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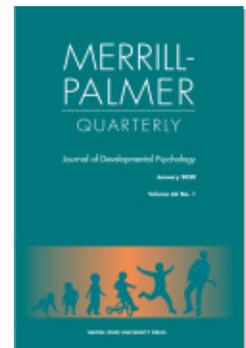
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## Children's Communicative Decisions Are Influenced by Gender, Shyness, and Peer Experiences

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The present study examined how school-age children's communicative decisions are influenced by the situation, their social partner, and their own characteristics (gender, shyness levels, and history of peer relationships). Children (8–12 years old,  $N = 246$ ) imagined themselves in social scenarios (depicted through comics) and indicated the likelihood of using particular communicative options (e.g., truth, lie, sarcasm, or prosocial response). They also completed measures of shyness and past social experiences with peers. Findings revealed gender differences: Boys were more likely to tell the truth when their social partner blundered, and boys demonstrated increased willingness to use sarcasm. Girls, particularly shy girls, reported increased likelihood of responding with prosocial communicative strategies. Children with a history of peer victimization endorsed using more critical comments, whereas those with positive social experiences (particularly girls) reported more prosocial responses. Together the findings provide insight as to how interpersonal and intrapersonal characteristics and contextual factors affect children's communicative choices.

When engaged in conversation, individuals continually make choices about what to say to effectively convey their intended message. A number of factors can influence their decisions, including the goals for the

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conversation, the situational context, and familiarity between social partners. Communication is a cooperative process that is thought to involve rules that individuals abide by in order for exchanges to be successful. Grice (1975) argued that effective communication necessitates adherence to four maxims, which require that communicators provide the appropriate amount of information (quantity), be truthful and well informed (quality), make statements that are relevant (relation), and generate utterances that are easy to understand and free of ambiguity (manner). However, social interactions are complex, and these maxims may be blatantly violated to convey particular intentions, for example, when individuals want to convey something that differs from what they believe (e.g., white lies) or from the literal meaning of their words (e.g., sarcasm). Thus, not only must children learn how to respond appropriately by using conversational norms, they must also learn when it is acceptable (or even preferred) to deviate from the cooperative “rules” of conversation to achieve a particular communicative objective. The present study investigated whether children’s decisions about how to respond to a friend are influenced by the situational context, their friend’s shyness level, as well as their own characteristics, such as gender, shyness, and previous social experiences with peers.

From a young age, children show some understanding of what it takes to engage in successful conversation. For instance, 2-year-old children rarely violate maxims of quality and manner in their own speech (Pellegrini, Brody, & Stoneman, 1987), whereas 3-year-olds are exceptionally skilled at abiding by the maxim of manner (Snow, Pan, Imbens-Bailey, & Herman, 1996). Moreover, 3-year-olds show sensitivity to others’ violations of Gricean maxims, with this sensitivity increasing with age (Eskritt, Whalen, & Lee, 2008; Okanda, Asada, Moriguchi, & Itakura, 2015). Although preschoolers have demonstrated an awareness and sensitivity to violations of conversational maxims, the ability to explain violations of these maxims does not emerge until 8–9 years of age (Ackerman, 1981). However, exposure to violations of conversational rules happens frequently. For instance, both children and parents have been shown to violate maxims during dinner-table conversation (Brumark, 2006). TV shows and movies commonly violate Grice’s maxims for comedic effect (Andresen, 2014; Attardo, 1993), as do users of social media (Hanifah, 2013; Whalen, Pexman, & Gill, 2009; Whalen, Pexman, Gill, & Nowson, 2013). Together this work suggests that, despite providing some guide for conversation, these conversational rules get broken to achieve a particular social or communicative objective, for example, when using sarcasm or lying.

Sarcasm is a form of figurative language in which an individual's words differ from his or her intended meaning (e.g., saying, "Smooth move!" after someone trips). Sarcasm, because of its ambiguity, carries with it increased risk of misinterpretation. However, it also has a number of social functions, which may be why it is used frequently in communication (e.g., to be humorous or jocular, to mock, to distance oneself emotionally, and to soften insults; Dews, Kaplan, & Winner, 1995; Dews & Winner, 1995; Gibbs & Izett, 2004; Pexman & Zvaigzne, 2004). Children's production of sarcasm emerges at age 5 years and continues to develop during middle childhood (Pexman, Zdrzilova, McConnachie, Deater-Deckard, & Petrill, 2009). The mean age of children using figurative language with family members has been shown to be just over 8½ years, with sarcasm and hyperbole being the most common forms of figurative language used by children (Pexman et al., 2009).

Lying, in terms of both prosocial lies, which are told to benefit others, and antisocial lies, which are told for self-serving purposes, represents another example of deviation from conversational rules (quality) in that individuals are not truthful in what they say. Lying is not uncommon, with children aged 3–14 years old telling, on average, one lie every other day (Lavoie, Leduc, Arruda, Crossman, & Talwar, 2017). Children's production of lies emerges in the preschool years, between 2 to 3 years of age (Evans & Lee, 2013; Lee, 2013; Talwar & Lee, 2008) and increases with sociocognitive development (Talwar & Crossman, 2011; Talwar & Lee, 2002a). As children develop, the types of lies they tell change (Talwar & Lee, 2002b; Popliger, Talwar, & Crossman, 2011; Talwar, Murphy, & Lee, 2007). For example, children as young as age 3 tell lies to conceal their transgressions (Talwar & Lee, 2002b), whereas older children tend to tell lies for prosocial reasons (e.g., to be polite; Talwar & Lee, 2002b; Talwar et al., 2007; Warneken & Orlins, 2015). Moreover, in a study of 7- to 11-year-olds, as age increased, children evaluated prosocial lies more favorably and were more likely to tell prosocial lies themselves (Xu, Bao, Fu, Talwar, & Lee, 2010). In general, young children typically believe it is wrong to lie (Harvey, Davoodi, & Blake, 2018), but commonly engage in lying for various reasons, such as to deny transgression, for personal gain, or to avoid responsibility (Newton, Reddy, & Bull, 2000).

The present study explored how children choose to communicate with others, including whether they decide to use language forms that deviate from typical "rules" of conversation (e.g., be truthful, be unambiguous), such as prosocial lying or sarcasm. Specifically, we were interested in examining how a child's own characteristics influence their choices about

what to say to others, as well as the nature of the context and characteristics of their social partner.

To date, there has been some research examining children's characteristics, particularly their sociocognitive skills, in relation to their communicative approaches. For instance, children with more advanced theory of mind tend to tell fewer antisocial lies (Lavoie et al., 2017). In addition, children with better mentalizing abilities demonstrate increased sarcasm comprehension (e.g., Nilsen, Glenwright, & Huyder, 2011). However, much less is known about the temperamental characteristics of children in relation to their communicative choices. Shyness is a temperamental trait characterized by quietness, vigilance, and restraint or reticence in novel social situations (Kagan, 1989). Shy children appear to experience a conflict in approach and avoidance motivations such that they simultaneously desire to approach their peers while being equally motivated toward avoidance because of their social anxiety (Asendorpf, 1990; Gazelle & Ladd, 2003). Within middle childhood and early adolescence, shy children demonstrate self-consciousness in social situations and tend to be embarrassed when they are the center of attention (Crozier, 1995). Shyness was of particular interest due to the important role that communication plays in moderating the relationship between shyness and later negative socioemotional outcomes (Coplan & Armer, 2005; Coplan & Weeks, 2009). Moreover, shyness influences both children's and adults' interpretation of ambiguous language, wherein sarcastic speakers are viewed as being meaner by shy individuals (Mewhort-Buist & Nilsen, 2013, 2017). We ask here whether children with greater shyness differ in how they choose to communicate with others. For instance, given the social risk that may come with violating typical rules for communication, are shy children less likely to use sarcasm or tell lies than are their nonshy peers? There is some reason to suspect this may be the case. For instance, socially anxious adults tell fewer lies than those who are extraverted (Kashy & DePaulo, 1996; Vrij & Baxter, 1999). However, a clear understanding as to the ways in which a child's shyness affects their communicative exchanges is limited by a paucity of research.

We also explored whether the shyness level of a child's social partner (in this study, identified as a friend) impacts their decisions about what to say during social exchanges. If children are sensitive to the possibility that shy individuals may be more likely to take offense to ambiguous language (Mewhort-Buist & Nilsen, 2013), they may be less likely to use sarcasm language when interacting with a shy child. Such enquiry has relevance for the social development of shy children in that, if provided with fewer examples of sarcasm, they may miss out on experiences that could be important for social cohesion (Turman, 2003) or learning about others' mental states

(Nilsen & Fecica, 2011). Moreover, if children feel that shy individuals are less confident than nons shy individuals, they may use less risky communicative approaches with them. Related to this notion, 5- to 11-year-old children were more likely to tell a prosocial lie to protect the feelings of someone who expressed sadness, compared to a neutral emotion, suggesting children are sensitive to others' affective states when choosing to engage in prosocial lying (Warneken & Orlins, 2015). Furthermore, pragmatically competent children—that is, those able to communicate appropriately within various social contexts—used more directives and clarification, and provided more information during social interactions with less competent children (Murphy, Faulkner, & Farley, 2014), which suggests that some children modify their communicative approach to that of their social partner.

In addition to the aforementioned research goals, we were interested in examining whether children's past encounters with peers, including both peer victimization and prosocial overtures from peers, related to their communicative decisions. As children age, their social networks grow larger and more complex, suggesting a greater opportunity to experience a wider range of behaviors by peers, including victimization (Wrzus, Hänel, Wagner, & Neyer, 2013). Experiences with peers was of particular interest, given that social relationships with peers play a crucial role in the psychological well-being of youth (Corsano, Majorano, & Champretavy, 2006; Hay & Ashman, 2003; Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006; Sarkova et al., 2014). For instance, a meta-analytic review found strong relations between peer victimization and depression, negative self-esteem, and lower self-confidence in youth 6–18 years old (Hawker & Boulton, 2000).

Past work has found that both negative and positive encounters within peer groups are related to children's social behaviors, within the preschool (Sebanc, 2003) and school-age years (Hanish, Ryan, Martin, & Fabes, 2005). Of more relevance to the current study, some work suggests a relationship between peer experience and communicative style. For example, preschool children who received higher approval ratings from peers tended to use a person-focused, rather than play-focused, communication style (Steinkamp, 1989). In contrast, 2- to 5-year-old children who were socially rejected by peers were found to make less competent social contributions during dyadic conversations, whereas popular children were found to communicate more effectively by engaging in turn taking, providing sufficient explanations, and maintaining discourse with peers (Black & Logan, 1995). Furthermore, children (10–12 years old) who were both perpetrators and victims of bullying were found to have an aggressive communication style compared to their peers, including those children who were bullies or victims (Salmivalli & Nieminen, 2002). It is thought that communicative

styles may be reinforced by a child's peer group (Cillessen & Mayeux, 2004). Given this, one might expect that the past experiences a child has with peers relates to the strategy they choose to adopt during communicative exchanges (which may in turn affect their future experiences with peers).

Finally, the gender of children in this study was examined in relation to their communicative choices because previous work has found differences between the communicative styles and social behaviors of girls and boys during social interactions. For instance, girls have been found to be more talkative, use more affiliative speech, use more emotion labels, and are more likely to mitigate conflict to maintain social relations than are boys (Leaper & Smith, 2004; Miller, Danaher, & Forbes, 1986; Tenenbaum, Ford, & Alkhedairy, 2010). With respect to adherence to conversational rules, little work has studied gender differences in children. Lying is more common in boys than in girls (Gervais, Tremblay, Desmarais-Gervais, & Vitaro, 2000); however, when girls do lie they are more skilled at concealing their lies than are boys (Popliger et al., 2011). Gender differences in communicative styles, including willingness to violate conversational maxims, appear to persist into adulthood. DePaulo and Bell (1993) found women are more likely to lie about their negative opinions (as cited in DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996) and are also more likely to tell prosocial lies when interacting with other women than when interacting with men (DePaulo et al., 1996). Men use more indirect speech and tend to violate conversational maxims more regularly than do women. For instance, men more frequently use maxim deviations when providing direction to children, putting themselves down, teasing others, and being humorous within conversation (Rundquist, 1992), as well as using sarcasm more frequently (Gibbs, 2000). We were interested in the degree to which a child's gender relates to his or her communicative decisions with friends in various context valences.

In sum, the first research goal was to investigate whether school-age girls and boys endorse using different communicative strategies with individuals (identified as friends) who are shy versus nonshy and whether this interacted with the situational context valence (positive or negative). To address this goal, 8- to 12-year-olds were presented with scenarios in which they witnessed a friend either doing something successfully or blundering an activity. They were then asked to indicate how likely they would be to respond to their friend by using various communicative options (truth, lie, sarcasm, or prosocial response). This age range was chosen because it represents a time shortly after the emergence of children's sarcasm use (Pexman et al., 2009); it is also when lies (particularly prosocial lies) start to be viewed more favorably (Xu et al., 2010) and when social relationships with peers are particularly important for youths' well-being (Schwartz, Lansford, Dodge, Pettit, & Bates, 2015).

It was anticipated that the communicative choices of girls may differ from those of boys. That is, we predicted that girls may endorse relationship-maintaining communicative strategies and boys may report a greater willingness to use sarcasm than would girls, as per research with adults (Gibbs, 2000). We also anticipated that, generally, children would endorse less socially risky communicative choices with shy friends. This hypothesis was based on the notion that children may view shy peers as being sensitive, easily offended, or intolerant of teasing and jocularity. It is also possible that, if shy children are seen as being socially vulnerable, participants might feel it is less appropriate to criticize them generally (i.e., regardless of whether a literal or sarcastic remark is used). Such a finding would be consistent with existing theories of temperament purporting that a child's temperament biases the responses of social partners, whose responses then further influence developmental outcomes (Rothbart & Bates, 2006).

The second research goal was to determine whether social characteristics of the participant related to the communicative strategies chosen. More specifically, we examined whether children's shyness level, and experiences with peers, influenced the communicative strategies chosen in different contexts. We anticipated that shy children would be less likely to endorse using sarcasm because using it carries with it the social risk of misunderstandings, which could lead to increased anxiety on behalf of shy individuals. Given the paucity of research, we did not have firm hypotheses for the relationship between a child's peer experiences and his or her communicative choices. Although children who report more peer victimization may endorse less socially appropriate communicative choices (Black & Logan, 1995), they may also show less willingness to take social risks, such as using sarcasm, owing to their (potentially) lower social status. Moreover, children who make less socially skilled communicative choices might be targeted by their peers more often.

Finally, the present work examined whether context and gender moderated the associations between children's shyness and peer experience with their communicative choices. That is, it may be that the influence of a child's characteristics on his or her communicative style may depend on the valence of the context. Moreover, certain characteristics may have different outcomes for girls and boys. For instance, peer victimization is more strongly related to boys' delinquent behaviors than girls' (Sullivan, Farrell, & Kliewer, 2006), and shyness is more strongly associated with internalizing problems for boys than girls (Colder, Mott, & Berman, 2002; Coplan, Closson, & Arbeau, 2007). Thus, it may be that both peer experiences and shyness hold a different relationship with the communicative choices made by girls versus boys.

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## Methods

### *Participants*

Tested were 254 children between the ages of 8 and 12 as part of a broader study on communication and shyness. Participants were recruited from elementary-school classes (Grades 4–6) in the Waterloo, Canada, region through information letters / consent forms sent home to parents.<sup>1</sup> Students who returned signed consent forms were eligible to participate in the study. Data from ten children were excluded because of early discontinuation or difficulties with understanding questionnaires ( $n = 5$ ), reported intellectual disability ( $n = 2$ ), or reported diagnosis of autism-spectrum disorder ( $n = 1$ ). Therefore, the final sample consisted of 246 participants ( $M_{\text{age}} = 10$  years, 7 months); 51% were girls. More specifically, there were 9 eight-year-olds (2 girls), 77 nine-year-olds (43 girls), 54 ten-year-olds (27 girls), 92 eleven-year-olds (47 girls), and 14 twelve-year-olds (7 girls). The majority of participants (95%) indicated that English was their first language.

### *Procedure*

Testing was conducted mainly during group sessions at children's schools. Each child had her or his own testing booklet from which to work and were encouraged to work independently. The booklets were counterbalanced: Thus, eight different versions were randomly distributed among the children. Booklets were also gender matched (i.e., booklets for girls included all female characters and vice versa). The booklets were self-directed and required the children to read the stories, questions, and self-report measures themselves. The examiner helped children with vocabulary understanding when requested. The testing session lasted 30–75 minutes, depending on the speed with which the children completed questionnaires.

*Vignettes.* Children read four vignettes depicting communicative interactions, which were presented with accompanying comics (see the Appendix). They were then asked to imagine themselves as the speaker within each story. The content of the scenarios differed in two fundamental

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1. A subsection of children, recruited through a lab database of families who had indicated an interest in participating in research, were tested in a research lab ( $n = 62$ ). This group did not differ from the school sample on any variables except that they reported less likelihood of lying ( $p = .002$ ).

ways: the context valence (between subject variable) and the shyness of the other individual (within subject variable). Stories in a negative context valence included scenarios where the other person failed at an activity (e.g., completely missing the hole while playing mini golf), or a positive context valence, where the other person succeeded at an activity (e.g., scoring a hole in one while playing mini golf). The other person in each scenario was identified as a friend and was indicated to be shy (e.g., does not like to be the center of attention) or nonshy (e.g., outgoing). The scenarios (e.g., mini golf, gardening, trying on a new shirt, or attending a fair) were counterbalanced such that they occurred in each condition across participants. In sum, each participant read two vignettes about interacting with a same-gendered shy friend and two vignettes about interacting with a same-gendered friend who was nonshy—in either all positive or all negative contexts. Responses were averaged across the two vignettes of the same condition, which accounted for missing data (<1% of response).

Following each scenario, children were asked about how they would respond to the other person. They were presented with five possible ending statements. (Only four were analyzed: telling the truth, lying, being sarcastic, and saying something prosocial.<sup>2</sup>) Note that, although a number of responses within the two context valences could be characterized as prosocial, this category referred to strategies that did not involve directly commenting on the event/behavior, but rather involved the specific intention of making the other person feel better/good. Children provided responses by using a rating scale from (0) *definitely not* to (4) *yes, definitely* to indicate the likelihood of saying each response option. Responses were not mutually exclusive in that children were asked to indicate the likelihood of each option rather than picking only one way of responding.

*Shyness measure.* After completing the vignettes and questions, children completed a measure of shyness, the Children's Shyness Questionnaire (CSQ; Crozier, 1995), a 26-item self-report questionnaire designed to assess both fearful and self-conscious aspects of shyness. To aid in the ease of administration of this measure, the seven items that were phrased as questions in the CSQ were reworded for this study to make all items first-person statements, consistent with the majority of the original items (e.g., the item, "Do you blush a lot?" was reworded to "I blush a lot").

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2. Children were also asked to report the likelihood of an action (e.g., laughing or high five), but these were not analyzed further because they overlapped conceptually with prosocial responses and the focus was on communicative utterances.

The responses for each item were scored 0 (*No*), 1 (*I don't know*), or 2 (*Yes*), with items reversed scored where appropriate. Items were averaged to create a final score and to account for missing items, which represented 2% of the response. The internal consistency of the measure in the current sample was .85.

*Social experiences measure.* The Social Experiences Questionnaire (SEQ; Crick & Grotpeter, 1996) was used to assess children's perceptions of their social interactions. The SEQ is a self-report measure that assesses the degree to which children experience peer victimization or, conversely, receive prosocial advances from others. This 15-item measure loads onto three factors, termed "overt victimization" (five items), "relational victimization" (five items), and "prosocial recipient" (five items). The overt victimization subscale measures the degree to which children are victims of physical aggression, whereas the relational victimization subscale measures the degree to which children are actively isolated or socially manipulated. The prosocial scale assesses the degree to which children experience positive overtures from others. Children rated how often each situation occurred for them by using a 5-point Likert scale ranging from *Never* (0) to *All the time* (4). Scores on each subscale were averaged, which accounted for missing data (3% of responses). The overt aggression and relational aggression scores were significantly related ( $r = .69$ ,  $p < .001$ ). The mean scores on each scale were combined to create a measure of negative peer interactions. The internal consistency of this measure was .87. (The alphas were .82 and .77, respectively, for the overt aggression and relational aggression scales.) The Cronbach's alpha for the prosocial experiences scale was .73.

## Results

Preliminary analyses revealed that there were a number of outliers, all within the SEQ. These scores were Winsorized to be within 3 *SD* of the mean ( $n = 7$ ). No other outliers were detected. Independent *t* tests revealed significant gender differences in a number of dependent variables. To account for this and to examine the hypothesized gender effects, gender was included as a between-subjects variable. There were no significant differences in the ages of the between-group samples (i.e., context valence and gender,  $ps > .06$ ). The different communicative strategies were analyzed separately because they were conceptually distinct and anticipated to have different predictors. However, their overall frequencies were examined to get a sense of how likely children felt they would use that response type. Children reported the lowest likelihood of lying ( $M = 0.63$ ,  $SE = .05$ ), followed by

sarcasm ( $M = 1.10$ ,  $SE = .07$ ), then telling the truth, ( $M = 2.17$ ,  $SE = .05$ ), and finally prosocial responses ( $M = 3.14$ ,  $SE = .05$ ).

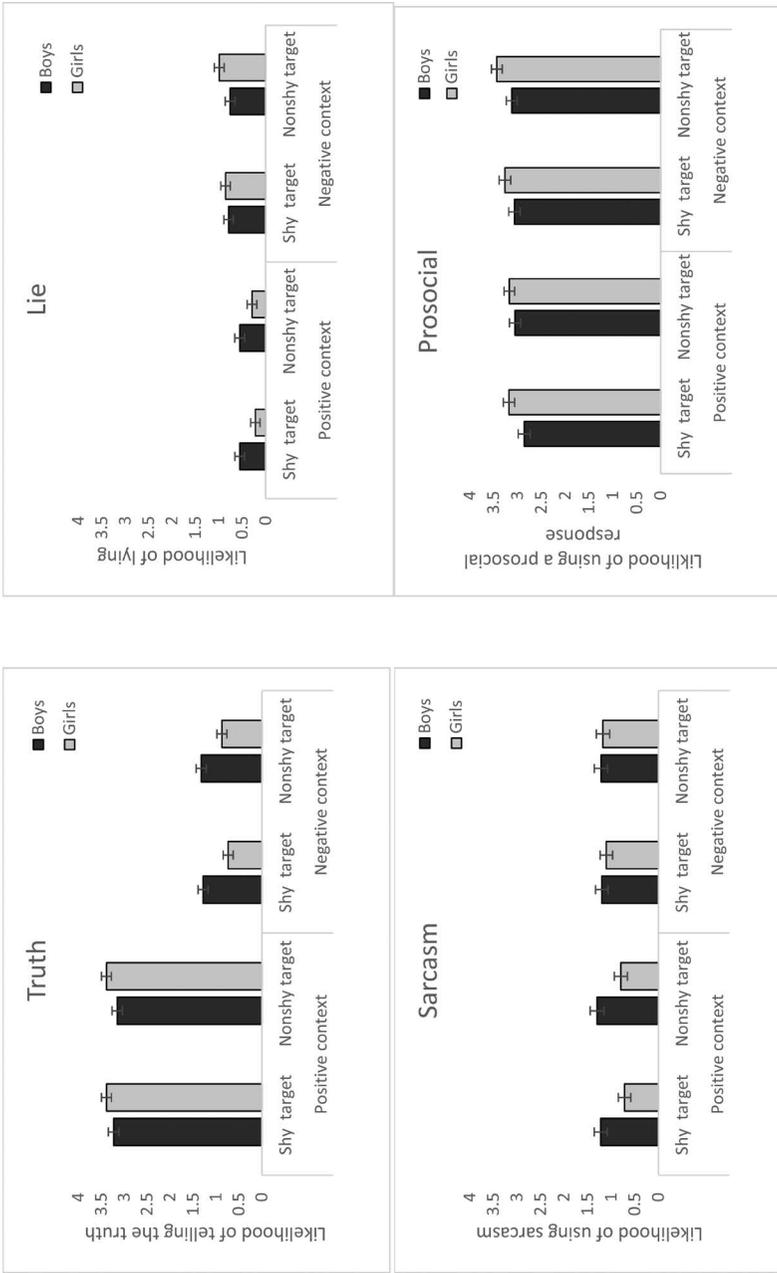
### *Impact of Context Valence on Communicative Choices*

Recall that the first research aim was to examine how the context valence and shyness of the recipient relate to the communicative strategies chosen by boys and girls. Each communicative strategy was analyzed separately in a 2 (Gender)  $\times$  2 (Recipient shyness)  $\times$  2 (Context valence) mixed-measures analysis of variance (see Figure 1).

*Truth.* When children's report of the likelihood they would make a truthful comment was examined, a main effect of context valence emerged,  $F(1, 242) = 513.32$ ,  $p < .001$ ,  $\eta_p^2 = .68$ . However, this main effect was qualified by a significant interaction between gender and context valence,  $F(1, 242) = 12.41$ ,  $p = .001$ ,  $\eta_p^2 = .049$ . Follow-up independent  $t$  tests (corrected using the Holm–Bonferroni method) were conducted to explore differences between context valence for each gender, as well as differences between genders within each context valence. Findings revealed that both genders were more likely to tell the truth in a positive context versus a negative context,  $t(124) = 20.77$ ,  $p < .001$ ;  $t(118) = 12.23$ ,  $p < .001$  (respectively for girls and boys). In a positive context, there were no differences between the two genders ( $p = .106$ ); however, within a negative context, boys were more likely to tell the truth than were girls,  $t(122) = 3.21$ ,  $p = .002$ . There were no other significant main effects or interactions ( $ps > .126$ ).

*Lies.* There was a main effect of context valence on children's report of the likelihood that they would lie,  $F(1, 242) = 22.32$ ,  $p < .001$ ,  $\eta_p^2 = .084$ . However, this effect was qualified by an interaction between gender and context valence,  $F(1, 242) = 5.61$ ,  $p = .019$ ,  $\eta_p^2 = .023$ . Independent  $t$  tests (corrected by using the Holm–Bonferroni method) revealed that, for girls, there was a significant difference across context valences in that they were more likely to lie in a negative context than in a positive context,  $t(1, 240) = 5.37$ ,  $p < .001$ . In contrast, boys did not show any difference in their report of lying across the two context valences ( $p = .121$ ). In a positive context, boys were found to be marginally more likely to lie than girls,  $t(120) = 2.38$ ,  $p = .019$ . In contrast, in a negative context, there were no differences in lying behavior ( $p = .292$ ). There were no other significant main effects or interactions ( $ps > .162$ ).

*Sarcasm.* When children's report of using sarcasm was examined, a main effect of gender emerged, wherein boys reported that they were more likely to use sarcasm than were girls,  $F(1, 242) = 4.83$ ,  $p = .029$ ,  $\eta_p^2 = .02$ . There were no other significant main effects or interactions ( $ps > .096$ ).



**Figure 1.** Children's communicative choices by gender, context valence, and target shyness.

*Prosocial responses.* Children's prosocial responses were examined, yielding a main effect of gender wherein girls endorsed using more prosocial responses than did boys,  $F(1, 242) = 5.14, p = .024, \eta_p^2 = .02$ . No other main effects or interactions emerged ( $ps > .054$ ).

### *Relations Between Shyness and Social Experience With Communicative Choices*

The second aim was to explore how children's own shyness or social experiences related to their communicative choices. The bivariate correlations between the measures are listed in Table 1. To explore the unique contribution of these individual differences, as well as to examine whether gender and/or context moderated the role that children's shyness or social experiences played on their communicative choices, regression analyses were conducted. Interaction terms were created by first mean centering the relevant variables. Age, gender, context, CSQ, SEQ-positive experiences, and SEQ-negative experiences were entered at the first step and the interaction terms between the measures of interest and gender, as well as with context, were entered at the second step. At the third step, the possible three-way interactions between the measure of interest, gender, and context were entered. Following these initial analyses, all nonsignificant interaction terms and individual predictors were removed from the analyses unless they were involved in higher level interactions or were control variables (i.e., age and gender).

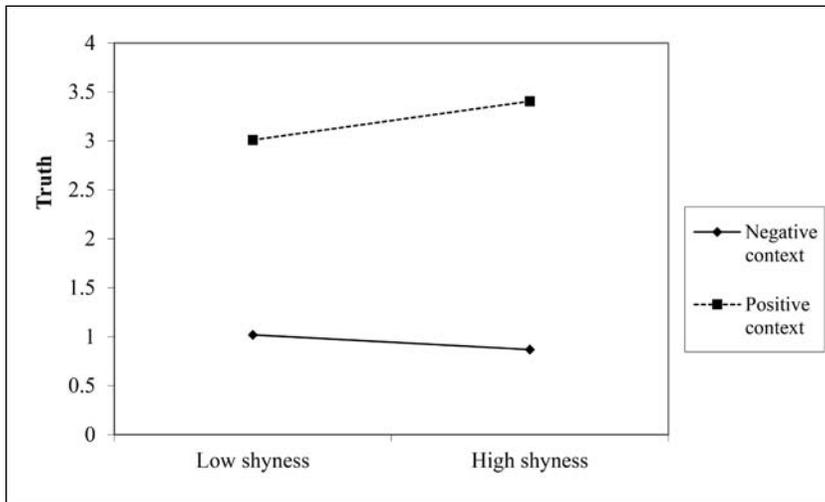
The results of these reduced models are reported in Table 2A and B. In terms of the likelihood that children would respond truthfully, context was found to have a moderating effect on children's shyness, as well as their positive and negative experiences with peers. To interpret these interactions, simple slopes analyses were conducted. With respect to shyness (Figure 2), there was a statistically significant relationship between shyness and telling the truth in the positive context ( $\beta = .14, B = .51, B SE = .21, p = .016$ ), but this relation was not significant in the negative context ( $p = .301$ ). This pattern is similar to that found for children's positive experiences with peers (Figure 3), where there was a significant positive relationship between the frequency of positive encounters and the likelihood of telling the truth in the positive context ( $\beta = .19, B = .35, B SE = .11, p = .002$ ), but there was not a significant relation in the negative context ( $p = .174$ ). In contrast, as the frequency of past negative experiences increased, the likelihood of telling the truth in the negative context increased ( $\beta = .14, B = .32, B SE = .13, p = .012$ ), but not in the positive

**Table 1.** Bivariate correlations between participant characteristics and communicative choices

	Truth		Lie		Sarcasm		Prosocial responses	
	Positive context	Negative context	Positive context	Negative context	Positive context	Negative context	Positive context	Negative context
Age	.04	.02	-.08	.02	.01	.17	-.09	-.18*
Gender (girl = 0, boy = 1)	-.15	.28**	.21*	-.10	.26**	.03	-.14	-.15
CSQ	.08	-.07	.02	.18*	-.20*	-.04	.16	.15
SEQ negative	-.12	.25**	.11	.02	-.06	.06	.15	.01
SEQ positive	.27**	-.16	-.28**	.05	-.14	-.02	.28**	.10

Note. CSQ = Children's Shyness Questionnaire; SEQ = Social Experiences Questionnaire.

\*  $p < .05$ . \*\*  $p < .01$ .



**Figure 2.** Interaction between shyness and context for *truth*.

**Table 2A.** Summary of regression analyses *truth* and *lie*

Predictors	Truth		Lie	
	Step 1 $\beta$ (SE)	Step 2 $\beta$ (SE)	Step 1 $\beta$ (SE)	Step 2 $\beta$ (SE)
Age	.02 (.05)	.01 (.05)	-.002 (.05)	-.01 (.05)
Gender (girls = 0; boys = 1)	.06 (.11)	.07 (.11)	.06 (.10)	.05 (.10)
Valence (neg. = 0; pos. = 1)	.82** (.10)	.82** (.10)	-.31** (.10)	-.31** (.09)
CSQ	.01 (.15)	-.05 (.19)	.08 (.13)	.22* (.18)
SEQ negative	.04 (.09)	.14 (.13)	—	—
SEQ positive	.03 (.08)	-.07 (.09)	-.04 (.07)	.12 (.09)
CSQ $\times$ Valence		.14* (.28)		-.21* (.25)
SEQ neg. $\times$ Valence		-.17** (.17)		—
SEQ pos. $\times$ Valence		.17** (.14)		-.26** (.13)
Equation $R^2$	.67**	.70**	.09**	.13**
$\Delta R^2$		.03**		.05**

*Note.* Nonsignificant interaction terms and individual predictors were removed from the analyses unless they were involved in higher-level interactions or were control variables. Beta values are standardized regression coefficients. CSQ = Children’s Shyness Questionnaire; SEQ = Social Experiences Questionnaire.

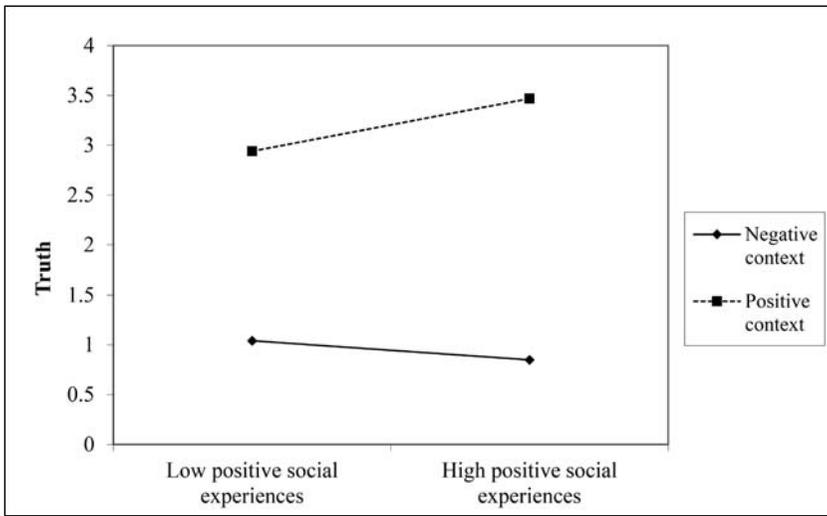
\*  $p < .05$ . \*\*  $p < .01$ .

**Table 2B.** Summary of regression analyses *sarcasm* and *prosocial responses*

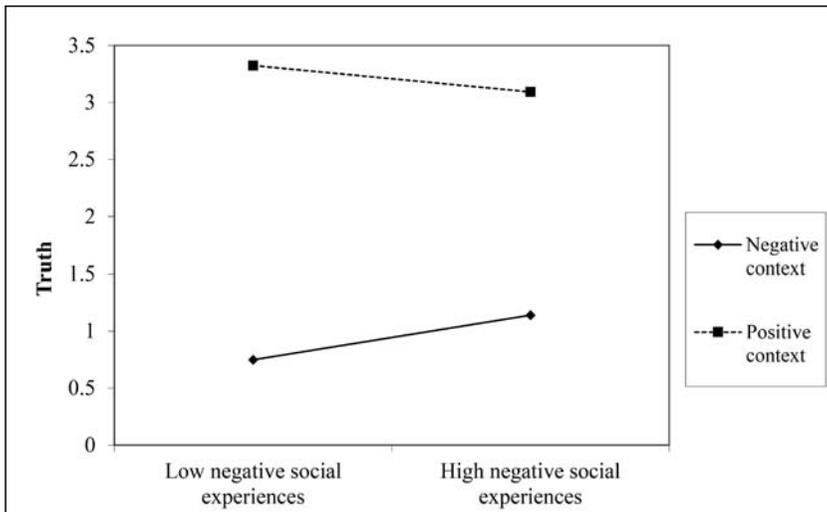
Predictors	Sarcasm		Prosocial responses	
	Step 1	Step 1	Step 2	Step 3
	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)
Age	.08 (.07)	-.13* (.05)	-.13* (.05)	-.14* (.05)
Gender (girls = 0; boys = 1)	.10 (.14)	-.05 (.11)	-.11 (.16)	-.10 (.15)
Valence (neg. = 0; pos. = 1)	-.08 (.13)	-.11 <sup>†</sup> (.10)	-.17 <sup>†</sup> (.15)	-.21* (.15)
CSQ	-.12 <sup>†</sup> (.19)	.19** (.14)	.15 (.20)	.17 <sup>†</sup> (.20)
SEQ negative	-.002 (.01)	—	—	—
SEQ positive	-.08 (.10)	.23** (.08)	.17 (.12)	.05 (.13)
CSQ × Valence			.05 (.29)	.03 (.28)
SEQ pos × Valence			.18 <sup>†</sup> (.15)	.38** (.20)
SEQ pos × Gender			-.08 (.14)	.12 (.19)
Gender × Context			.10 (.22)	.09 (.22)
SEQ pos × Gender × Valence				-.30* (.29)
Equation R <sup>2</sup>	.03 <sup>†</sup>	.08**	.08**	.11**
$\Delta R^2$			.01	.02*

*Note.* Nonsignificant interaction terms and individual predictors were removed from the analyses unless they were involved in higher-level interactions or were control variables. Beta values are standardized regression coefficients. CSQ = Children's Shyness Questionnaire; SEQ = Social Experiences Questionnaire.

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .



**Figure 3.** Interaction between positive social experiences and context for *truth*.



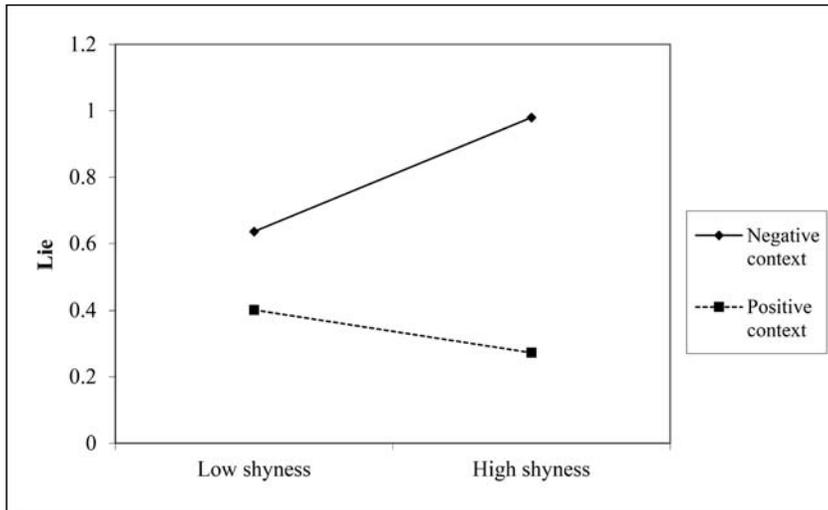
**Figure 4.** Interaction between negative social experiences and context for *truth*.

context ( $p = .109$ ) (Figure 4). Thus, children who are shyer and who report more positive peer interactions indicate they are more likely to tell the truth after someone has completed a task successfully, whereas for those with previous negative peer interactions there is more likelihood that they will tell the truth about a blunder.

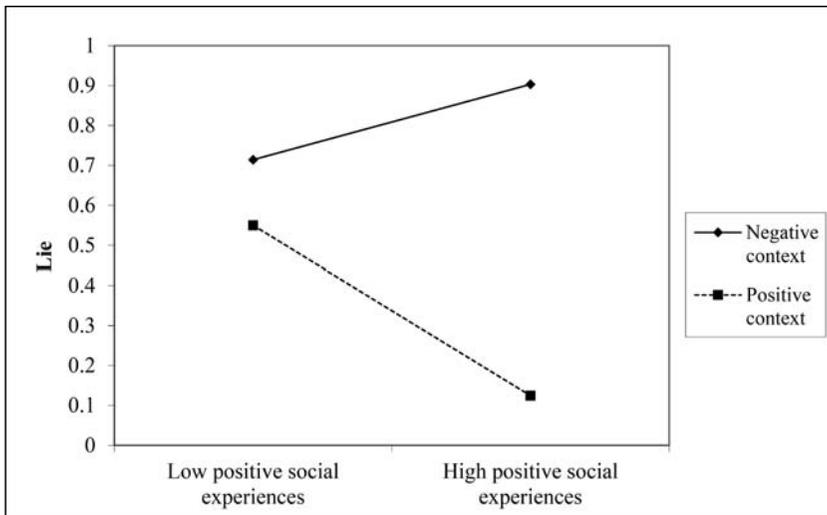
Context was also found to moderate the relationship between shyness and positive peer experiences and children's likelihood of lying (Figures 5 and 6). With respect to shyness, within the negative context as children's shyness levels increased, there was an increased likelihood that they would lie ( $\beta = .18$ ,  $B = .45$ ,  $B SE = .18$ ,  $p = .012$ ), but not a significant relationship in the positive context ( $p = .364$ ). Within the positive context, children who reported more frequent positive experiences with peers were less likely to lie ( $\beta = -.28$ ,  $B = -.28$ ,  $B SE = .10$ ,  $p = .006$ ), but there was no relationship within the negative context ( $p = .150$ ). Thus, those children who are shy are more likely to lie when a friend makes a blunder, and those children who have more prosocial experiences are less likely to lie about a success.

For children's report of propensity to use sarcasm, none of the interaction terms were significant and so were removed from the model, leaving only the first step. None of the predictors were found to uniquely relate to children's propensity to use sarcasm, though there was a trend for children who reported higher shyness levels to indicate a lower likelihood of using sarcasm.

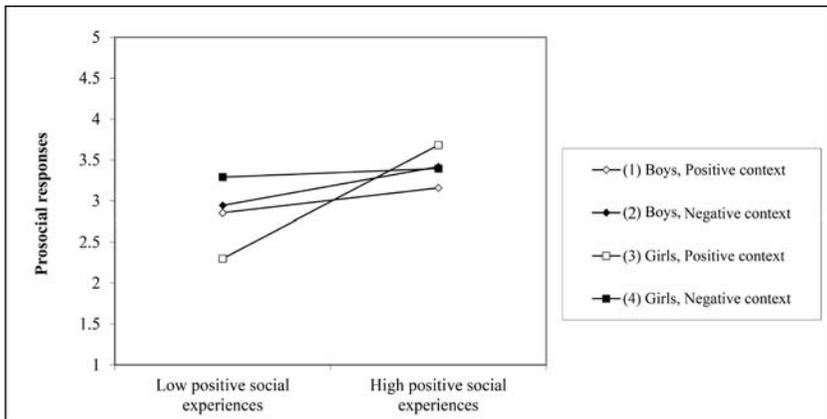
With respect to children's report of prosocial responses, a three-way interaction emerged between children's previous positive experiences with peers, gender, and context (Figure 7). Simple slopes analysis revealed that for boys there was no relationship between positive social experiences and their prosocial responses in either context ( $ps > .100$ ). For girls, there was not a relationship between positive social experiences and rate of prosocial



**Figure 5.** Interaction between shyness and context for lying.



**Figure 6.** Interaction between positive social experiences and context for *lying*.



**Figure 7.** Three-way interaction between positive social experiences, context, and gender on children's *prosocial responses*.

responses in the negative context ( $p = .681$ ). In contrast, in the positive context, there was a significant relationship between the frequency of positive social experiences and the degree to which they endorsed prosocial responses ( $\beta = .69, p < .001$ ). Girls who reported a greater number of previous positive experiences with peers were more likely to report using a prosocial communicative strategy.

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## Discussion

The goal of the present work was to examine the degree to which girls' and boys' communicative choices were impacted by the context valence and their friend's shyness. Moreover, associations between children's characteristics, such as shyness and previous social experiences with peers, and communicative choices were evaluated.

While children's general sensitivity to the context valence (i.e., how successful their friends had been during an activity) emerged, the data revealed rather striking gender differences across the various communicative choices. For instance, children's decisions about whether to tell the truth or lie were influenced by the context valence. (For example, children were more likely to tell the truth in a positive context, where the friend did something successfully, versus in a negative context, where the friend made some sort of blunder.) However, interactions between gender and context valence emerged for children's choice of telling the truth or lying. Boys were more willing to criticize their friends than were girls, as reflected by increased likelihood of telling the truth in a negative context and lying within a positive context. Such findings are consistent with previous research findings with adults (albeit in the context of providing opinions on art), wherein men were more likely to tell the truth to the artist about their negative opinions of the paintings than were women (DePaulo & Bell, 1993, as cited in DePaulo et al., 1996).

Gender effects were also found when examining children's reporting of sarcasm use: Across context valences, boys reported being more likely to use sarcasm than did girls. This finding is consistent with the adult literature, which has found that men (relative to women) enjoy sarcasm more (Druker, Fein, Bergerbest, & Giora, 2014), make, and are perceived by others to make, more sarcastic remarks (Colston & Lee, 2004; Gibbs, 2000), and use aggressive humor such as sarcasm more often (versus self-defeating humor, which women use more frequently; Hampes, 2006; R. A. Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). Here we show similar findings at an earlier developmental stage.

Further gender effects emerged when examining children's willingness to respond using a prosocial utterance with the intention of making their friend feel better: Girls endorsed more prosocial responding than did boys. This finding is in keeping with the general finding that, throughout middle childhood, girls exhibit more prosocial behaviors than do boys (Holmgren, Eisenberg, & Fabes, 1998; Rose & Rudolph, 2006; Zimmer-Gembeck, Geiger, & Crick, 2005), including in their ability to regulate negative affect (Saarni, 1984). This gender difference increases in adolescence

(Van der Graaff, Carlo, Crocetti, Koot, & Branje, 2018) and extends into adulthood, where women are thought to show increased prosocial behavior within interpersonal domains (Eagly, 2009), including their communicative style (e.g., providing more compliments, more compassionate language, and fewer interruptions; Holmes, 1988, 1989; Park et al., 2016; West, 1984; West & Zimmerman, 1983; Woods, 1989).

Taken together, the gender effects paint a picture whereby boys endorsed a greater degree of critical and socially risky communicative strategies and a lesser degree of prosocial responses. Three main theories attempt to account for gender differences in language use. The socialization perspective stresses that same-sex peer groups lead girls and boys to hold different gender norms, identities, and interests (Leaper, 1994, 2000; Leaper & Ayres, 2007). Girls are perceived to be gentler, friendlier, and more empathetic and emotionally expressive than boys (Best et al., 1977; Serbin, Powlishta, & Gulko, 1993; Spence & Buckner, 2000) and are viewed negatively when they display typically masculine traits, such as playing loud and rough (Blakemore, 2003). Although the socialization theory was posited decades ago, research suggests that gender stereotypes continue to be prevalent today (Haines, Deaux, & Lofaro, 2016) and are reinforced in various contexts, including schools (Erdena & Wolfgang, 2004) and movies (England, Descartes, & Collier-Meek, 2011).

These socialization experiences are theorized to in turn influence the development of language use. For instance, girls use language to establish and maintain social bonds with peers by using affiliative forms of speech, whereas boys use language to assert dominance through the use of commands and assertive statements (Maltz & Borker, 1982). The second explanation is the social constructionist perspective (Eagly, Wood, & Diekmann, 2000; Leaper, 2000; Leaper & Ayres, 2007), which posits that gender differences emerge as a product of situational demands. According to this view, women are more likely to rely on affiliative speech during interactions, whereas men are more likely to rely on assertive speech to reinforce their social status. Lastly, the biological approach holds that language differences are the result of evolutionary pressures for men to be dominant and women to be nurturing and submissive to survive and raise offspring (Andersen, 2006; Leaper & Ayres, 2007). The present findings do not favor one theory over another, but further the notion that gender differences emerge within the communicative choices that school-age children make when interacting with friends.

The second aim of the study was to explore how shyness and social experiences relate to communicative choices. Children who endorsed greater levels of shyness were more likely to tell the truth in a positive

context and lie in a negative context, and were marginally less likely to use sarcasm. Thus, we see that greater levels of shyness result in responses that would be considered more supportive or face-saving for the other individual (e.g., providing a prosocial lie) as well as less socially risky (e.g., less likely to use ambiguous language such as sarcasm). Conceptually, this could mean that shy children are motivated to avoid making communicative choices that could potentially disrupt social relationships with others. Furthermore, shy children are particularly sensitive to social threats and may be less likely to endorse socially risky language forms (LoBue & Pérez-Edgar, 2014). Although the social risk-taking behavior of shy children has not been researched empirically, adolescents with greater loneliness (a commonly reported feeling by shy children; Coplan & Weeks, 2009) have been shown to take fewer social risks (Moore & Schultz, 1983). This finding may also reflect differences in the interpretation of sarcastic language for shy children. For instance, both shy children and adults report that speakers who use sarcastic language are meaner than their nonshy peers (Mewhort-Buist & Nilsen, 2013, 2017).

The influence of shyness on communication was also explored by asking children about their communicative choices when interacting with a shy friend versus nonshy friend. The shyness of the target did not impact children's communicative decisions. That is, they showed comparable rates of truth telling, lying, sarcasm use, and prosocial responding with shy targets versus nonshy targets. Thus, although past work has found that children are more likely to tell a prosocial lie to protect the feelings of someone who exhibits sadness (Warneken & Orlins, 2015), here there was not a similar sensitivity demonstrated to shyness. It may be that just telling someone about the shy (or not) characteristics of the other person was not enough to elicit different communicative choices; whereas actually engaging with someone exhibiting signs of shyness (e.g., blushing or looking away) could lead to communicative differences.

The types of previous experiences children had with their peers were associated with their communicative choices. Children who reported more frequent peer victimization indicated they would be more likely to tell the truth in a negative context. That is, they would be more likely to let someone know that they had done something wrong. This is an interesting finding because it suggests that these children are less sensitive to social norms surrounding blunders—that is, that it is inappropriate to draw attention to when someone has made a mistake. As the research was correlational, causal relations cannot be determined. However, one could speculate that these children experience more negative interactions with peers

because of the poor social choices these children make, such as pointing out others' mistakes. Conversely, it may be that the experience of peer victimization leads one to feel more like retaliating against others socially. The finding fits with a larger body of work suggesting that children who experience peer victimization may be less socially skilled. These children display fewer assertive behaviors, cry more easily, show more hovering when attempting to engage with peer groups, and are more aggressive (e.g., Cooley, Fite, & Pederson, 2018; Patterson, Littman, & Bricker, 1967; Perry, Willard, & Perry, 1990; Schwartz, Dodge, & Cole, 1993). Moreover, in addition to being less socially skilled, youth who experience peer victimization show more behavioral maladjustment than their more popular peers (Sullivan et al., 2006). We extend these findings by demonstrating a relationship between communicative strategies and histories of peer victimization.

Those children who endorsed a history of more frequent positive interactions with peers were more likely to endorse prosocial communicative choices generally, such as more likely to tell the truth and less likely to lie in a positive context. Context moderated the interaction between children's positive interactions with peers and gender on the likelihood of using a prosocial response. That is, within the positive context, girls (but not boys) who reported more frequent positive experiences with peers were found to indicate they would be more likely to provide a prosocial response. Together these findings suggest that children with positive peer relations are more likely to recognize and endorse more socially skilled, context-appropriate, communicative behavior, and, for girls, generate communicative behavior that aims to make their friends feel good about themselves. Consistent with these findings, children with higher communicative competence receive more positive peer evaluations than do children with communicative difficulties (Gertner, Rice, & Hadley, 1994). Furthermore, pragmatic competence, as measured by the appropriateness of language use in a given context, has been found to be an important predictor of popularity among preschoolers (Nærland, 2011).

Although findings provide insight into interesting ways in which children's characteristics influence the communicative choices they make, this study is not without limitations. First, as the vignettes were gender matched to the participants, the gender effects should be interpreted with some caution. That is, we cannot be certain that the gender effects were due to the child's gender or the gender of the child's friend. However, as children's social groups tend to be from the same gender (Maccoby, 1988; Maccoby & Jacklin, 1987; C. L. Martin, Fabes, & Hanish, 2014; C. L. Martin, Fabes,

Hanish, Leonard, & Dinella, 2011; C. L. Martin et al., 2013), our stimuli reflected more typical scenarios for the participants. Second, though the methodology used here enables a window into how children may interact, there is a difference between what one might say and what one actually says during an interaction. Follow-up work could involve more in vivo experimental methods. In addition, children were provided with the specific example of something they could say (e.g., “Boy, that was an awesome shot!”). They may have been responding to the specifics of the example instead of the category. For instance, whereas they may be inclined to tell the truth, they would choose a different way of expressing it (e.g., saying “Wow! Amazing!”). Another limitation is the reliance on self-report measures to examine children’s shyness and peer experiences, which may have pulled for more socially desirable responses. Another approach would have been to use peer-nomination strategies, which would facilitate an examination as to how peers’ perceptions of a child relate to that child’s communicative choices. The degree to which findings generalize across varied cultures is not known because of the limited information we collected on our sample; thus, further work examining how cultural and group (e.g., classroom) norms impact children’s behavior is warranted. It would also be useful to expand the age range to more broadly assess for developmental differences. Finally, we did not specify the nature of the friendship in the vignettes; thus, we do not know how the children interpreted the specific relationship (e.g., close friend or more distant acquaintance), nor whether children were consistent in their interpretation. It would be interesting for future work to explore how children’s communicative choices vary across different relationships—and, further, whether such variance relates to factors such as previous peer experiences.

Findings highlight the various factors that influence children’s decisions about what to say and with whom. In sum, girls endorsed communicative strategies that were more prosocial in nature, whereas boys tended to use more socially risky language. Those children with a history of negative experiences endorsed more critical choices, and those with histories of increased positive experiences made more prosocial choices. Shyer children chose responses that suggest more face-saving for the other individual. Understanding the communicative strategies of children has implications for models of communication (and communicative development) as well as for attempts to improve the communicative competence and pragmatic skills of at-risk children. Furthermore, improving communicative choices are avenues worthy of exploration for reducing the negative social outcomes often experienced by at-risk youth.

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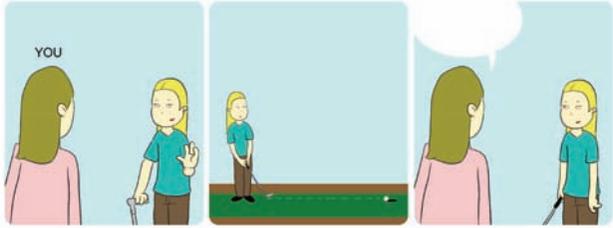
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**Appendix – sample story**

For this story, imagine that **you** are in the story. After you finish reading the story, answer the questions below.



You and your friend are playing mini golf on a field trip. Your friend is shy. She really doesn't like to be the center of attention. You are on the same team. Your friend tells you she is an awful mini-golf player. Your friend hits the ball and she scores a hole in one!

Rate how likely you would do or say the following if you were in this situation:

<b>In this situation, would you:</b>	Definitely not	Probably not	Maybe	Probably, yes	Yes, definitely
Tell the truth by saying, "Boy, that was an awesome shot!"	<input type="radio"/>				
Tell a lie by saying, "That was an awful shot."	<input type="radio"/>				
Be sarcastic by saying, "Boy, that sure was an <b>awful</b> shot!"	<input type="radio"/>				
Give your friend a high five.	<input type="radio"/>				
Congratulate your friend: "You should be really proud!"	<input type="radio"/>				

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