILD 1]?  
 How often does [CHILD 2] truthfully tell you about [CHILD 1]'s wrongdoings? (That is, how often does [CHILD 2] tattle on [CHILD 1]?)  
 How often do [CHILD 2] and [CHILD 1] lie to you together?  
 How often does [CHILD 2] keep secrets from you?  
 How often does [CHILD 2] keep secrets from [CHILD 1]?

On a scale from 1 (Never) to 6 (Very Frequently), how often do [CHILD 1] and [CHILD 2] tell the following types of lies **in the context of their sibling relationship?**

<b>Prefer not to answer</b>	<b>Never (1)</b>	<b>Very Rarely (2)</b>	<b>Rarely (3)</b>	<b>Occasionally (4)</b>	<b>Frequently (5)</b>	<b>Very Frequently (6)</b>
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Lies to be polite to their sibling

Lies to spare their sibling's feelings

Lies to protect him/herself from harm/getting in trouble

Lies to protect their sibling from harm/getting into trouble

Lies to trick or manipulate their sibling

Lies to harm their sibling/get their sibling in trouble

Lies to obtain a reward (for example, money, a toy)

Lies to make a good impression on their sibling

Lies of omission (i.e., lies that leave out the "full story", also known as part truths)

Lies to avoid conflict in the family

Lies to prevent their sibling from learning information (for example, about the Tooth Fairy or that they missed out on a treat)

Lies to keep his/her own secrets

Lies to keep their sibling's secrets

### Appendix E – Sibling Relationship Questionnaire

Please answer the following questions based on [CHILD 1] and [CHILD 2]'s relationship. Please answer on a scale of 1 (Hardly at all) to 5 (Extremely much).

<b>Prefer not to answer</b>	<b>1 – Hardly at all</b>	<b>2 – Not too much</b>	<b>3 – Somewhat</b>	<b>4 – Very Much</b>	<b>5 – Extremely Much</b>
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How often do your children do nice things for each other?

How much do your children show one another things that one of them doesn't know how to do?

How much do your children tell one another what to do?

How much do your children care about each other?

How much do your children do things together?

How much do your children insult and call each other names?

How much do your children like the same things?

How much do your children tell each other everything?

How much do your children try to out-do each other at things?

How much do your children admire and respect each other?

How much do your children disagree and quarrel with each other?

How much do your children cooperate with each other?

How much do your children help each other with things that one of them doesn't know how to do by him or herself?

How much do your children make each other do things?

How much do your children love each other?

How often do your children play around and have fun with each other?

How much do your children mean to each other?

How much do your children have in common?

How much do your children share secrets and private feelings?

How much do your children compete with one another?

How much do your children look up to and feel proud of each other?

How much do your children get mad at and in arguments with each other?

How much do your children share with each other?

How much do your children teach each other things that one of them doesn't know how to do?

How much do your children order each other around?

How much is there a strong feeling of affection (love) between your children?

How much free time do your children spend with each other?

How much do your children bug and pick on each other in mean ways?

How much are your children alike?

How much do your children tell each other things that they do not want other people to know?

How much do your children try to do things better than each other?

How highly do your children think of each other?

How much do your children argue with each other?

### Appendix F – Items Concerning Children’s Antisocial Behaviour

Compared to others of his/her age, how well does [CHILD 1 / CHILD 2]:

<b>Prefer not to answer</b>	<b>Worse</b>	<b>Average</b>	<b>Better</b>
Get along with other kids?			
Behave with his/her parents?			

Please indicate the degree to which the following statements are true for [CHILD 1 / CHILD 2].

<b>Prefer not to answer</b>	<b>Not true (as far as you know)</b>	<b>Somewhat or sometimes true</b>	<b>Very true or often true</b>
[CHILD 1 / CHILD 2] argues a lot			
[CHILD 1 / CHILD 2] is mean to or bullies others			
[CHILD 1 / CHILD 2] destroys his/her own things			
[CHILD 1 / CHILD 2] destroys things belonging to his/her family or others			
[CHILD 1 / CHILD 2] is disobedient at home			
[CHILD 1 / CHILD 2] is disobedient at school			
[CHILD 1 / CHILD 2] doesn’t get along with other kids			
[CHILD 1 / CHILD 2] doesn’t seem to feel guilty after misbehaving			
[CHILD 1 / CHILD 2] breaks the rules at home, school or elsewhere			
[CHILD 1 / CHILD 2] gets in many fights			
[CHILD 1 / CHILD 2] is impulsive or acts without thinking			
[CHILD 1 / CHILD 2] loses his/her temper			

Please indicate the frequency of which [CHILD 1 / CHILD 2] does each of the following.

<b>Prefer not to answer</b>	<b>Never</b>	<b>Sometimes</b>	<b>All the time</b>
[CHILD 1 / CHILD 2] misbehaves at home			
[CHILD 1 / CHILD 2] misbehaves at school			
[CHILD 1 / CHILD 2] follows the rules			
[CHILD 1 / CHILD 2] does what I ask them to do			
[CHILD 1 / CHILD 2] engages in problematic behaviours			

## Appendix G – Debriefing Letter

### Debriefing Letter

Debriefing Brochure for Parents  
 Development, Context, and Communication (DCC) Lab  
 Phone: (905) 721-8668 ext. 3841  
 Email: [dcclab@ontariotechu.ca](mailto:dcclab@ontariotechu.ca)

Dear Parent/Legal Guardian,

Thank you for the support of your participation in our study! We sincerely appreciate your interest in our research and hope that you had a great experience completing our survey. We are hoping to examine the social influences on children's honesty and dishonesty, particularly how siblings influence one another's lie telling. The following are common questions that parents have about children and their lie-telling behavior.

**Q: Why do children tell lies?**

A: Children tell lies for the same reason adults tell lies: to gain something, protect themselves, or protect others and be polite. A child may tell a lie to avoid getting in trouble or to prevent another person's feelings from being hurt. There are different reasons and intentions behind various lies. Lie-telling is a part of normal development and associated with increasing mental and social skill. However, very little is known about the social influences on children's lie telling, including how siblings influence lie telling. A key purpose of this survey was to examine parents' perceptions of lie telling in the context of children's sibling relationships.

**Q: How should I react when my child lies and how do I curb their lie-telling?**

A: There are two things to keep in mind when dealing with lies:

1. What is the child's stage of development?
2. What is the context and motivation for the lie?

Under six years of age, children's lies are often confused with their imagination and fantasy world. Furthermore, children are also learning to experiment and get what they want. For young children, pleasing their parents is very important to them. Thus, they may sometimes tell a fib which they think will satisfy their parents more than the truth would. At around six years of age and above, children become more effective lie-tellers. They begin to grasp the subtleties of lying and its consequences. They also start to assess the social situations in which lies are told and develop an understanding that in some circumstances, people tell "white lies" with an intention of being polite or preventing harm. This is a good time to teach them to weigh the consequences of a lie. Furthermore, it is also best to address the underlying behaviour that the child is lying about rather than the lie itself. Overall, it is a good idea to keep lines of communication open between parents and children while also ensuring that parents do not make promises that they cannot keep. For example, it is best not to say "I won't get mad if you tell me the truth" unless you really mean it!

**Q: If my child tells lies, is she/he going to become a chronic liar?**

A: Probably not! All children tell lies at some time or another (just like all adults!), while very few become chronic liars. Chronic lie-telling is usually a difficulty in adolescence and is often

symptomatic of other social-emotional or behavioral problems. It may be that the child is trying to get attention or is trying to cope with an adverse school/home environment. If there appears to be a problem, you may wish to seek (or continue receiving) professional advice.

Thank you once again for your participation! If there are any further questions, please feel free to contact us at (905) 721-8668 ext. 3841 or [dcclab@ontariotechu.ca](mailto:dcclab@ontariotechu.ca). If for any reason you found this study to be emotionally upsetting, you can contact the Distress Centre of Durham at (905) 430-2522, or the Distress Centre of Niagara at (905) 688-3711.

### **Appendix H – Open-Ended Questions**

1. Tell us about some examples or situations, if any, in which your children lie to protect each other.
2. Tell us about a time, if any, when you asked your child(ren) to lie to their sibling.
3. Are there any other types of lies that your children tell that we haven't asked about so far?
4. Is there anything else that you would like us to know about your children's sibling relationship or your family?

### Appendix I – Behavioural Lie Telling Vignettes

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

- 1. Jenny scribbled on her brother's book. Jenny's brother asked Jenny if she had scribbled on his book. Jenny said "No, I didn't scribble on your book."**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

- 2. Jonah is colouring with his brother, Marcus. Marcus is drawing a picture that Jonah does not like. When Marcus asks Jonah if he likes his picture, Jonah says, "Yes, I love it".**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

3. **Josh's dad gives him a chocolate bar and says, "Don't tell your little sister I gave this to you." When his little sister asks Josh where he got his chocolate bar from, he says, "My friend at school gave it to me."**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie  
 This is a type of lie I have asked my children to tell for me

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

4. **Maria recently learned that the Tooth Fairy doesn't exist but her younger sister still believes in the Tooth Fairy. When her younger sister asked Maria if the Tooth Fairy was real, Maria replied, "Yes, she gave me money last time I lost a tooth!"**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie  
 This is a type of lie I have asked my children to tell for me

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

5. **Grace got a C on a recent test at school. She wants her older sister to think she is smart so when her sister asks what mark she got on the test, Grace says she got an A.**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

6. **Jake finds some drugs in his older brother's backpack. When Jake confronts his brother about the drugs, his brother says that they don't belong to him - even though he was planning to use them at a party during the upcoming weekend.**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

7. **Anna accidentally spilled a glass of milk on the carpet. Later, Anna's mother asks Julia, Anna's sister, if Anna spilled the milk on the carpet. Julia says, "No, I spilled the milk."**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

8. **Martin and Sylvia are not allowed to feed their dog under the dinner table. One night at dinner Martin is mad at Sylvia so he tells their parents that he saw her feed the dog under the table - even though she really didn't.**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

9. **Aaron and his dad are on their way home from Aaron's soccer game when he tells his dad that he is hungry and wants pizza. When they get home, Aaron tries to avoid his parents getting into an argument by telling his mom that they haven't had dinner yet.**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious secret to keep  
 I am likely to ask [CHILD 1] to keep this type of secret  
 I am likely to ask [CHILD 2] to keep this type of secret  
 I would punish this type of secret-keeping  
 I have told my children it is okay to keep this type of secret

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

10. **Malcolm's parents promised to give \$20 to the sibling who read the most books over the summer. Malcolm read half as many books as his sister but said he read more books than her so he could get the \$20 prize.**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

- 11. Sharice is not supposed to borrow her sister's clothes but she took one of her sister's nicest tops for a school dance. When her mom asks her why she found her sister's top in her purse, Sharice says she has no idea how it got there.**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie  
 [CHILD 2] is likely to tell this type of lie  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie

Please read the following hypothetical scenario and indicate the degree to which you agree or disagree with the corresponding questions on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

- 12. Alicia has seen her older brother smoking and spray painting buildings after school with a new group of friends. When their mom asks Alicia what her brother has been up to lately, Alicia says that she has seen him staying after school to get help with homework.**

<b>Prefer not to answer</b>	<b>1 – Strongly Disagree</b>	<b>2 – Somewhat Disagree</b>	<b>3 – Neither Agree Nor Disagree</b>	<b>4 – Somewhat Agree</b>	<b>5 – Strongly Agree</b>
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I believe that this is a serious lie  
 [CHILD 1] is likely to tell this type of lie for [CHILD 2]  
 [CHILD 2] is likely to tell this type of lie for [CHILD 1]  
 I would punish this type of lie  
 I have told my children it is okay to tell this type of lie

