Shyness, Verbal Irony Comprehension, and Socio-Emotional Functioning in Middle Childhood

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Abstract

Shy children simultaneously desire to engage in social interactions with their peers and to avoid social situations (particularly novel ones) due to feelings of anxiety and self-consciousness. Although not in itself considered pathological, childhood shyness is a significant risk factor for a number of negative social and emotional outcomes including peer victimization, low perceived friendship quality, loneliness, and symptoms of depression. Previous work finds that pragmatic language skills and aspects of communicative competence influence the relationship between shyness and these negative outcomes. Counterfactual verbal irony, in which the literal meaning of an utterance is directly opposite its intended meaning, is a figurative language form that has been posited to have a number of important social functions. The Tinge Hypothesis, for example, claims that the use of verbal irony mutes the critical tone of ironic criticisms, and simultaneously renders ironic compliments less kind than literal compliments. It has also been shown that shyness is related to children's ratings of the attitude of ironic speakers, with children who are shyer rating ironic criticisms as being meaner than did less shy children. Building on these findings, and the potential protective role of good communication skills, this dissertation examined relations between verbal irony comprehension, effective communication, and socio-emotional outcomes in shy children aged 8-12 years.

Using a series of vignettes and self-report measures, Study 1 revealed that while neither verbal irony comprehension nor socio-communicative skills mediated the relationship between shyness and its associated negative outcomes, verbal irony comprehension moderated the relationship between shyness and symptoms of loneliness and depression. Contrary to predictions, shy children with better verbal irony comprehension had greater loneliness and depression symptoms. Similarly, for girls, better verbal irony comprehension strengthened the

relationship between shyness and peer victimization. In contrast, for boys, better verbal irony comprehension and better socio-communicative skills were associated with a reduction in the risk of victimization associated with shyness. Possible explanations for these unexpected findings are discussed.

Within the broad aim of examining the interplay between trait shyness and ironic language use, I was also interested in whether shyness influenced children's perceptions of the communicative intentions and personal characteristics of ironic speakers beyond judging speaker attitudes. In Study 2 children were asked to rate fictional characters on a number of dimensions after reading short vignettes in which the characters interacted with a same-gendered peer using sarcastic or literal criticism or praise. Children generally rated speakers who used verbal irony as being funnier, yet less kind than speakers who made literal remarks. Non-shy participants also indicated that they would be less likely to befriend a speaker who used irony with a shy target, suggesting that non-shy children may feel it is less appropriate to use verbal irony with shy children. Overall, regardless of whether speakers used ironic or literal statements, shy children felt that the speaker was kinder and more popular when they had seen the speaker interacting with a shy target, suggesting that the participants may have been identifying with the targets. Across the two studies, the majority of the findings were consistent with the Tinge Hypothesis, with children rating speakers who made ironic compliments less favourably than those who made literal compliments.

In a second part of Study 2, when children were asked to imagine themselves in the vignettes and then indicate the likelihood that they, themselves, would tell the truth, lie, use sarcasm or make a prosocial remark, the findings again followed the Tinge Hypothesis, with sarcasm being favoured over literal criticisms, but literal compliments being favoured over ironic

compliments. Girls' responses were more consistent with this trend, while boys were more likely to choose the less prosocial options, such as literal criticisms, ironic compliments, and lying in positive contexts.

These two studies explore the complex relations between shyness, gender, verbal irony comprehension, and social and emotional functioning (Study 1), and children's perceptions of speakers using verbal irony (Study 2). Many of the findings suggested that for shy children strong verbal irony comprehension and socio-communicative competence were related to poorer social and emotional outcomes. This suggests that targeting skills deficits may not be the route to mitigating the negative social and emotional outcomes associated with shyness. Shyness was not related to perceptions to ironic speakers across many measures, although there was some preliminary evidence that non-shy children thought it was less appropriate to use irony with shy targets. Further research should continue to explore how the risks associated with childhood shyness could be mitigated.

Table of Contents

General Introduction

Shyness is viewed as a temperamental trait characterized by quietness, vigilance and restraint or reticence in novel social situations. While shyness occurs on a continuum and by itself is not seen as pathological, it associated with a host of social difficulties including poor friendship quality, peer exclusion, and victimization (Booth-LaForce & Oxford, 2008, Gazelle & Ladd, 2003; Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006), and psychological difficulties including loneliness and depression (e.g., Rubin et al., 2004). Poor social communication has been identified as one possible mechanism behind these associations. That is, basic pragmatic language skills, such as the use of appropriate greetings and social conventions, were found to moderate the relationship between shyness and negative socio-emotional outcomes, with better pragmatic skills reducing the association between shyness and negative outcomes (Coplan & Weeks, 2009). However, effective communication goes beyond knowledge of the appropriate social conventions of language. Successful communicators must be highly attuned to a conversational partner's communicative intentions. Complicating this process is the fact that much of what we say is ambiguous, such that the intended meaning of our statements cannot always be gleaned by the literal meanings of the words alone. One example that highlights this ambiguity is figurative language, in which the literal meaning of the words differs in meaningful ways from the speaker's intended meaning. Counterfactual verbal irony, a form of figurative language used to convey criticism or praise, is an utterance where the speaker's intended meaning is directly opposite to the literal meaning of the spoken words, such as someone saying *"smooth move"* after a friend trips. If individuals have difficulty integrating the cues necessary to understand verbal irony (such as the context and the tone of voice of the speaker), they could mistakenly interpret the statement as being literal or deceptive, leading to

1

misunderstandings. Despite the risk of miscommunication, we continue to use verbal irony because it serves several important social functions, such as humour, jocularity, mocking, emotional distancing, and softening insults (Dews, Kaplan, & Winner, 1995; Dews & Winner, 1995). Past work has demonstrated that shy children may be missing the mark when interpreting verbal irony. My previous research demonstrated, using a third-person paradigm, that shy children attribute a more negative attitude to speakers using verbal irony than do less shy children, suggesting that they may be more likely to take offence when they are the targets of ironic remarks (Mewhort-Buist & Nilsen, 2013).

As counterfactual verbal irony is used to evaluate others (i.e., through either criticism or praise), I further speculated that the social costs of misinterpreting verbal irony could be significant for the psychosocial well-being of shy children. Addressing these queries, the overarching goal of this dissertation was to examine how shyness affects the comprehension, use, appreciation of, and attitudes towards verbal irony, as well as to examine how verbal irony comprehension, in particular, and socio-communicative competence, in general, may influence the negative social and emotional outcomes associated with shyness. Study 1 examined whether verbal irony comprehension and/or socio-communicative competence (a larger construct including receptive vocabulary, theory-of-mind, second-order false belief, figurative language understanding, and irony comprehension), could be mediators or moderators in the relationship between shyness and negative socio-emotional outcomes. Study 2 examined whether the perceived appropriateness of using irony varied as a function of the shyness of the target (in the story), or of the respondent (i.e., the child participant). This research adds to the growing body of research examining the influence of socio-communicative competence on the negative socio-

2

emotional outcomes of shyness, and improves our understanding of the social functions of verbal irony.

Social Development, Social Withdrawal, and Shyness

Since the time of Piaget (1932) and Bandura (1989), researchers have been interested in how social interaction affects children's learning and development. In particular, it is postulated that social interaction affects how children learn about non-social and social worlds, allows children to begin to appreciate multiple perspectives, and allows for the integration of social rules, norms and morals (Damon & Killen, 1982; Kruger, 1993). Social interactions are also thought necessary for the development of social competence, self-efficacy, and social cognition, influencing cognitive and language development (Rubin, Hymel, Mills, & Rose-Krasnor, 1991; Rubin, Stewart, & Coplan, 1995). Furthermore, social competence contributes to language development, as children gain experience with language through their social interactions, and much learning occurs through interaction and observation (Bandura, 1989). In the middle school years, the peer group becomes especially important in influencing a child's social and communicative development, as North American children spend a large portion of their time with peers during the school week. Research shows that sociable children who are also popular with their peers are confident, have greater self-competence in social situations, are at a decreased risk for internalizing and externalizing disorders in later childhood, and have greater academic achievement (e.g., Chen, Rubin, & Sun, 1992; Morison & Masten, 1991; Rubin et al, 1993; Hymel, Rubin, Rowden, and LeMare, 1990). Given the developmental importance of social interaction, it becomes imperative to evaluate the ramifications for children when their opportunities for typical social interactions are reduced.

There are a number of reasons why children may have reduced social interactions. The present work focuses on social withdrawal, the behavioural tendency to remove oneself from social interactions. Children who withdraw from social experiences can be grouped into two groups: those children who are disinterested in social encounters, removing themselves from both familiar and unfamiliar peer contexts; and those who desire social interaction but avoid it due to anxiety, who are typically referred to as "shy" (Asendorpf, 1990). Shy children may appear to have typical social interactions when they are with familiar peers; however, when they are in novel social situations, or with large groups, they withdraw, often demonstrating "on-looker" behaviour, quietly watching their peers from a distance (Asendorpf, 1990). Shy children (termed anxious solitary children in some studies) are thought to experience a conflict in approach and avoidance motivations, such that they simultaneously desire to approach their peers, and are equally motivated to avoid others due to anxiety (Asendorpf, 1990; Gazelle & Ladd, 2003). As shy children enter middle childhood and early adolescence, they demonstrate self-consciousness in social situations, and tend to be embarrassed when they are the centre of attention (Crozier, 1995). Both the anxious and self-conscious aspects of shyness are captured by the Children's Shyness Questionnaire, a self-report measure developed for use in school-aged children (Crozier, 1995).

Psychosocial consequences of shyness. Children who are shy have been shown to be at risk of experiencing a number of social and psychological difficulties throughout childhood and adolescence. In preschool, parent-rated shyness has been found to be associated with lower self-perceived competence, including both physical and cognitive competence (as measured by the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children; Harter & Pike, 1984), greater need for teacher attention, and higher levels of teacher-rated asocial

4

behaviour (Coplan & Armer, 2005). Throughout the primary school years, children on a pathway of increasing social withdrawal have been found to experience loneliness, solitude and peer exclusion (although this study did not differentiate between shyness and social disinterest; Booth-LaForce & Oxford, 2008). When social withdrawal is separated into the two dimensions of social disinterest and shyness, shy children (7 to 9 years of age), reported greater loneliness, social dissatisfaction and dislike of school, and had higher parent and teacher ratings of internalizing problems and peer difficulties than did socially disinterested children (Coplan & Weeks, 2010). Self-reported shyness is correlated with self-esteem in children aged 9 to 12 years, such that those children who report high levels of shyness view themselves more negatively in terms of their competence across a variety of domains including social acceptance and behavioural competence, with low global self-esteem as well (Cheek & Melchior, 1990; Crozier, 1995). Similarly adolescents' self-reported behavioural inhibition (the tendency in young children to react negatively in novel situations, thought to be a precursor or antecedent to shyness) is positively correlated with measures of worry, depression, and symptoms of anxiety disorders (Muris, Merkelbach, Wessel, & van de Ven, 1999). A number of research groups have found a stronger association between shyness and internalizing problems for boys (e.g., Colder, Mott, & Berman, 2002; Coplan, Closson, & Arbeau, 2007; Eisenberg, Shepard, Fabes, Murphy, & Guthrie, 1998; & Rubin, Chen, & Hymel, 1993), although this has not been seen universally (e.g., Crick & Ladd, 1993). Shy, anxious, fearful and sad behaviours tend to be accepted or rewarded by parents when they are demonstrated by girls, although they tend to be discouraged when demonstrated by boys (e.g., Coplan, Prakash, O'Neil, & Armer, 2004; Stevenson-Hinde & Glover, 1996).

In terms of social difficulties, it has been shown that shy children often experience poor friendship quality, peer exclusion, and victimization (Crick & Grotpeter, 1996; Gazelle & Ladd, 2003; Rubin et al, 2006). Understanding the potential mechanisms behind the peer difficulties associated with shyness is important, since peer exclusion and victimization are themselves associated with many of the negative psychological outcomes that are commonly associated with shyness, including loneliness and depression (Crick & Grotpeter, 1996). For example, Gazelle and Ladd (2003) demonstrated that the combination of anxious solitude and peer exclusion predicted increased depression symptoms over time in children from kindergarten to the fourth grade. Conversely, having high quality friendships has been found to be a *protective* factor against many of the negative psychological outcomes associated with shyness and behavioural inhibition, including the development of internalizing problems, poor self-esteem, loneliness and depression (Coplan, Arbeau & Armer, 2008; Coplan & Armer, 2005; Coplan et al, 2007; Muris et al, 1999; Parker & Asher, 1993; Prior, Smart, Sanson, & Oberklaid, 2000; Rubin et al, 2004). Similarly, Murberg (2009) demonstrated that peer support moderates the relationship between shyness and the development of depression in adolescents, while Fordham and Stevenson-Hinde (1999) showed that having high quality friendships buffers shy children against loneliness and anxiety. Therefore, it may be that the reduction of peer difficulties (poor friendship quality, exclusion, victimization) mitigates the risk of developing psychological difficulties for shy children.

Although all of the factors that lead shy children to be victimized have not yet been elucidated, it is plausible that good socio-communicative competence could enable shy children to improve their social interactions, thereby reducing the likelihood of negative social and emotional outcomes. In fact, it could be that strong socio-communicative competence

6

differentiates those shy children who do not experience negative social trajectories in childhood from those who do. If this is true, improving shy children's communication skills could be one avenue for intervention for these at-risk children. Prior to exploring such a premise, children's ability to navigate various aspects of our language system is explored.

Figurative Language

The development of communicative competence is important to children's social development, since communication is the means through which children engage in increasingly sophisticated social interactions (Nelson, 2005). Through the use of language, children come understand the mental states of those around them (de Rosnay & Hughes, 2006). Observation of others in interaction has also been shown to be related to later mentalizing ability (Dunn & Brophy, 2005), demonstrating that communicative exposure outside of dialogical interactions supports mental state reasoning abilities as well. In fact, some psychologists have argued that mentalizing ability is a social skill that is developed through engagement with others (e.g., Carpendale & Lewis, 2006; Reddy & Morris, 2009).

When learning their language, children follow a clear developmental progression in their understanding of the structure (syntax) and meaning (semantics) of language: learning single words at around their first birthday, two-word phrases by their second birthday, and speaking in sentences with some fluency by their third (Berko Gleason, 2009). Even at an early age, the ambiguous nature of language is evident, in that children, aged 12-18 months will use the same words to convey a variety of meanings. For example, the word "ball", could mean "look at the ball", "that is a ball", or "I want the ball" (known as telegraphic speech; Berko Gleason, 2009). Adults resolve the ambiguity of the message by integrating a number of cues from the environment, such as whether the child is reaching (wanting) or pointing to (drawing attention

7

to) the ball. Through their experiences with these types of interactions, the child learns the requirements for effective communication. This ability, which falls under the domain of the pragmatics of language, reflects children's ability to effectively use language within social contexts.

One key aspect of pragmatic language is the ability to communicate in a way that is tailored to the needs of a listener. Though listeners, for their part, must integrate various cues from the speaker in order to resolve any communicative ambiguity in the speaker's message. Grice (1975) argued that effective communication requires the adherence to four maxims, labelled quantity, quality, relation, and manner. According to Grice, effective communication requires that we communicate the right amount of information (quantity), that we are truthful and well-informed (quality), that our statements are relevant (relation), and that they are easy to understand (manner). By considering the shared knowledge and beliefs, or "common ground" between themselves and their partners (Clark, 1992), and by following the conversational maxims governing functional communication, speakers and listeners engage in effective cooperative conversational exchanges. However, there are times when speakers choose to blatantly violate the conversational maxims in order to highlight certain implicatures. When using figurative language, for example, speakers intentionally violate the maxims of quality and/or manner in order to pursue certain communicative goals.

Figurative language, which includes such forms of language as metaphor, hyperbole, understatement and irony, is language in which the literal meaning of the words differs in some meaningful way from the speaker's intended meaning. On the surface, these forms of language appear to violate the Gricean maxim of quality since the literal interpretations of the individual words would not lead to a truthful message. For example, to say that a child is a "bottomless pit"

8

after eating several helpings of dinner is not a true statement when taken literally. In the case of figurative language, the important meaning is that which is implied (e.g., that the child is eating a lot), rather than that which is literal.

It has been argued that the different forms of figurative language can be ordered in terms of the level of discrepancy between their intended and literal meanings, with counterfactual verbal irony (where the literal meaning of the words is directly opposite to the intended meaning of the speaker, Katz & Lee, 1993) as the most discrepant, followed by metaphor, hyperbole, understatement and non-counterfactual irony (irony that highlights the incongruity of an event; Demorest, Silberstein, Gardner, & Winner, 1983). Figurative language can also be ordered on a continuum of communicative purpose from social to rhetorical, with counterfactual verbal irony as the most social, followed by hyperbole and understatement, with metaphor and non-counterfactual irony anchoring the rhetorical end of the continuum (Demorest et al, 1983). Thus, counterfactual verbal irony is both the most discrepant and most socially-motivated form of figurative language, representing an interesting intersection between communicative and social development. Difficulties with this language form may serve as marker for more general socio-communicative challenges (e.g., understanding communicative intentions generally). Furthermore, given the number of social functions ironic language serves, if a child is not able to appreciate the communicative function of ironic utterances, he or she may be at greater risk of social difficulties.

Verbal irony. The term "irony" can be used to describe a number of figurative language types including dramatic irony, situational irony, and counterfactual verbal irony. Throughout the remainder of this dissertation, I will be referring to counterfactual verbal irony when using the terms "verbal irony", "irony", and "ironic". Irony can be used to criticize a situation or a

9

person, where the intended meaning is negative or mocking, as in the following example: *'Chris and Tara are playing mini-golf on a field trip. They are on the same team. Tara tells Chris she is a great mini-golf player. Tara hits the ball and completely misses the hole. Chris says: "Boy, that was an awesome shot!"'* (Example 1). The positive statement, *"Boy, that was an awesome shot!"* is used to convey the negative message that Tara's shot was terrible. Ironic criticisms that target a person directly, such as Example 1, are commonly referred to as *sarcasm*, although some authors suggest that sarcasm must also be overtly mocking and biting (e.g., Bowes & Katz, 2011). Irony can also be used as a form of compliment, where the intended meaning is positive, as in the following example: '*Steve grows flowers in his backyard. Samantha offers to weed Steve's garden one day. Samantha tells Steve she is a bad gardener. Samantha finishes quickly, pulling out all the weeds, and watering the flowers. Steve says, "You are such an awful gardener"'* (Example 2). In this case the negative statement, *"You are such an awful gardener"* conveys the positive message that Samantha is actually a very good gardener. As can be seen from the above examples, verbal irony, by its form, exploits the potential ambiguity of language by using words in very different ways than their definitions would suggest. Verbal irony also carries with it a degree of social ambiguity, in that the teasing nature of the statements includes both elements of humour and aggression towards the same person (Shapiro, Baumeister, & Kessler, 1991). Much of the work examining verbal irony, including the research in this dissertation, uses short vignettes wherein one character makes a statement to another character that is either literal or ironic, after a positive or negative event (e.g., Examples 1 and 2, respectively). Using this design, verbal irony can be explored using both ironic criticisms (i.e., sarcasm, since they are directed at an individual, as opposed to a situation), and ironic compliments (also directed at an individual).

Counterfactual verbal irony is the first form of figurative language that children are able to successfully comprehend (Demorest et al, 1983). Children's comprehension of the different forms of counterfactual irony follows a developmental progression. For *ironic criticisms*, studies have shown that children begin to comprehend that a speaker's beliefs are opposite to the literal meaning of his or her statement at the age of 5-6 years, as demonstrated by their accurate assessment of speaker belief on approximately 20-50% of trials (Climie & Pexman, 2008; Filippova & Astington, 2008), with other research showing some understanding in children as young as 3 years (Angeleri & Airenti, 2014). However, it is not until 7-8 years of age that children begin to appreciate that speakers of ironic criticisms intend to be mean (Filippova & Astington, 2008; 2010). Children's comprehension of *ironic compliments* lags behind their comprehension of ironic criticisms, such that they still have difficulty interpreting the beliefs and intentions of speakers at the age of 7-12 years (Mewhort-Buist & Nilsen, 2013; Whalen & Pexman, 2010). In fact, even adults have some difficulty interpreting the intentions of speakers making ironic compliments. Adults have been shown to rate speakers as "nice" on only 70% of ironic compliment trials (Climie & Pexman, 2008). It should be noted, however, that differing task methodologies have led to some differences in the ages when these skills are observed (Filippova & Astington, 2010). Children's *production* of ironic criticisms (sarcasm) emerges at the age of 5 years, and continues to develop during middle childhood (Pexman, Zdrazilova, McConnachie, Deater-Deckard, & Petrill, 2009). Pexman and colleagues (2009), for example, found that the mean age of children using figurative language with their family members (including jocularity, sarcasm, rhetorical questions, hyperbole and understatement) was just over 8 years; 6 months, with sarcasm and hyperbole being the most common forms used by children in their study. To date, there have not been any studies examining the rate of children's

production of verbal irony in conversations with peers; however it has been shown that children

use some sarcasm with their peers as early as kindergarten (Ely & McCabe (1994).

Several lines of research have revealed a number of cues on which children rely for the

interpretation of verbal irony. For comprehension of both ironic criticisms and ironic

compliments, children must appreciate the discrepancy between the situational context of the

statement and the statement itself, in order to understand that the statement is counterfactual.

Research has demonstrated that both children (Ackerman, 1983) and adults (Pexman, Whalen, &

Green, 2010) use the discrepancy between the context and the final statement to interpret ironic

remarks, and that the magnitude of this discrepancy is related to the ease of irony comprehension

in adults (Pexman et al, 2010). For example, in the case of an ironic criticism, if the situation is

very negative, and the ironic statement is very positive, the large discrepancy will facilitate irony

comprehension. Furthermore, context discrepancy interacts with the directness of the statement

such that irony is better identified when it is directed specifically to a character in conditions of

high context incongruity, and when it is indirect (i.e., referring to people in general) in conditions

of low context incongruity (Pexman et al, 2010).

In addition to context, several other cues help to mark the use of verbal irony. While tone

of voice of the speaker is used by both children and adults to identify sarcasm (Capelli,

Nakagawa, & Madden, 1990; Keenan & Quigley, 1999), some studies have found that young

children (aged 5-8 years) do not seem to rely heavily on this cue (Ackerman, 1983; Sullivan,

Winner, & Hopfield, 1995; Winner & Leekam, 1991), or that they can make use of this cue only

when the intonation is exaggerated (Glenwright, Parackel, Cheung, & Nilsen, 2014). For adults,

on the other hand, research suggests that multiple subjective auditory cues are integrated when

adults are listening to sarcastic statements (Voyer & Techentin, 2010). Adults also use the

relationship between the speaker and the target of the ironic statement in their detection of irony or their interpretation of the pragmatics of irony, especially for ironic compliments (Pexman et al, 2010; Pexman & Zvaigzne, 2004). Similarly, characteristics of the speaker, such as his or her occupation or personality traits have been shown to influence ratings of irony for both adults and children (Katz & Pexman, 1997; Pexman, Glenwright, Hala, Kowbel, & Jungen, 2006). Children also use the listener's knowledge state as a cue to whether a statement will be interpreted as ironic (Nilsen, Glenwright, & Huyder, 2011), demonstrating an awareness of the common ground between speakers and targets. Irony comprehension is further facilitated for children when the statement echoes or alludes to previously held beliefs or expectations (Creusere, 2000; Hancock, Dunham, & Purdy, 2000; Keenan & Quigley, 1999).

Further than examining the cues used in irony comprehension, several studies have elucidated the underlying skills and experiences that are required for children to appreciate irony. Filippova and Astington (2008), for example, found that children's vocabulary and mentalizing ability (i.e., their ability to understand the knowledge, beliefs and intentions of others, also known as theory of mind), were good predictors of verbal irony comprehension. A recent fMRI study looking at irony processing in adults found that irony processing involved activation of brain areas relevant to both social and communicative competence (Shibata, Toyomura, Itoh, & Abe, 2010). These areas included the right medial prefrontal cortex (MPFC), the right precentral gyrus (PG), and the left superior temporal sulcus (STS), which are areas that are involved in mentalizing (MPFC), metaphor and idiom comprehension (PG), and language processing and social attention (STS), respectively. While it has also been suggested that executive functioning skills may be important in verbal irony comprehension, this has not been studied empirically (Hala, Pexman, Climie, Rostad, & Glenwright, 2010). In order to gain proficiency with this

language form, children also require social experience, since communicative interactions provide

children with the opportunity to learn about the mental states of others, and become adept at

taking others' perspectives (Nelson, 2005). Children who are not provided with adequate social

exposure may not have the same experiences to support pragmatic development, of which

comprehension of figurative language is a part. Indeed, research has demonstrated that parent's

self-reported use of irony is related to their children's burgeoning verbal irony comprehension

(Hala et al, 2010).

Social functions of irony. Children encounter verbal irony frequently, such as during

conversations with their families (Pexman et al, 2009; Recchia, Howe, Ross, & Alexander, 2010)

and in television programming (Dews & Winner, 1997). Adults have been shown to use irony in

8% of conversations with friends and strangers (Gibbs, 2000). Similarly, young adults have been

shown to use figurative language in almost all (94%) emails, although of these instances of

figurative language, sarcasm was used much less frequently than hyperbole (Whalen, Pexman, &

Gill, 2009). Teachers have also been shown to use irony to manage behaviour in the classroom

(Piirainen-Marsh, 2011). Since using figurative language risks the possibility of

misinterpretation, it could be asked why people would choose to use this language form at all.

The answer to this question, in part, is that the use of verbal irony, in particular, has been shown

to serve several social functions.

As defined above, people may use verbal irony for both criticism (i.e., using a positive

statement to convey a negative belief), and for praise (i.e., using a negative statement to convey a

positive belief). However, it has been argued that the inferences individuals make when

interpreting verbal irony go beyond the simple counterfactual statement. Garmendia (2010)

posits that the counterfactual interpretation of the statement acts as a bridge from the literal

statement to the true inferred meaning. For example, in Example 1 (above), one can infer not only that Chris thinks that Tara's shot was bad, but that he is also criticizing her expectation of doing well. Similarly, while on the surface, the phrase *"You sure are a lousy gardener"* appears to compliment Samantha's gardening skills (Example 2), it also implies that Steve is criticizing her original self-deprecating view. From this viewpoint, irony is used to convey a critical attitude in *all* cases, whether criticisms or compliments, and full appreciation of the speaker's meaning involves significant inference. Speakers may therefore use ironic compliments when they are envious of a listener's accomplishments (Dews et al, 1995; Pexman & Zvaigzne, 2004) or to highlight a listener's unwarranted expectations of failure (Garmendia, 2010), in order to convey both positive and negative messages simultaneously. Similarly, it has been suggested that verbal irony is a manner of communicating failed expectations (Pexman, 2008). The evaluative nature of verbal irony differentiates it from other forms of figurative language, which may be used in social discourse but with fewer social implications.

Aside from the social overtures present in the content and structure of the ironic utterance, studies have shown that irony serves a number of additional social functions. For example, adults have been shown to use verbal irony to be humorous or jocular, to mock, to distance themselves emotionally, and to soften insults (Dews, et al 1995; Dews & Winner, 1995; Gibbs & Izett, 1999, Pexman & Zvaigzne, 2004). The Tinge Hypothesis argues that using verbal irony achieves the positive social goals of softening insults, saving face, and preserving relationships because the meaning of the ironic criticisms is muted by the literal word meaning (Dews & Winner, 1995). Thus, ironic criticisms are considered less negative than literal criticisms, thereby allowing speakers to state their opinions in a less aggressive manner. The Tinge Hypothesis also argues that the literal meaning of the words in ironic compliments renders

them less positive than literal compliments. This muting of the praise in ironic compliments would also be expected under Garmendia's argument that all irony is critical (Garmendia, 2010).

Several studies have shown that children as well as adults appreciate the muting function of verbal irony, in that they rate ironic criticisms as less mean than literal criticisms, and ironic compliments as less nice than literal compliments starting at the age of 5-6 years (e.g., Dews & Winner, 1995; Harris & Pexman, 2003; Mewhort-Buist & Nilsen, 2013; Pexman & Glenwright, 2007). In further support of the Tinge Hypothesis, adults rate ironic criticisms that are more ironic as also being more polite, while conversely rating ironic compliments that are more ironic as being less polite (Pexman & Zvaigzne, 2004). However, it should be noted that not all uses of verbal irony have demonstrated the same muting effect. Bowes and Katz (2011) demonstrated that sarcasm was perceived as *more* victimizing and relationally aggressive when used in dialogues mixed with other figurative language within an emotionally-charged conflict situation. While they argue that this is a more ecologically valid representation of sarcasm, few studies have used this paradigm; and these stimuli may not be characteristic of how verbal irony is used among children and in children's entertainment media (the Bowes & Katz study was with adults).

Considering the ubiquity of irony in children's everyday social experiences, and its purported social functions, verbal irony understanding is relevant to the development of both communicative and social competence. In fact, the impetus for much of the research into verbal irony has been the assumption that poor verbal irony comprehension could lead to social consequences such as peer difficulties; however, this has yet to be studied empirically.

Although the relationship between verbal irony comprehension and social outcomes has yet to be investigated, there are several studies highlighting the importance of other components

16

of pragmatic language understanding to social competence and social outcomes. For example, researchers have used the Children's Communication Checklist (CCC; Bishop, 1998) to assess the relationship between pragmatic language and social outcomes. The CCC (now in a revised form, the CCC-2) is an observer-report checklist examining children's pragmatic skills across a number of domains including conversation initiation, coherence, and rapport, as well as stereotyped utterances that are often characteristic of autism spectrum disorder (Bishop, 1998). This scale also includes items tapping into children's appropriate use of context including their ability to adjust their speech to the social demands of the situation, and their ability to interpret non-literal language, although the latter skill is only measured using 2 of the 70 items in the measure (Bishop, 1998). Using the pragmatic competence composite of the CCC, children with pragmatic language difficulties showed increased social and behavioural problems, including peer difficulties (Conti-Ramsden & Botting, 2004). Other research has demonstrated that pragmatic language understanding is related to prosocial behavior with peers (Coplan & Weeks, 2009). Coplan and Weeks (2009) assessed children using the pragmatic judgement subtest of the Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999), which measures children's ability to provide appropriate responses to a variety of common social situations such as answering the telephone, or making a request. They found that children's performance on this task was related to teacher ratings of prosocial behaviour with peers. Moreover, the interpretation of faux pas, where someone unwittingly insults another person due to a lack of knowledge, has also been shown to be related to children's peer relations. Specifically, children who showed poor faux pas understanding were rated by their classmates less favorably than were children who performed well on the task (Banerjee & Watling, 2005). A longitudinal follow-up of the same participants showed that there was a reciprocal relationship

between peer rejection and faux pas understanding such that peer rejection predicted poorer faux pas understanding in younger children, and worse faux pas understanding predicted peer rejection in older children (Banerjee, Watling, & Caputi, 2011). Because verbal irony is inherently evaluative, including elements of criticism, it was expected that difficulties in verbal irony comprehension or interpretation would be even more likely to lead to significant negative social outcomes including decreased quality or quantity of social experience, which may then further exacerbate communicative difficulties.

Shyness and Socio-Communicative Competence

As mentioned above, social engagement and communication with others is important to the development of a host of social skills (e.g., Bandura, 1989; de Rosnay & Hughes, 2006; Dunn & Brophy, 2005; Nelson, 2005). As such, children who are removed from social interactions by either peer exclusion or by their own choice (as in social withdrawal and shyness) are at risk of developing both social and communicative difficulties.

The relationship between communicative competence and shyness has been studied empirically. Children who are shy have been found to have language skills that differ from their same-aged peers, including decreases in vocabulary, verbal fluency and phonological awareness (Spere & Evans, 2009). Particularly relevant to the proposed study, I have previously demonstrated that shy children have a different pragmatic understanding of verbal irony than do their less shy peers (Mewhort-Buist & Nilsen, 2013). Although shy children understood that ironic speakers meant to communicate the opposite to what the literal interpretation of their words would suggest, children with higher self-identified shyness rated speakers who made ironic statements as being meaner than did less shy children. Since adults who understand ironic remarks (both criticisms and compliments) rate the statements more favourably than do those

who do not understand the remarks (van Mulken, Burgers & van der Plas, 2011), the finding from our study that shy children rated ironic speakers as being mean, *despite* intact comprehension of the statements, suggests that shy children have a different attitude towards verbal irony, as opposed to a different understanding of it, per se. Similar findings have been shown in adults, with shyness being positively correlated with ratings of speaker's negative attitude when the speaker used ironic compliments (Mewhort-Buist & Nilsen, *accepted*). Recall that verbal irony is used frequently in children's environments, and that it serves many social functions. Their tendency to interpret sarcasm more negatively could lead shy children to be more easily offended by ironic remarks, leading to increased distancing from their peers.

Some research has demonstrated a moderating role of strong communication skills on the relationship between shyness and negative psychosocial trajectories. For example, Coplan and Armer (2005) demonstrated that expressive language skills, as measured by the Expressive One-Word Picture Vocabulary Test: Revised (Gardner, 1990), moderated the associations between parent-rated shyness and teacher-rated asocial behaviour, teacher attention, and self-perceived competence. Children who had stronger expressive language skills at the beginning of the school year appeared to be somewhat protected from the negative psychosocial outcomes associated with shyness at the end of the preschool year. This relationship occurred despite a lack of a significant correlation between shyness and expressive vocabulary, suggesting that while shy children do not always lack the communicative skills of their peers, improvements in their language skills still have the potential to mitigate some of the risks associated with shyness.

Particularly relevant to the current studies, another study from the same research team found that young elementary school children's degree of shyness was negatively correlated with their pragmatic language abilities (Coplan & Weeks, 2009). That is, children (aged 6-7 years)

who were rated by their parents as being shyer were less able to provide socially appropriate verbal responses to common social scenarios (as assessed by the Pragmatic Judgement subtest of the Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 2008)). Furthermore, strong pragmatic language skills were related to better psychosocial outcomes for shy children, suggesting that language skills can moderate the relationship between shyness and social and emotional difficulties. Shy children who had stronger pragmatic skills at the beginning of the school year were found to have greater prosocial behaviour and lower self-reported loneliness and social anxiety symptoms at the end of school year. For boys, better pragmatic language skills were associated with a decrease in parent-reported shyness over time. These results suggest that strong pragmatic language skills could serve as a protective factor against some of the risks often associated with childhood shyness. The pragmatic judgement subtest used in the Coplan and Weeks (2009) study involves appropriate application of the Gricean maxims, but lacks examples that are more socially complex, such as statements requiring inference, including verbal irony. Since verbal irony is clearly evaluative, the social costs of misinterpreting verbal irony could have even greater significance for the psychosocial well-being of shy children.

Within the adult literature there is evidence to suggest that communicative competence could mediate the relationship between shyness and relationship quality (Arroyo & Harwood, 2011). In Arroyo and Harwood's (2011) study, young adults completed a number of questionnaires with a friend about themselves, their friend, and their relationship. It was found that self-perceived and friend-perceived communicative competence mediated the relationship between shyness and relationship quality; however, in this study, communicative competence was not measured objectively. Although mediation has not yet been explored in children, the

study by Coplan and Weeks (2009) demonstrated that basic pragmatic ability moderated the relationship between shyness and negative social and emotional sequelae. Yet, the potential role of verbal irony and other measures of communicative competence in the negative social and emotional outcomes of shyness have yet to be explored. In the present work, Study 1 examines whether verbal irony comprehension and/or socio-communicative competence mediate or moderate the relationship between shyness and negative socio-emotional outcomes in children. Research into verbal irony comprehension has been predicated on the idea that misinterpretation of irony would lead to social costs; Study 1 explored this assumption. Study 2 further examined the social functions of verbal irony by exploring whether the perceived appropriateness of using irony varied as a function of the shyness of the target (in the story), or of the respondent (the child participant). This research brings together research into social and communicative competence in hopes to better understand the social functions of figurative language, and the impact of socio-communicative competence on the social and emotional well-being of shy children.

Study 1 Introduction

As discussed above, there is a wide body of literature demonstrating that shy children are at risk of developing a number of social and psychological difficulties, including peer rejection and victimization, lower perceived friendship quality, loneliness and depression (e.g., Muris et al, 1999; Rubin et al, 2004). Children who are shy have also been shown to have a number of communicative difficulties including weaker vocabulary skills, weaker pragmatic skills (e.g., appropriately adjusting what is said for a listener), and greater incidence of specific language impairment (Coplan & Weeks, 2009; Spere & Evans, 2009; Wadman, Durkin, & Conti-Ramsden, 2008). Furthermore, studies have demonstrated that strong vocabulary skills and basic pragmatic language skills moderate the relationship between shyness and negative social and emotional outcomes, particularly for boys (Coplan & Weeks, 2009). In adults, communicative competence mediates the relationship between shyness and relationship quality (Arroyo & Harwood, 2011), and friendship quality has been shown to be related to emotional well-being, such that children with high quality friendships report less loneliness and few symptoms of depression (Fordham & Stevenson-Hinde, 1999).

Although studies examining verbal irony comprehension and interpretation have consistently suggested that failure to appreciate verbal irony will lead to important social consequences, this assumption has yet to be examined empirically. My previous research (Mewhort-Buist & Nilsen, 2013) demonstrated that shy children attribute a more negative attitude to speakers using verbal irony than do less shy children, suggesting that they may be more likely to take offence when they are the targets of ironic remarks. Study 1 extends this work by examining whether socio-communicative competence, in general, and verbal irony comprehension, in particular, mediate the relationship between shyness and the negative social

22

and psychological outcomes that can ensue in shy children, such as depressive symptoms and poor social relations.

I expected that a global measure of socio-communicative competence would act as a mediator between shyness and negative social and emotional outcomes, and that, more specifically, verbal irony comprehension would similarly be related to these social and emotional outcomes for children in middle childhood (the age at which children comprehend some ironic criticisms and compliments, without having fully mastered comprehension of either; Climie & Pexman, 2008). That is, I expected that shy children would demonstrate difficulties in verbal irony comprehension, which in turn would relate to peer difficulties, including relationship dissatisfaction and victimization. As peer difficulties have been previously demonstrated to be related to these emotional states (Crick & Grotpeter, 1996), I hypothesized that peer difficulties would further act as a mediator between verbal irony comprehension and emotional variables (i.e., loneliness and depression scores). Since verbal irony is inherently evaluative and critical in nature, it was expected that verbal irony would more strongly mediate negative outcomes than would socio-communicative competence as a whole.

It is also possible that verbal irony comprehension may act a moderator between shyness and the negative social and emotional outcomes often associated with it. If this were the case, I would expect that, similar to the findings of Coplan and Weeks (2009), verbal irony comprehension would act as a protective factor mitigating the risk of developing negative social and emotional outcomes for shy children.

Study 1 Method

Participants

Participants were recruited from English-speaking elementary school classes (4rd-6th grade, 9-12 years of age) in the Waterloo Region and Waterloo Catholic District School boards. This age range was chosen since it is the age at which children are beginning to comprehend ironic compliments (Climie & Pexman, 2008; Mewhort-Buist & Nilsen, 2013), thereby minimizing floor effects for ironic compliments, without achieving ceiling effects of ironic criticisms.

In total, 184 parents returned study materials for their children; however, two packages had incomplete consent forms. Of the 182 children who received parental consent to participate, two declined participation, and eleven were excluded due to missing data. Thus, 169 students were included in the initial sample (M_{age} = 10 years, 6 months, SD_{age} = 10 months; 49% were boys). Eighty-six percent of participants' parents reported that their children learned English as their first language. Seventy-two percent of participants' mothers, and 68% of fathers had completed post-secondary education (college degree or diploma, university degree, or greater).

As is noted in the sections that follow, two control questions were included. Portions of participants' data were excluded as a result of failure to pass the control questions, which led to some participants having too much missing data to be analysed for certain portions of the analyses (i.e., no trials left of one of the statement types of a particular valence). As such, the number of participants having sufficient data for analyses is cited in each relevant subsection of the Results section.

Procedure

Information letters and consent forms were sent home to all children enrolled in participating grade 4-6 classes. Those children whose parents provided consent were invited to participate in a 45 minute individual session, followed by a second group testing session, both conducted at their school. Children had the opportunity to decline participation without penalty. Individual testing occurred in a quiet room or a corner of the library with one of two female examiners and the child, and lasted 35-45 minutes. Group testing occurred with children seated at tables in school libraries, classrooms, or conference rooms, where they worked independently on self-report questionnaires in booklets. Group testing sessions lasted between 30-75 minutes depending on the reading level and attention skills of the participants, with most participants completing the booklet within 45 minutes. At the end of the group session children were provided a pencil for their participation, and returned to class independently. In most cases, children participated in the individual session first, and then the group session later. However, in some cases, scheduling required that the group session occurred before the students' individual session.

Socio-communicative competence. In the individual sessions with the experimenter children completed a number of measures assessing components of social communication including two figurative language tasks (a verbal irony task and a nonliteral language task), two theory of mind tasks, and a measure of receptive vocabulary. The measures are described in the order that they were administered in the sections that follow.

Verbal irony task. Children were presented with 12 stories in which two characters, one male and one female, were engaging in an activity (e.g., playing soccer, snowboarding, waterskiing, art class; See Appendix A for the full set of stories). Stories either included a negative context, wherein one character, hereafter referred to as the "target" failed at the activity (e.g., when playing soccer, the target fails to score a goal by completely missing the net), or a positive context, wherein the target succeeded at the activity (e.g., the target scores the game winning goal in the last few minutes of the game). The other character, hereafter referred to as the "speaker" then made a statement about the target's performance that was either a literal or ironic criticism (in negative contexts) or a literal or ironic compliment (in positive contexts).

Four versions of each story were created to include all four valence and statement type combinations for each story context (i.e., literal criticisms, ironic criticisms, literal compliments, ironic compliments). Each participant heard one version of each of the 12 stories, and the 4 versions of each story were counterbalanced across participants, so that all 48 stories were approximately equally represented. Gender of the speaker was counterbalanced across participants for each statement type. This method of counterbalancing ensured that children's performance across statement types did not vary as a function of the story salience (i.e., reducing the likelihood that participant's ratings vary as a function of the activity in which the characters are engaging). There were, thus, four sets of 12 stories. Within each set, the stories were presented in a fixed order, with the stories distributed in the set in a pseudo-randomized order, with the requirement that the same valence/statement type did not occur three times in succession.

The stories were presented on a laptop, with each story narrated by the same female speaker, accompanied by comic strips to aid in interest and memory for the story. The final

26

statements made by the speakers were presented with appropriate intonation, since it has been

shown that irony is more easily understood when spoken with appropriate tone-of-voice (Keenan

& Quigley, 1999; Woodland & Voyer, 2011). That is, the literal criticisms were made using a

blunt, sincere tone; the ironic criticisms were made using a mocking tone; the literal

compliments were made using a pleasant, sincere tone; and the ironic compliments were made

using a pleasant, teasing tone. To assess the tone of the statements, the final statements from

each story were isolated from the rest of the recording and presented without the comics to

psychology graduate students who rated each statement as "literal" or "ironic". Any statement

that was not endorsed as being the appropriate statement type was re-recorded until greater than

50% of raters agreed that the intonation matched the statement type (10 graduate students rated

each story). A *t*-test comparing the literal and ironic intonation ratings of the final recordings

confirmed that the ratings significantly differed ($t(46) = -32.04$, $p < .001$). Raters correctly

identified literal or ironic statements based on speaker tone of voice for 95% and 97% of literal

criticisms and compliments, respectively, and for 95% and 88% of ironic criticisms and

compliments, respectively[1].

Children were introduced to the verbal irony task by being told that they would be

listening to a series of stories while looking at comic strips depicting the story events. At the

beginning of the verbal irony task, children were trained on the use of the response options and

rating scales, using scenarios that did not include any figurative language. Following the practice

stories, they were presented with the experimental stories, each time being shown the complete

comic strip and hearing the story events unfold on the recording. The comic remained visible

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[1] The task of the raters was much more difficult than the actual task because the context was absent. Thus, each statement could be judged on tone of voice alone, rather than using the discrepancy between the spoken words and the context as a cue to the ironic interpretation.

while the children answered questions about the story, to serve as a memory aid. Please see

Appendix B for an example trial including all questions and response options.

Children responded by clicking on radial buttons associated with their responses and

rating scales, which were adapted from Pexman and colleagues (2006), and Climie and Pexman

(2008). The first question, hereafter referred to the "speaker belief question" was designed to

assess children's understanding of the speaker's true beliefs with respect to the story events (i.e.,

the story context). For this question, children indicated using a "thumb up" or "thumb down"

button, with the words "good" and "bad" visible below the images, whether the speaker thought

the object of the final statement was good or bad (e.g., *Did Chris think that Tara was a good*

mini-golf player or a bad mini-golf player?). A response was considered accurate if, for

criticisms, the child rated that the speaker thought the story context (i.e., the performance of the

target) was bad. For compliments, children were deemed accurate when they correctly identified

that the speaker thought the context was good. The next question was designed to assess

children's understanding of the communicative intentions of the speaker. Children were asked to

indicate, by "yes", "no", or "I don't know" whether the speaker intended to communicate his or

her belief (e.g., *Did Shawn want Ava to believe he thought that her painting was [child's*

answer]?). Children earned one point for correctly answering "yes" to this question; however,

this question was only scored for items in which children got the speaker belief question correct.

Finally, children rated the attitude of the speaker using a 5-point Likert type scale

depicting faces ranging from "very nice" to "very mean" to indicate the attitude of the speaker

(e.g., *When Chris said, "Boy, that was an awesome shot!", how nice or mean was he being?*).

Thus, children' ratings of speaker meanness were on a 5 point scale, with numeric values

assigned to each rating for coding. That is, -2 represented "very mean", -1 represented "a little

bit mean", 0 represented "not mean, but not nice either", 1 represented "a little bit nice", and 2 represented "very nice". The rating scale included both pictures (e.g., emoticons) and words as anchors for the ratings. This question was only scored for trials in which the participant got both the speaker belief and speaker intent questions correct.

Theory of mind tasks. Theory of mind was assessed using the Theory of Mind subtest from the standardized test, A Developmental Neuropsychological Assessment, 2nd Edition (NEPSY-II; Korkman, Kirk & Kemp, 2007). This subtest of the NEPSY-II assesses children's abilities to understand that others may have differing beliefs and intentions than themselves, their ability to recognize pretending and imaginative play, and their ability to recognize appropriate affect (i.e., emotion) based on context. Three items in this subtest involve the comprehension of figurative language, which I considered as a separate socio-communicative construct from theory of mind, so a separate figurative language measure was formed by averaging these three items (denoted as "NepsyFig" on path diagrams in the Results section, below). The remaining items were summed to create a theory of mind score. The theory of mind subtest from the NEPSY-II was administered in a standardized fashion, as indicated in the manual.

Theory of mind (ToM) was also assessed using a 2nd order false belief task adapted from Coull, Leekam and Bennett (2006), since previous studies examining irony comprehension in children of this age range have used second order false belief as the primary measure of mentalizing ability. In this task, children were presented with a story wherein one character deceives a second character, while, unbeknownst to the first character, the second character witnesses the truth. Therefore, the first character has a false belief about the second character's knowledge state. Children heard an audio-recorded vignette outlining the story details, accompanied by a comic, provided frame-by-frame, to aid in comprehension and to serve as a

memory aid. After listening to the story, children were asked questions to assess their 2nd order false belief understanding, and were asked to justify their response. In order to be successful on these questions, children had to think about a character's thoughts about another characters' mental state. Children received one point for correctly answering the false belief question, and a second point if their justification explicitly referred to the thoughts or knowledge states of the character. Thus, children could earn a score of 0, 1 or 2 on the second order false belief (SOFB) story.

Nonliteral language task. To assess children's general ability to understand the intended meaning of figurative language, the nonliteral language task from the Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 2008) was administered. This task assessed children's ability to comprehend speakers' meaning when the literal meanings of the spoken words are not sufficient to convey the full meaning of the utterances, such as occurs when using metaphors, similes, indirect requests and verbal irony. Thus, this measure provided an assessment of children's general ability to comprehend non-literal (i.e., potentially ambiguous) language. This subtest was administered in a standardized manner as described by the manual. The total raw score on the subtest was used in subsequent analyses.

Receptive vocabulary. In order to assess children's receptive vocabulary skills, they were administered the Picture Vocabulary subtest of the Test of Language Development-Intermediate, 4th Edition (TOLD-I:4; Hammill & Newcomer, 2008). This task required that children point to a picture (from a group of 6 pictures on a card) that corresponds to a two-word phrase spoken by the researcher. The task was administered in a standardized fashion as outlined in the manual. Children viewed all 9 picture cards included in the task, with each child starting at the first item of the first picture card and continuing until all items for the card are completed or the ceiling

criterion for the card (two incorrect responses in a row) is met. Children received one point for every correct response, which were summed to create a raw score (out of 80) to be used for further analyses.

Socio-emotional measures. Children completed measures of social and emotional functioning as part of the group testing session, using self-report questionnaires assessing symptoms of shyness, loneliness, depression, friendship quality, and peer victimization, as described below.

Shyness. Children's self-reported levels of shyness were assessed using the Children's Shyness Questionnaire (CSQ; Crozier, 1995), a self-report questionnaire designed to assess both fearful and self-conscious aspects of shyness. This task was originally developed using words generated by children to describe the phrase "being shy", and, as such, demonstrates good face validity for this age group. The resulting scale consists of 26 statements and questions, with children responding whether the statement is true for them with either "yes", "I don't know" or "no". To aid in the ease of administration of this measure, the seven items that were worded 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"). In addition, some wording was changed to make the items applicable to North American school children (i.e., "Head Teacher" was changed to "Principal"). The original form of this measure has been shown to have good internal consistency, with a Chronbach's α value of .82 (Crozier, 1995), which was replicated in this study (α = .815). The responses for each item were scored 0 ('no'), 1 ('I don't know') or 2 ('yes'), with items reversed scored where appropriate, and averaged to create a final score. The average was used to account for missing items, which represented 1.37% of the responses to this measure.

31

Loneliness. Loneliness has reliably been shown to be related to levels of shyness in elementary school children (e.g., Fordam & Stevenson-Hinde, 1999). Loneliness was assessed using the Loneliness Questionnaire devised by Asher & Wheeler (1985). This measure includes 16 self-report items assessing loneliness and 8 filler items. Children rate how true each statement is for themselves using a 5-pt Likert scale ranging from "that's always true about me" (4) to "that's not true at all about me" (0). This measure has been shown to have good internal reliability (Cronbach's α = .90), and has been shown to correlate with responses to a single item measure of loneliness in a large scale national survey (Asher & Wheeler, 1985). In the current sample, the reliability of the measure was similar (α = .888). Scores were averaged to create an overall loneliness score, to account for missing items, which represented 2.76% of the responses to this measure.

Depression symptoms. Since a number of studies have identified shy children as being at risk for depression, and since loneliness has also been argued to cause depression (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006), the Children's Depression Inventory 2 (CDI2, Kovacs, 2011) was used to assess depressive symptoms within my sample. This measure, developed for children aged 7-17 years, consists of 28 groups of three statements, for which the child chooses the statement that best represents his or her feelings over the past two weeks. Children's responses are combined into four subscales, two scales and one overall depression scale. For the purposes of this study, the overall score was used. An average was computed rather than a sum in order to account for missing items, which represented 1.14% of the responses to this measure. The CDI2 has good psychometric properties for children aged 7-12, with a Cronbach's α value of .90 for the overall depression scale, which was nearly replicated in

this study (α = .879). Test-retest reliability has also been demonstrated with a corrected

reliability estimate of r = .89 for the overall depression scale.

Peer Victimization. To examine the potential impact of verbal irony comprehension on

peer relationships, the Social Experiences Questionnaire (SEQ; Crick & Grotpeter, 1996) was

used. 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 13-item measure

loads onto three factors, termed "relational victimization" (5 items), "overt victimization" (3

items), and "prosocial recipient" (5 items), which have internal reliability values of .80, .78 and

.77, respectively. In the current sample, the reliability of the overall measure was found to yield

a Cronbach α of .88, with reliabilities of .81, .80, and .83 for the relational victimization, overt

victimization and prosocial recipient subscales, respectively. The relational victimization

subscale measures the degree to which children are actively isolated or manipulated in a social

manner (e.g., "How often do other students leave you out on purpose?"). The overt victimization

subscale measures the degree to which children are victims of physical aggression (e.g., "How

often do you get kicked or shoved?"). The prosocial recipient subscale measures the degree to

which prosocial overtures are advanced towards children (e.g., "How often do other students let

you know that they care about you?"); however, preliminary analyses revealed that inclusion of

this variable in the models for mediation analysis reduced indices of model fit. Furthermore, the

focus of the study was on negative outcomes for shy children, so this subscale was not analysed

further. Children rate how often each situation occurs for them using a 5-pt Likert scale ranging

from "All the time" (4) to "Never" (0). Scores were averaged (to account for missing data,

which represented 1.66% of item responses) to create scores for the overt and relational

victimization scales.

Friendship quality. If shy children have difficulty appreciating the muting function of verbal irony, they may be more likely to take offence to ironic remarks, leading to the perception that others are frequently aggressing towards them. Thus, the self-perceived quality of children's best friendships was assessed using the Friendship Quality Questionnaire (FQQ; Parker & Asher, 1993). This is a self-report questionnaire wherein children respond to 40 items about their best friend (e.g., "We make each other feel important and special."), indicating on a 5-pt Likert scale how true various statements are for their relationship, ranging from, "not at all true" (0) to "really true" (4). As part of the recruitment package, children were asked to identify the name of their best friend. Best friends did not need to be mutually identified for this study, as we were most interested in the children's perceptions of their best friendship, rather than whether the friendship was reciprocated. Each child's FQQ was individualized with the name of their identified friend inputted into each question, to reduce the possibility that children are responding based on an ideal or prototypical friendship (Parker & Asher, 1993). Children's responses load onto six factors (Cronbach's α values from this study in parentheses); Validation and Caring ($\alpha = .92$), Conflict Resolution ($\alpha = .75$), Conflict and Betrayal ($\alpha = .77$), Help and Guidance ($\alpha = .88$), Companionship and Recreation ($\alpha = .66$), and Intimate Exchange ($\alpha = .85$). The overall reliability measured in this study was .95. Average scores were calculated for each subscale (to correct for missing values, with 1.83% of items missed on this scale) and to create an overall score (with appropriate items reverse-scored). Preliminary analyses revealed that inclusion of the Conflict and Betrayal subscale in the mediation analysis reduced indices of model fit, so it was excluded from the structural equation models.

Study 1 Results

Preliminary Analyses

There were 23 participants for whom English was not their first language. Preliminary t-tests comparing children who learned English as their first language and those who did not found that they differed (marginally) on only one study variable, speaker attitude on ironic compliments ($t(130) = 1.936$, $p = .055$). That is, children who learned English as their first language rated speakers who made ironic compliments as being nicer ($M = -0.179$, $SE = 0.105$) than did children who did not learn English first ($M = -0.692$, $SE = 0.225$). When the relevant analyses were completed excluding these participants, the conclusions were identical, therefore, those participants who did not learn English as their first language remained included in the dataset. Receptive vocabulary scores did not significantly differ between those children who did or did not have English as a first language ($t(25.347) = 1.430$, $p = .165$).

Statistical outliers for the predictor variables were Winsorized to be within 3 standard deviations of the mean (as per Tabachnick & Fidell, 2007; TOLD-I:4: $n = 3$, ToM: $n = 1$, NepsyFig: $n = 1$, CASL: $n = 1$, CSQ: $n = 1$, Loneliness $n = 1$, CDI $n = 3$, FQQ $n = 2$-5 depending on subscale, SEQ $n = 2$-4 depending on subscale). The mean level of shyness in this sample was 0.768 ($SD = 0.314$; $SE = 0.024$). See Table 1.1 for descriptive statistics for all measures, and Table 1.2 for the correlations between predictor and outcome variables.

Children's Comprehension/Interpretation of Verbal Irony

The verbal irony task involved participants reading vignettes wherein one character commented on the performance of another character using either a literal or an ironic criticism or compliment. A median split of self-reported shyness using scores on the CSQ was used to create

non-shy and shy groups for the ANOVAs[2], which differed significantly in their levels of shyness ($t(167)$ = -20.307, p<.001). The group referred to as "non-shy" had a mean level of shyness of 0.512, while the group referred to as "shy" had a mean level of shyness of 1.040; as such, the groups differed by greater than one standard deviation on their self-reported shyness[3]. Separate 2(valence; criticisms versus compliments) x 2(statement type; literal versus ironic) x 2 (shyness; not shy versus shy) repeated measures ANOVAs, were used to examine participants' understanding of the beliefs and communicative intentions of the speakers in the vignettes, and whether these interpretations were related to the participants' self-reported levels of shyness. The Bonferroni correction was used to correct for multiple comparisons in *post hoc* analyses.

Speaker belief. As noted above, the speaker belief question was coded as correct or incorrect based on whether the participant's response matched the belief of the speaker in the vignette. Proportions correct were therefore calculated for the purposes of these analyses. Across all participants, there was a significant main effect of valence ($F(1, 167) = 110.768, \eta_p^2 = .399, p < .001$). Participants performed better on criticisms ($M = 0.919, SE = 0.012$) than they did on compliments ($M = 0.759, SE = 0.014$). There was also a significant main effect of statement type ($F(1, 167) = 177.270, \eta_p^2 = .515, p < .001$), with participants performing better on literal stories ($M = 0.975, SE = 0.006$) than on ironic stories ($M = 0.703, SE = 0.020$). However, these were clarified by a significant valence by statement type interaction ($F(1, 167) = 149.867, \eta_p^2 = .473, p < .001$). As shown in Figure 1.1, participants were most accurate at identifying the beliefs of the speaker for literal criticisms (96.7%) and literal compliments (98.2% of the time), followed by ironic criticisms (87.2%), which significantly differed from literal remarks (ps <

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[2] The continuous measure of shyness was used in structural equation models and regression analyses.
[3] The terms "shy" and "not shy" were used for ease of communication of findings here and throughout this dissertation. The CSQ does not have a cut-off score to categorize children based on shyness level reported.

.001). Participants had significantly more difficulty identifying the beliefs of the speaker for

ironic compliments, on which they correctly identified that the speaker thought positively about

the target's performance only 53.5% of the time. Performance on ironic compliments was

significantly lower than performance on the other three statement types ($ps < .001$). There were

no significant effects or interactions when looking at participant shyness with the speaker belief

ratings ($ps > .453$).

Speaker communicative intent. After answering the speaker belief question,

participants were asked whether the speaker intended to communicate his or her beliefs to the

target, to ensure that participants were not interpreting the statements as being deception (the

correct answer for all valence/statement type conditions is "yes"). Participants earned a point for

correctly answering this question, and the proportion correct for each valence/statement type

condition was calculated for this analysis. For these analyses, only those stories on which

participants correctly identified the speaker's beliefs were included, which led to 39 participants

no longer having enough data to be analysed for subsequent variables (i.e., they had no

remaining trials for at least one of the valence/statement type combinations).

There was a significant main effect of valence ($F(1, 128) = 5.536$, $\eta_p^2 = .041$, $p = .020$),

with participants better understanding the intentions of speakers making compliments ($M =$

0.724, $SE = 0.019$) than those making criticisms (($M = 0.667$, $SE = 0.020$). There was also a

main effect of statement type ($F(1, 128) = 299.238$, $\eta_p^2 = .700$, $p < .001$), with participants

performing better on literal stories ($M = 0.945$, $SE = 0.010$) than on ironic stories ($M = 0.446$,

$SE = 0.028$). There was also a main effect of shyness ($F(1, 128) = 4.950$, $\eta_p^2 = .037$, $p = .028$),

with children in the non-shy group performing better ($M = 0.730$, $SE = 0.022$) than children in

the shy group ($M = 0.661$, $SE = 0.022$). Since an incorrect response on the intent question would

37

mean that the speaker is lying (i.e., does not want to communicate his or her belief), children

with elevated levels of shyness were therefore more likely indicate that speakers were lying than

were less shy children. There were no significant interactions amongst the variables on the

communicative intention variable ($ps \geq .072$).

Speaker attitude. Participants were asked to rate on a continuum the attitude conveyed

by the speaker, by indicating on a five point scale to what degree the speaker was being mean or

nice. For these analyses, only those stories on which participants correctly identified the

speaker's belief and communicative intentions were included, which led to 111 participants no

longer having enough data to be analysed for subsequent variables (i.e., 39 participants were

eliminated due to missing data after removing trials with incorrect speaker belief questions, and

an additional 72 participants were eliminated due to missing data after removing trials with

incorrect speaker intention questions, leaving an n of 58 for the speaker attitude analysis)[4].

There was an expected main effect of valence ($F(1, 56) = 402.202$, $\eta_p^2 = .878$, $p < .001$),

with criticisms being rated as meaner ($M = -1.231$, $SE = .078$) than compliments ($M = 1.175$, SE

$= 0.082$). There was also a main effect of statement type ($F(1, 56) = 18.628$, $\eta_p^2 = .250$, $p <$

$.001$), with ironic statements being rated as being meaner ($M = -0.240$, $SE = 0.095$), overall, than

literal statements ($M = 0.185$, $SE = 0.040$). However, these results are qualified two significant

interactions. There was a valence by statement type interaction ($F(1, 56) = 59.727$, $\eta_p^2 = .516$, p

$< .001$). As seen in Figure 1.2, these results are consistent with the Tinge Hypothesis; ironic

criticisms were rated as less mean than literal criticisms ($p < .001$), while ironic compliments

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[4] Findings did not differ when the speaker attitude ratings were analyzed in the 130 participants who remained prior to removing participants who did not pass the speaker intent control question. It is only for the speaker attitude ratings that participants were removed for failing the speaker belief and speaker intent control questions. Subsequent analyses include verbal irony comprehension as a predictor variable, and, therefore, all 169 participants are included.

were rated as being less nice than literal compliments ($p < .001$). There was also a significant interaction between shyness and statement type ($F(1, 56) = 4.596$, $\eta_p^2 = .076$, $p = .036$). As seen in Figure 1.3, when the statement type is collapsed across valence, non-shy participants rated ironic statements as being meaner than literal statements overall ($p < .001$), while the difference between literal and ironic statements was not significant for shy participants ($p = .226$)

Does Socio-Communicative Competence Mediate Relations Between Shyness and Negative Social and Emotional Outcomes?

The potential mediating role of verbal irony comprehension in the relationship between shyness and negative socio-emotional outcomes was explored using structural equation modelling (SEM). An irony score was created by awarding one point for each trial on which the participant correctly identified the speaker's belief (ironic statements only), and an additional point for each trial on which the participant correctly identified the speaker's intent to be sarcastic. The second point was only awarded for trials on which the participant got both the speaker belief and speaker intent questions correct. Therefore, in total, participants could earn up to six points (up to two points for each of three ironic criticism stories and three ironic compliment stories). Three models were created exploring whether verbal irony comprehension, more general figurative language comprehension (including the verbal irony task, the CASL nonliteral language task, and the NepsyFig variables described earlier), or overall socio-communicative competence (a composite including all of the figurative language measures, as well as the TOLD-I:4, ToM, and SOFB measures) could mediate the relationship between shyness and friendship quality, emotional difficulties (loneliness and depression symptoms), and peer victimization (relational and overt victimization), which are described in the sections that follow.

Verbal irony. Figure 1.4 depicts the standardized solution of the first model, examining the potential mediating role of verbal irony comprehension (as represented by the verbal irony score) in the relationship between shyness and the negative socio-emotional outcomes commonly associated with shyness. As can be seen in the figure, the fit of the model was acceptable. That is, although the model had a significant Chi-Square ($p <.001$, suggesting poor fit), the *RMSEA* was .089, and the *CFI* was approaching the cut-off for good fit of 0.950 (*CFI* = .941). The direct paths between shyness and peer victimization (standardized regression weight = .324, $p < .001$) and between shyness and emotional difficulties (standardized regression weight = .279, $p < .001$) were statistically significant and consistent with published research showing that shy children are at increased risk for peer victimization, loneliness and symptoms of depression. Similarly, shyness was significantly predictive of poor friendship quality (standardized regression weight = -.209, $p = .011$). In fact, the model accounted for 72% of the variance in emotional difficulties, suggesting that the loneliness and depression reported by the participants was largely predicted by their levels of shyness, low friendship quality, and peer victimization. However, the model does not support a mediation role for verbal irony in the relationship between shyness and friendship quality, shyness and peer victimization, nor shyness and emotional difficulties. Shyness did not significantly predict verbal irony comprehension, as the direct path between these two variables was non-significant ($p = .296$). Likewise, verbal irony comprehension did not predict friendship quality, peer victimization, nor emotional difficulties (p values for standardized regression weights on direct paths were $\geq .358$).

Figurative language. Figure 1.5 depicts the standardized solution of the second model, examining the potential mediating role of figurative language comprehension, a latent variable created by combining the verbal irony and CASL scores, and the figurative language items of the

NEPSY-II in the relationship between shyness and the negative socio-emotional outcomes commonly associated with shyness. Similar to Figure 1.4, above, the fit of the model was acceptable, with a significant Chi-Square (p <.001, suggesting poor fit), but acceptable *RMSEA* and *CFI* scores (.072 and .942, respectively). Similar to the previous model, the direct paths between shyness and peer victimization (standardized regression weight = .326, p < .001) and between shyness and emotional difficulties (standardized regression weight = .262, p < .001) were statistically significant. Similarly, shyness was significantly predictive of poor friendship quality (direct effect = -.293, p = .029), with the model accounting for 71% of the variance in emotional difficulties. There was also a statistically significant direct effect of shyness on figurative language understanding, with increased levels of shyness being related to lower figurative language scores (standardized regression weight = -.235, p = .018). Yet, the model did not support a mediation role for figurative language understanding in the relationship between shyness and friendship quality, shyness and peer victimization, nor shyness and emotional difficulties, as the direct paths between figurative language understanding and all three outcome variables were non-significant (p values for direct paths were all ≥ .388).

Socio-communicative competence. Figure 1.6 shows the standardized solution of the third and final model, examining the potential mediating role of overall socio-communicative competence, as represented by a latent variable created by combining measures of theory of mind, figurative language, and vocabulary in the relationship between shyness and negative socio-emotional outcomes. Similar to Figures 1.4 and 1.5, above, the fit of the model was acceptable, with a significant Chi-Square (p <.001), but acceptable *RMSEA* and *CFI* scores (.068 and .923, respectively). Similar to the previous two models, the direct paths between shyness and peer victimization (standardized regression weight = .317, p < .001) and between shyness and

emotional difficulties (standardized regression weight = .258, $p < .001$) were statistically

significant, and shyness was significantly predictive of poor friendship quality (standardized

regression weight = -.200, $p = .017$). The model accounted for 72% of the variance in emotional

difficulties. There was also a statistically significant direct effect of shyness on overall

communicative competence, with increased levels of shyness being related to lower

communicative competence scores (standardized regression weight = -.214, $p = .013$).

Nevertheless, the model did not support a mediation role for socio-communicative competence

in the relationship between shyness and friendship quality, shyness and peer victimization, nor

shyness and emotional difficulties, as the direct paths between socio-communicative competence

and all three outcome variables were non-significant (p values for direct paths were all $\geq .359$).

Does Socio-Communicative Competence Moderate Relations Between Shyness and Negative Social and Emotional Outcomes?

Although a mediation role for verbal irony comprehension, specifically, and for

figurative language and socio-communicative competence, in general, was not supported, it is

still possible that measures of social communication moderate the relationship between shyness

and the negative social and emotional outcomes associated with shyness. Since Coplan and

Weeks (2009) found interactions between gender and pragmatic language functioning in the

relationship between shyness and negative outcomes such as loneliness, depression and peer

victimization, gender was included in the moderation analyses. Hierarchical linear regressions

were used to explore the potential 3-way interaction between gender, shyness and measures of

socio-communicative competence on socio-emotional outcomes, along with all possible 2-way

interactions.

Verbal irony. To look at the potential moderating role of verbal irony comprehension on the relationship between shyness and the negative socio-emotional sequelae of shyness, hierarchical regressions were used. For these analyses the predictors (self-reported shyness on the CSQ and irony score) were centred by creating z scores prior to calculating interaction variables. Age, gender and TOLD-I:4 scores were entered on the first step, followed by shyness on the second step, verbal irony score on the third step, all possible two-way interactions (i.e., shyness x verbal irony, gender x shyness, gender x verbal irony) on the fourth step, and the three-way interaction between shyness, gender and verbal irony comprehension on the fifth step. Separate regressions were performed for each of the outcome variables. See Table 1.1 for an overview of the results.

Loneliness. Shyness was a significant positive predictor of loneliness ($\beta = 0.434$, $p < .001$), which explained 9.0% of the variance in loneliness scores. Although the model including shyness, age, gender and TOLD-I:4 score (i.e., Step 2) fit the data well ($F(4, 164) = 7.151$, $p < .001$), there was a marginal improvement in the ability of the model to predict the variance in loneliness scores when the two-way interaction between shyness and verbal irony score (along with all other possible two-way interactions) was added to the model at the 4th step ($F(8,160) = 4.675$, $p < .001$; $\Delta R^2 = .039$, $p = .058$). Examination of the individual predictors revealed a significant two-way interaction between shyness and verbal irony score in the prediction of loneliness ($\beta = 0.211$, $p = .008$), which explained 3.6% of the variance. As can be seen in Figure 1.7, higher verbal irony comprehension was associated with an increase in the relation between shyness and loneliness, that is, serving as a risk factor for a poorer outcome for shy children. Tests of simple slopes suggested that at low levels of verbal irony comprehension, the strength of the relation between shyness and loneliness was reduced ($\beta = .218$, $p = .029$), whereas the

relation between shyness and loneliness was strong at higher levels of verbal irony

comprehension ($\beta = .581$, $p < .001$).

Depression symptoms. Shyness was a significant positive predictor of depression

symptoms ($\beta = 0.544$, $p < .001$), which explained 14.2% of the variance in CDI scores. While a

model including only shyness, age, gender and TOLD-I:4 score (i.e., Step 2) fit the data well

($F(4, 164) = 12.156$, $p < .001$), the model predicted more of the variance in depression symptom

scores when the two-way interaction between shyness and verbal irony score (along with all

other possible two-way interactions) was added to the model at the 4th step ($F(8,160) = 7.841$, p

$< .001$; $\Delta R^2 = .042$, $p = .027$). Examination of the predictors revealed that there was a significant

two-way interaction between shyness and verbal irony score in the prediction of depression

symptoms ($\beta = 0.216$, $p = .004$), which explained 3.8% of the variance. As can be seen in Figure

1.8, higher verbal irony comprehension was associated with an increase in the relation between

shyness and depression symptoms, serving as a risk factor for a poorer outcome for shy children,

similar to the findings for loneliness scores. Likewise, tests of simple slopes suggested that at

low levels of verbal irony comprehension, the strength of the relation between shyness and

depression symptoms was reduced ($\beta = .311$, $p = .001$), whereas the relation between shyness

and loneliness was strong at higher levels of verbal irony comprehension ($\beta = .678$, $p < .001$).

Friendship quality. Shyness was a significant negative predictor of self-reported

friendship quality ($\beta = -0.271$, $p < .001$), which explained 7.0% of the variance in overall FQQ

scores. Gender was also a significant predictor of friendship quality ($\beta = -0.248$, $p = .001$),

which explained 6.0% of the variance in overall FQQ scores, with girls reporting greater

friendship quality than boys. The model including shyness, age, gender and TOLD-I:4 score (i.e.,

Step 2) fit the data well ($F(4, 164) = 5.388$, $p < .001$). There was no significant increase in the

ability of the model to predict the variance in friendship quality scores when the possible two- and three- way interactions were added to the model at the 4th and 5th steps (ΔR^2s ≤ .027, ps ≥ .168).

Peer victimization. It has been demonstrated that girls and boys perpetrate, and are victims of different forms of bullying, with boys perpetrating and experiencing greater overt victimization (i.e., physical aggression and threats of violence) and girls perpetrating and experiencing greater relational victimization (i.e., peer exclusion, the spreading of rumours, manipulation; Crick & Bigbee, 1998; Crick & Grotpeter, 1995). In the current study, preliminary analyses revealed a marginally-significant difference between boys and girls in the level of self-reported overt victimization (t(167) = -1.763, p = .080), with boys reporting greater overt victimization than girls. Since gender was being explored as a potential predictor, and gender differences in the two forms of victimization have been demonstrated, the two subscales of the SEQ, overt victimization and relational victimization, were analysed separately.

Overt victimization. Shyness was a significant positive predictor of self-reported overt victimization (i.e., physical aggression, threats), explaining 7.1% of the variance in this measure (β = 0.386, p < .001). Gender was also a significant predictor of overt victimization (β = 0.154, p = .037), which explained 2.3% of the variance, with boys reporting greater overt victimization than girls. While the model including shyness, age, gender and TOLD-I:4 score (i.e., Step 2) fit the data well (F(4, 164) = 5.111, p = .001), the model predicted more of the variance in overt victimization scores when the three-way interaction between gender, shyness and verbal irony score was added to the model at the 5th step (F(9,159) = 3.822, p < .001; ΔR^2 = .056, p = .001). Examination of the predictor variables in the full model revealed a significant two-way interaction between shyness and verbal irony score in the prediction of overt victimization (β =

0.244, $p = .023$), which explained 2.7% of the variance. However, this interaction emerged only in the context of the significant three-way interaction between gender, shyness and verbal irony score ($\beta = -0.382$, $p = .001$), which explained 5.6% of the variance. That is, when the two-way interaction was included in the model in the previous step, there was no significant increase in the predictive ability of the model, nor a significant interaction effect at that step. This interaction only emerged once the three-way interaction was included in the model.

To explore this three-way interaction further, separate hierarchical regressions were conducted with the data split by gender. When this was done, for girls, there was a significant two-way interaction between shyness and verbal irony score ($\beta = 0.229$, $p = .026$), which explained 5.1% of the variance in overt victimization. Figure 1.9 (a) shows that better verbal irony comprehension strengthened the relationship between shyness and overt victimization for girls, similar to the results for symptoms of loneliness and depression. Tests of simple slopes suggested that at low levels of verbal irony comprehension, the relation between shyness and overt victimization was eliminated ($\beta = 0.148$, $p = .304$), whereas the relation between shyness and overt victimization was strong at higher levels of verbal irony comprehension ($\beta = 0.613$, $p < .001$). There was also a significant two-way interaction between shyness and verbal irony score for boys ($\beta = -0.290$, $p = .027$; 5.7% of variance explained); however the direction of effects was opposite to that of girls. As can be seen in Figure 1.9 (b), better verbal irony comprehension was found to weaken the relation between shyness and overt victimization, such that increasing shyness was no longer associated with increased overt victimization (simple slope $\beta = -0.066$, $p = .710$). In contrast, at low levels of verbal irony comprehension, there was a strong relation between shyness and overt victimization (simple slope $\beta = 0.494$, $p = .002$). In summary, for girls, results were similar to those for loneliness and depression scores, with verbal irony

comprehension serving as a risk factor for shy children developing negative social outcomes. In contrast, for boys, better verbal irony comprehension eliminated the relation between shyness and overt victimization.

Relational victimization. Shyness was a significant positive predictor of self-reported relational victimization, explaining 9.3% of the variance in this measure ($\beta = 0.441$, $p < .001$). While the model including shyness, age, gender and TOLD-I:4 score (i.e., Step 2) fit the data well ($F(4, 164) = 4.015$, $p = .004$), the model predicted more of the variance in relational victimization scores when the three-way interaction between gender, shyness and verbal irony score was added to the model at the 5th step ($F(9,159) = 3.250$, $p = .001$; $\Delta R^2 = .038$, $p = .008$). Examination of the predictor variables in the full model revealed a significant two-way interaction between gender and shyness ($\beta = -0.214$, $p = .044$; explaining 2.0% of the variance), and a marginal two-way interaction between shyness and verbal irony score in the prediction of relational victimization ($\beta = 0.207$, $p = .057$, explaining 2.2% of the variance). However, these two-way interactions emerged only in the context of the significant three-way interaction between gender, shyness and verbal irony score ($\beta = -0.315$, $p = .008$), which explained 3.8% of the variance in relational victimization scores. Thus, similar to the results for overt victimization described above, while the addition of the two-way interaction terms in the previous step of the model did not lead to a significant increase in the predictive ability of the model, nor any significant interaction effects at that step, these interactions emerged once the three-way interaction was included in the model.

To explore the three-way interaction further, separate hierarchical regressions were conducted with the data split by gender. When this was done, there was no significant interaction between verbal irony comprehension and shyness for girls ($\Delta R^2 = .026$, $p = .117$). In

contrast, for boys, a significant two-way interaction was found between shyness and verbal irony comprehension (β = -0.261, p = .046, 4.6% variance explained), as can be seen in Figure 1.10, good verbal irony comprehension reduced the relation between shyness and relational victimization, similar to the results for overt victimization. Tests of simple slopes suggested that for boys at high levels of verbal irony comprehension, the relation between shyness and relational victimization was eliminated (β = -0.075, p = .673), whereas the relation between shyness and overt victimization was strong at lower levels of verbal irony comprehension (β = 0.429, p = .006).

Socio-communicative competence. In addition to examining the moderating role of verbal irony comprehension in the relationship between shyness and social and emotional outcomes, I was also interested in exploring the broader construct of socio-communicative competence including vocabulary, theory-of-mind skills, and overall figurative language understanding. To do this, a composite score was computed by averaging scores across all of the standardized socio-communicative measures (TOLD-I:4, SOFB, NepsyFig, ToM, verbal irony score, CASL). Stepwise regressions were used in the same manner as above, with the socio-communicative competence composite substituted for the verbal irony score. Thus, age and gender were entered on the first step, followed by shyness on the second step, socio-communicative competence on the third step, all possible two-way interactions (i.e., shyness x socio-communicative competence, gender x shyness, gender x socio-communicative competence) on the fourth step, and the three-way interaction between shyness, gender and socio-communicative competence on the fifth step. Separate regressions were performed for each of outcome variables. See Table 1.2 for an overview of the results.

Loneliness. With loneliness score as the dependent variable, only the model including

shyness, age, and gender (i.e., Step 2) resulted in a significant change in the R^2 ($p < .001$). This

model fit the data well ($F(3,165) = 9.489$, $p < .001$). Shyness was found to be a significant

positive predictor of loneliness ($\beta = 0.388$, $p < .001$), which explained 14.6% of the variance in

loneliness scores, while there were no significant effects of socio-communicative competence,

nor any significant interactions (Step 3, 4 and 5 $\Delta R^2 \leq 0.022$, $ps \geq .126$).

Depression symptoms. Shyness was a significant positive predictor of depression

symptoms ($\beta = 0.559$, $p < .001$), which explained 13.5% of the variance in CDI scores. While

the model including shyness, age, and gender (i.e., Step 2) fit the data well ($F(3,165) = 16.199$, p

$< .001$), the model predicted more of the variance in depression symptom scores when the

possible two-way interactions were added to the model at the 4th step ($F(7,161) = 9.095$, $p <$

$.001$; $\Delta R^2 = .054$, $p = .008$). A significant two-way interaction was found between gender and

socio-communicative competence in the prediction of depression symptoms ($\beta = -0.347$, $p =$

$.002$), which explained 4.5% of the variance. As can be seen in Figure 1.11, for boys, higher

socio-communicative competence was related to lower self-reported depression symptoms

(simple slope $\beta = -0.544$, $p < .001$), suggesting, that for boys strong socio-communicative

competence serves as a protective factor against depression symptoms. In contrast, for girls,

there was no significant relation between socio-communicative competence and depression

scores (simple slope $\beta = 0.070$, $p = .623$).

Friendship quality. With friendship quality as the dependent variable, the model

including shyness, age, and gender (i.e., Step 2) resulted in a significant change in the R^2 ($p <$

$.001$). This model fit the data well ($F(3,165) = 7.138$, $p < .001$), and showed that shyness was a

significant negative predictor of self-reported friendship quality ($\beta = -0.267$, $p < .001$), which

explained 6.9% of the variance in overall FQQ scores. Gender was also a significant predictor of friendship quality (β = -0.245, p = .001), which explained 5.9% of the variance in overall FQQ scores, with girls reporting greater friendship quality than boys. There were no significant effects of socio-communicative competence nor any significant interactions (Step 3, 4 and 5 $\Delta R^2 \leq$ 0.011, ps $\geq$ .144).

Peer victimization. As noted above, the two subscales of the SEQ, overt victimization and relational victimization, were analysed separately, due to reported gender differences in the experiences of each form of victimization.

Overt victimization. Shyness was a significant positive predictor of self-reported overt victimization, explaining 3.9% of the variance in this measure (β = 0.318, p = .008). Although the model including shyness, age, and gender (i.e., Step 2) fit the data well ($F(3,165)$ = 6.844, p < .001), there was a significant improvement in the ability of the model to predict overt victimization scores when the three-way interaction between shyness, gender, and socio-communicative competence was added to the model at the 5th step ($F(8,160)$ = 3.290, p = .002; ΔR^2 = .024, p = .036). The three-way interaction between gender, shyness, and socio-communicative competence (β = -0.270, p = .036), explained 2.4% of the variance. However, when this interaction was explored further with separate hierarchical regressions with the data split on gender, there were no significant shyness by socio-communicative competence interactions (i.e., after addition of shyness x communicative competence variable, $\Delta R^2 \leq$ .025, ps $\leq$ .138). Therefore, this marginal interaction was not explored further.

Relational victimization. Shyness was a significant positive predictor of self-reported relational victimization, explaining 5.8% of the variance in this measure (β = 0.386, p = .001). While the model including shyness, age, and gender (i.e., Step 2) fit the data well ($F(3,165)$ =

5.333, $p = .002$), the model predicted more of the variance in relational victimization scores when the three-way interaction between gender, shyness and socio-communicative competence was added to the model at the 5th step ($F(8,160) = 3.205$, $p = .002$; $\Delta R^2 = .026$, $p = .030$). Thus, there was a significant three-way interaction between gender, shyness and socio-communicative competence ($\beta = -0.280$, $p = .030$), which explained 2.6% of the variance.

To explore this interaction further, separate hierarchical regressions were conducted with the data split on gender. When this was done for girls, only the direct effect of shyness remained ($\beta = 0.381$, $p < .001$) accounting for 14.5% of the variance. Thus, communicative competence was not a significant predictor of relational victimization for girls. In contrast, for boys, a significant two-way interaction between shyness and socio-communicative competence was found ($\beta = -0.259$, $p = .021$), which explained 6.2% of the variance in boys' self-reported experiences of relational victimization. As can be seen in Figure 1.12, for boys who had good socio-communicative competence the association between relational victimization and shyness was eliminated (simple slope $\beta = -0.082$, $p = .619$). Boys with weaker socio-communicative competence demonstrated increasing levels of self-reported relational victimization with increasing shyness (simple slope $\beta = 0.354$, $p = .007$).

Study 1 Discussion

Understanding the pathways between shyness and these negative social and emotional outcomes is imperative in reducing the risk associated with childhood shyness. As social communication is an important element of successful peer relationships at any age, and shy or socially anxious individuals have been shown to have difficulties with a number of socio-communicative tasks (e.g., faux pas and understanding nonverbal behaviour; Banerjee & Henderson, 2001; Schroeder & Ketrow, 1997), Study 1 explored the potential mediating or moderating role of socio-communicative competence in the relationship between shyness and the negative social and emotional outcomes often associated with it. In particular, the study examined whether verbal irony comprehension, in particular, or socio-communicative competence, in general, would mediate or moderate the relationships between shyness and poor friendship quality, peer victimization, loneliness and depression.

Preliminary analyses revealed that, similar to past work, children's ability to understand the beliefs and intentions of ironic speakers varied as a function of the type of the irony used. That is, children were better able to recognise ironic criticisms than they were able to recognise ironic compliments. This finding is consistent with research showing that even adults struggle to fully understand ironic compliments (Mewhort-Buist & Nilsen, *accepted*), potentially because such comments are used less frequently than other forms of figurative language (Dews & Winner, 1997). Similar to my master's research (Mewhort-Buist & Nilsen, 2013), shyness was not related to how well children understood the beliefs of the speaker. That is, shy children were just as able to understand that for ironic criticisms the speaker believed the target had performed poorly, and for ironic compliments the speaker believed the target had performed well. Where shy children differed from their peers was in their understanding of the communicative intentions

52

of the speakers. On those stories for which the children correctly understood the speaker's

beliefs, shy children had more difficulty understanding that speakers meant to communicate their

true beliefs when using sarcasm. That is, shy children were more likely to indicate that speakers

were lying to targets. This is the first study which shows a difference for shy versus non-shy

children in the comprehension of the basic language form of verbal irony. However, it should be

noted that the question asked of children (e.g. Did Conner want Lucy to believe that he thought

the cake was bad?) was linguistically complex, which may have been difficult for shy children to

respond to. The inference that shy children have difficulty understanding that a statement is

intended to be ironic thus requires further confirmation.

Across all participants, the results of speaker attitude ratings were consistent with the

Tinge hypothesis; ironic criticisms were rated as being significantly less mean than literal

criticisms and ironic compliments were rated be being significantly less nice than literal

compliments. There was also an interaction with between shyness and statement type. While

non-shy participants rated irony as being "meaner" overall (collapsed across criticisms and

compliments), there was not a significant difference between ratings of literal and ironic

statements for shy participants. Findings did not replicate those found in my previous research

(Mewhort-Buist & Nilsen, 2013; Mewhort-Buist & Nilsen, *accepted*), which showed that

shyness was related to rating ironic speakers as being "meaner" (though both showed that

individuals with higher shyness misconstrued the intentions of speakers). There are a number of

methodological differences between the studies, which may have contributed to the different

findings. First, in the present work self-reported shyness was provided in a group format (albeit

via paper-and-pencil tasks), which may have influenced participants ratings, and led to more

missed items. Second, the vignettes differed in several ways including administration via a

computer, which allowed for a consistent tone of voice in the questions that were asked of participants, since portions of the story were repeated in many of the questions. Also, the stories were reworded to ensure that ironic statements always echoed a previously held belief of the target, which has been shown to aid in irony comprehension. Third, the current study used a slightly older age range (grades 4-6 verses grades 3-5). Yet, most of these methodological changes (particularly those to the verbal irony task) represent improvements over the previous studies (e.g., increased standardization, including an echoed statement), and it is not clear how such changes would account for the difference in findings.

The primary aim of the present work was to determine whether verbal irony mediated relations between shyness and negative socio-emotional outcomes. Such mediation was not supported by the data. Consistent with previous research (e.g., Coplan & Weeks, 2009; Gazelle & Ladd, 2003; Muris et al, 1999), there were direct effects between shyness and the negative social and emotional outcomes, and friendship quality was a partial mediator between shyness and emotional outcomes (loneliness and depression symptoms; Fordham & Stevenson-Hinde, 1999). Similarly, peer victimization mediated the relationship between shyness and emotional outcomes, as predicted by the literature (Crick & Grotpeter, 1996; Gazelle & Ladd, 2003). However, the direct paths between shyness and verbal irony comprehension, and between verbal irony comprehension and social and emotional outcomes were all non-significant. When larger socio-communicative variables were examined, results were similar, with the exception that shyness predicted the broader constructs of figurative language comprehension and socio-communicative competence. While the latter finding is predicted by previous research showing that shy children show weaker language skills generally (Spere, Schmidt, Theall-Honey, & Martin-Chang, 2004), to my knowledge this is the first evidence suggesting that shyness is

related to children's ability to accurately interpret the meaning of figurative language, specifically.

Although a mediating role was not shown for any of the socio-communicative variables, verbal irony was found to moderate the relationship between shyness and many of the socio-emotional outcomes measured in this study. Interestingly, and contrary to predictions, higher verbal irony comprehension was found to be a risk factor for worse emotional outcomes in shy children, with better verbal irony comprehension strengthening the relationship between shyness and symptoms of loneliness and depression. Similarly, in terms of negative peer interactions, for girls, higher verbal irony comprehension was associated with an increase in the strength of the relationship between shyness and peer victimization (overt victimization). In contrast, for boys, good verbal irony comprehension reduced or eliminated the relationship between shyness and both overt and relational victimization (operating as a significant protective factor for shy boys).

Thus, while researchers in the field of verbal irony comprehension have tended to suggest that failure to grasp verbal irony could lead to important negative social and emotional consequences, this notion was not supported in the data. In contrast, strong verbal irony comprehension may represent a risk factor for shy children, rather than a protective factor when considering their likelihood of developing symptoms of loneliness and depression (regardless of gender) and their likelihood of experiencing peer victimization (for girls).

When the larger construct of socio-communicative competence was explored as a potential moderator, an interaction between gender and socio-communicative competence was found when depression was the dependent variable. For boys, better socio-communicative competence was associated with decreased levels of depression, supporting a protective role for socio-communicative competence for boys, whilst there was no relation between depression and

socio-communicative competence for girls. In addition, there was a three-way interaction between gender, shyness and socio-communicative competence when predicting relational victimization. Similar to those results found with verbal irony as the moderator, for those boys who had good socio-communicative competence, the relation between shyness and peer victimization was eliminated. For boys low in socio-communicative competence, increased shyness was associated with increased relational victimization. Girls did not show a relation between socio-communicative competence and shyness in predicting victimization.

A number of the moderation findings are initially counter-intuitive; instead of being uniformly protective, verbal irony comprehension was associated with worse emotional outcomes and victimization for shy children (although the latter finding was restricted to girls). However, these findings are consistent with a growing body of research demonstrating that proficiency in socio-cognitive skills, such as mentalizing, may increase the risk for the development of negative social and emotional outcomes in vulnerable populations. For example, in their prospective, longitudinal study, Hoglund, Lalonde and Leadbeater (2007) demonstrated that children who were rejected or neglected by their peers had an increased risk of demonstrating aggression, anxiety, sadness, fearfulness and social withdrawal when they also had strong interpersonal perspective co-ordination. Interpersonal perspective coordination refers to the awareness of others' emotions and motives during social interactions; therefore, this skill may lead children to be more sensitive to negativity from their peers. Of note, the direct effects of strong interpersonal perspective coordination were in line with more traditional views that better socio-cognitive skills are associated with positive outcomes. That is, better interpersonal perspective coordination was associated with decreased peer rejection and neglect, and decreased behavioural and emotional problems. It was only when looking at the relation between peer

56

rejection and neglect and ensuing behaviour and emotional problems that the risk moderation pattern emerged. Thus, whilst conferring social and emotional benefits broadly, strong social cognition may have a downside for vulnerable children, by increasing their awareness of negative social interactions.

In a similar vein, a number of studies have demonstrated that brain processes associated with attention orienting, sustained attention, and emotion processing moderate risks associated with early childhood behavioural inhibition (see Henderson, Pine, & Fox, 2015 for a review). Attention orienting allows humans and other animals to avoid threatening situations; however, a number of researchers have shown that increased attention to threat is related to an increase in the relations between behavioural inhibition and negative social outcomes. For example, Perez-Edgar and colleagues demonstrated that adolescents who were behaviourally-inhibited as children showed an increased risk of exhibiting social withdrawal when they demonstrated attention biases towards threatening stimuli (Perez-Edgar et al, 2010a). Similarly, Hardee and colleagues (2013) found that young adults who were behaviourally-inhibited in childhood and who had strong connectivity between the amygdala and the prefrontal cortex (connecting areas in the brain responsible for fear processing and reasoning) were also at an increased risk of demonstrating social withdrawal. In a large longitudinal study, it has also been shown that increased orienting to novel stimuli (i.e., decreased sustained attention), is associated with increasing levels of behavioural inhibition over childhood, and increased social discomfort in adolescents who were behaviourally inhibited at age 9 months (Perez-Edgar et al, 2010b). Thus, in the current study, an increased ability interpret ironic utterances may lead shy children to attend more to the negative or critical aspects of the language, which could then perpetuate negative outcomes.

Alternatively, it is also possible that cognitive biases often associated with shyness and social anxiety may have influenced the findings. That is, children who are anxious have been shown to interpret non-hostile or ambiguous situations as threatening (e.g., Bell-Dolan, 1995; Stopa & Clark, 2000). In the case of ironic criticisms in particular, interpreting the situation as hostile could lead children to better identify sarcastic utterances (i.e., versus interpreting statements as lying), which would lead to higher verbal irony comprehension score. Furthermore, negative cognitive biases, may, in fact, moderate the relation between shyness and negative outcomes. If this were the case, negative cognitive biases could be the true moderator, with better verbal irony comprehension being a secondary by-product of these biases.

Interesting gender effects emerged from the data. When looking specifically at overt victimization, where children are physically bullied or threatened, for girls, better verbal irony comprehension was related to an increase in the relation between shyness and victimization. In contrast, for shy boys verbal irony comprehension was protective, in that strong verbal irony comprehension eliminated the relation between shyness and overt victimization. Similarly, when looking at relational victimization, where children are ostracized and excluded from groups, both good verbal irony comprehension and socio-communicative competence were protective for boys, in that those shy boys who had better verbal irony comprehension or socio-communicative competence were found to experience lower levels of relational victimization (whereas shyness did not interact with communicative variables for girls in predicting relational victimization). These results may suggest that verbal irony comprehension is an important factor in male bonding relationships. Indeed, there is research in the adult literature to suggest that males enjoy sarcastic humour more than females, and that both men and women prefer humour in which sarcasm is directed at males (Drucker, Fein, Berberbest, & Giora, 2014). Gibbs (2000) also

58

found that males endorse making more sarcastic remarks than do females, which matches general perceptions that males are more likely to make ironic statements than are females (Colston & Lee, 2004). Interestingly, however, for boys low in shyness, better verbal irony comprehension and socio-communicative competence were associated with greater level of overt and relational victimization. Since the findings do not speak to the direction of effects, it is possible that the victimization itself leads to better verbal irony comprehension in this subset boys, due to repeated exposure to sarcastic criticisms, although this proposition is speculative. When looking at gender differences overall, there is paucity of research reporting gender effects in the verbal irony literature, particularly when looking at research with children.

This study was not without its limitations. Due to the exploratory nature of the work and the large number of research questions that I sought to explore, there were a large number of analyses completed, which, at times, looked at the same data different ways (e.g., both mediation and moderation models explored; irony, figurative language, and socio-communicative composites explored separately although they have overlapping component variables; irony comprehension data were explored both as a dependent variable and as a predictor for different research questions). This approach can lead to an increased rate of Type 1 errors. For this reason, a conservative approach was taken towards post hoc analyses (i.e., the Bonferroni correction), and missing data were also handled conservatively. If children did not participate in one of the testing sessions (i.e. due to random factors such as being ill or leaving for vacation), they would have a large number of variables without data, as many measures were completed in each of the two sessions. Rather than imputing values for these variables, they were excluded listwise (sample size for each analysis provided in the results section). To reduce the effect of unanswered individual items on self-report questionnaires of socio-emotional functioning,

average scores of all answered items were used, rather than sums. This method may underestimate students' levels of socio-emotional problems as children often refrained from answering particularly emotionally-laden items (e.g. items about suicidal ideation and whether their family members cared for them on the CDI). Future research in this area could take a more targeted approach, asking a limited number of questions across a number of smaller studies, to limit the number of analyses (i.e. rather than testing multiple models and research questions simultaneously).

In conclusion, in this study, participants' shyness did not affect their ratings of speaker belief (consistent with previous work). However, it was found that shyer children had more difficulty interpreting the speakers' communicative intentions on ironic remarks. Central to my aims, the results demonstrated that verbal irony comprehension moderated the relationship between shyness and symptoms of loneliness and depression, interestingly, serving as a risk factor for more negative outcomes. Furthermore, for girls, verbal irony comprehension moderated the relationship between shyness and peer victimization (overt), in the same negative direction. In contrast, for boys, better verbal irony comprehension and socio-communicative competence were associated with lower victimization in shyer boys, but higher victimization in non-shy boys.

A number of interesting questions are raised by these findings. If shy children have some difficulty interpreting the communicative intentions of ironic speakers, as shown in this study, or if they interpret ironic statements as being more aggressive, as shown in my previous work (Mewhort-Buist & Nilsen, 2013; Mewhort-Buist & Nilsen, *accepted*), then it would be interesting to know how they view ironic speakers more broadly. For instance, it may be possible that shy children make more negative attributions about the character traits of ironic

60

speakers. It is also unknown whether children generally have any awareness that shy children may not receive sarcasm positively. It may be the case that children view shy peers as being sensitive or more easily bristled, which could lead them to be hesitant to use this riskier language form with shy children. The goal of Study 2 was to begin to answer some of these questions. In Study 2, I presented children with stories depicting two characters interacting wherein the target of the remark (literal or ironic) was identified as being shy or non-shy. Participants were then asked a number of questions about their perceptions of the personal characteristics of the speakers. This methodology allowed me to explore the perceived social acceptability of verbal irony use with shy targets, and whether such perceptions varied as a function of the shyness of the participants making the ratings. In a second portion of the study, I asked children to rate how likely they would be to use this language form to determine whether they would modify their language forms based on the shyness of the target (and whether such modifications would vary according to their own self-reported shyness).

Study 2 Introduction

One finding that emerged from the results of Study 1 was that shyer children had more difficulty with appreciating ironic speakers' communicative intent, more often interpreting ironic speakers as lying compared to less shy children. Together, the present work and past research (Mewhort-Buist & Nilsen, 2013) suggest that there is a difference in the way that shy children interpret the intentions or attitude of ironic speakers. Study 2 was designed to further explore the impact of shyness on children's perceptions of ironic speakers by having them rate speakers on a number of dimensions including state measures of communicative intention, attitude and humour (i.e., related to the specific utterance) and trait measures of kindness, sense of humour, and popularity. Participants were also asked to rate how much they would like to be friends with the speaker. This design allowed me to address the initial aim of Study 2, exploring the impact of participants' shyness levels on their evaluations of ironic speakers.

A second aim of Study 2 was to explore whether children felt it was more or less appropriate to use verbal irony with shy targets. To this end, in all of the verbal irony stories, a sentence was added identifying the person who was the target of the final remark as being either shy or not shy. If children notice that shy children do not interpret irony in the same way as do non-shy children, they may feel it is less appropriate to use irony with shy targets. It is also possible that, if shy children are seen as being socially vulnerable, participants may feel it is less appropriate to criticize shy children, regardless of whether a literal or an ironic 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). Recent research has shown that maternally-reported social fear in 24-month-olds, was related to decreased social engagement by

62

the children, and by their social partners at 36 months, suggesting that even very young children adjust their behaviour according to their social partner's temperament (Walker, Degnan, Fox, & Henderson, 2015). Study 2 (Part A) was designed such that the interactions between participant or target shyness and verbal irony use could be explored, thereby providing insight into the social interplay between irony use and shyness.

The third aim of Study 2 was to explore children's willingness to *use* verbal irony, and how reported use might relate to their own shyness or the shyness of the target. The large majority of verbal irony research has focussed on comprehension, rather than production, using similar paradigms to Study 1 in which children listened to or read stories featuring verbal irony, and then responded to questions about the story and the characters therein from a third-person observer perspective (e.g., Ackerman, 1983; Climie & Pexman, 2008; Filippova & Astington, 2008; Whalen & Pexman, 2010). This is likely due to the fact that it is difficult to ensure experimental control and time-consuming observational methods are required in studies exploring production. There are a few notable exceptions, however, with some observational studies exploring the production of verbal irony by children and their parents (Recchia et al, 2010; Pexman et al, 2009), which have shown that children as young as age 5-6 years generate ironic statements. Research examining individual differences in verbal irony production are lacking, however, and I was particularly interested in whether children would be willing to use verbal irony and whether such willingness was dependent on the participants' and targets' level of shyness. Therefore, the current study required a design wherein I could explore verbal irony production without sacrificing much experimental control (as the shyness of the target needed to be manipulated). To achieve this aim, in the second part of Study 2 (Part B), children were asked to imagine that they were characters within stories (similar to those used in Part A). The stories

in Part B were missing the final utterance, and children were then asked to rate how likely they would be to make a number of possible statements, including a literal statement, an ironic statement, a lie, or a prosocial remark.

Finally, as per the gender effects that were revealed in Study 1, it may be the case that verbal irony comprehension and use is appreciated differently among boys than it is among girls. As noted previously, research suggests that males enjoy sarcastic humour more, and endorse making more sarcastic remarks than females (Drucker et al, 2014; Gibbs, 2000). It has also been shown that adult males use aggressive forms of humour including sarcasm more than females (Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). Thus, throughout Study 2, I also explored the impact of gender on children's perceptions of the acceptability of verbal irony use.

These aims led to a number of hypotheses. It was hypothesized that shy children may rate ironic speakers less favourably than less shy children, and may not endorse wanting to become friends with ironic speakers. If this is case it would suggest that shy individuals are sensitive to the ways in which peers communicate and select friends accordingly. It was further hypothesized that children would rate speakers who used verbal irony with shy targets more negatively than speakers who used it with non-shy targets. With respect to children's willingness to use verbal irony, I hypothesized that shy children would be less likely to endorse using verbal irony, because using it carries with it the risk of misunderstandings, which could lead to increased anxiety on the part of shy individuals. Similar to Part A, the stories included targets who were either identified as being "shy" or "not shy" to further explore whether participants would be likely to use irony with shy children,. I predicted that children would be less likely to endorse using irony with shy targets. This hypothesis was based on the idea that children may view shy peers as being sensitive, easily offended, or intolerant of teasing and jocularity. Finally,

given that Study 1 found that more successful ironic language comprehension was associated with better socio-emotional outcomes for shy boys, I expected that boys would be more likely to rate ironic speakers favourably in Part A, and that they would also indicate that they would be more willing to use verbal irony than would girls. If such a finding emerges, it could suggest that proficiency in understanding and interpreting verbal irony is more important within boys' social relationships.

Study 2 Method

Participants

Participants were recruited from English-speaking elementary school classes (4rd-6th grade, 9-12 years of age) in the Waterloo Region and Waterloo Catholic District School boards. Two hundred and thirteen children received parental consent to participate. Of those, 19 declined participation, or were absent during testing, two discontinued early, and three were excluded due to an intellectual disability ($n = 2$) or autism spectrum disorder diagnosis ($n = 1$). Thus, 189 students were included in the initial sample. Unlike Study 1, preliminary analyses found that the participants for whom English was not their first language had statistically significant differences in their results on a number of key variables compared to their peers for whom English was their first language. Results of the study differed when these participants were removed. This finding is consistent with past work which has found differences in figurative language understanding in individuals' second language, even when they are fully proficient in the second language (Bromberek-Dyzman & Ewert, 2010). Therefore, those participants who did not learn English as their first language were excluded from the present analyses ($n = 10$)[5]. The final sample included 179 participants (M_{age} = 10 years, 7 months; 47% were boys). Preliminary analyses revealed that there were significant gender differences in children's responses to items in the second irony task (i.e., Part B) of the study. To account for this, as well as to examine the hypothesized gender effects, gender was included as a between-subjects variable in the analyses for that portion of the study.

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[5] In Study 1, children's first language status did not affect the results related to the main research questions, and thus analyses included those participants who did not have English as their first language.

66

As is noted in the sections that follow, a number of the questions included in the analyses for the first irony task (i.e., Part A) were used as controls for children's later responses about the speakers' characteristics. That is, any story in which the participants did not answer the first three questions (i.e., the memory control, the statement type/communicative intent, and the speaker belief questions) correctly was excluded from further analyses. For some participants, excluding stories on which they did not pass these three questions led to them having no stories of a particular statement type/target combinations left for analysis (i.e., having no ironic compliments for shy targets, etc.), as such, the number of participants having sufficient data for analyses is cited in each relevant subsection of the Study 2 Results section, below.

Procedure

Information letters and consent forms were sent home to all children enrolled in participating grade 4-6 classes. Those children whose parents provided consent were invited to participate in a one-time group testing session at their school. Children had the opportunity to decline participation without penalty. Testing occurred in groups seated at tables in school libraries, classrooms, or conference rooms. Each child had his or her own testing booklet from which to work, and were encouraged to work independently. The booklets, described below, were counterbalanced such that there were 8 different versions randomly distributed amongst the children. In addition, there were separate booklets for male and female participants (i.e., booklets for female participants included all female characters and vice versa). The booklets contained two verbal irony tasks (Part A and Part B), and self-report measures assessing shyness, mood symptoms, and social experiences. Testing was self-directed, and required the children to read the stories, questions, and self-report measures. The examiner helped children to understand the wording when necessary. The testing session lasted between 30-75 minutes, with most

participants completing the booklet within 45 minutes. At the end of the session children were provided feedback letters and a pencil for their participation, and returned to class independently.

Part A: Children's perceptions of speakers using verbal irony. Children were presented with 8 stories in a comic strip format. In each story two characters, both matched in gender to the participant, were engaging in an activity (e.g., playing soccer, snowboarding, waterskiing, art class, etc.). One of the characters, hereafter referred to as the "target", was identified in the story text as being either shy or not shy, including an indication of the target's internal state (e.g., feeling nervous in new situations). Stories either included a negative context, wherein the target failed at the activity (e.g., when snowboarding over a jump the target lands on his/her face in the snow), or a positive context, wherein the target succeeded at the activity (e.g., he/she snowboards over the jump, spins twice in the air, and land perfectly). The other character, hereafter referred to as the "speaker" then made a statement about the target's performance that was either a literal or ironic criticism (in negative contexts) or a literal or ironic compliment (in positive contexts). Ironic statements were marked by having the adjectives describing the target's performance bolded and italicized.

The verbal irony task in Part A of the study had a 2 (story valence: criticisms/ compliments) x 2 (statement type: literal/ironic) x 2 (shyness of the target: not shy/shy) mixed design with the story valence as a between subjects variable, and statement type and shyness of the target of the remark as a within subjects variables. That is, half of the children read stories that included literal and ironic criticisms (i.e., negative contexts), and the other half read stories that included literal and ironic compliments (i.e., positive contexts). Story context was used as a between-subjects variable to reduce the time requirement for participants due to the large number of variables. As such, each child completed 8 stories, two of each within-subject combination

(i.e., non-shy target/literal statement, non-shy target/ironic statement, shy target/literal remark, shy target/ironic remark). Since the stories were also written to be consistent with participant gender, there were, in total, 16 versions of each scenario. Each participant heard one version of each of the 8 stories, with the stories in a fixed order. See Appendix C for the complete set of stories used in Part A of Study 2.

Following each story, children were asked a series of multiple-choice questions. The first three questions were designed to assess their attention to the task and their comprehension of the statement types. Answers to these questions were used as controls for later analyses, as described in more detail in the Results section, below. Participants earned one point on each correctly answered question, with responses for the two stories of each type averaged. The first question was a memory control which asked participants which character performed the action being discussed (i.e., they must identify the target; *"Who snowboards over the jump?"*). Response options for this item included the names of both characters. The second question assessed their understanding of the statement type and the speaker's communicative intention (e.g., *"When Jackson said, 'Wow, you can land **amazing** jumps,' was he: (choose one) a) Telling the truth, b) Lying, c) Being Sarcastic, or d) I don't know"*). The third question assessed children's understanding of the beliefs of the speaker (e.g., *"Did Jackson think Will was good at landing jumps or bad at landing jumps?* Response options included the words "good" and "bad" accompanied by images of a "thumbs up" and a "thumbs down"). Answering this latter question requires an appreciation that the speaker's belief is opposite to the literal meaning of his or her spoken words. For any trial on which participants got any three of these questions incorrect, their data were not included for the speaker attribution questions that followed because appropriately

understanding the story content and the speaker belief was seen as a necessary prerequisite for understanding children's appreciation of speaker attributions.

Following the control questions, participants were asked to rate the attitude and level of humour of the speakers' communication. For the speaker attitude question, children rated on a 5-point Likert scale how "nice" (+2) or "mean" (-2) the speaker was being when the speaker made the final statement (e.g., *When Jackson said, "Wow, you can land **amazing** jumps," how nice or mean was he being?).* The rating scale included both pictures and words as anchors for the ratings. Next, children rated how funny the speaker was being when the speaker made the final statement using a 6-point Likert scale using faces and words ranging from "not at all funny" (0) to "extremely funny" (5), (e.g., *When Jackson said, "Wow, you can land **amazing** jumps," how funny was he being?*).

For the final portion of Part A, participants rated the friendship potential and personal characteristics of the speaker. They were presented with a table in which they responded to a 5-point Likert scale rating from "very much" (4) to "not at all" (0) how much they would like to be friends with the speaker (e.g., *How much would you like to be friends with Jackson?*), and how much they think the speaker is a kind, funny or popular person (e.g., *How much do you think that Jackson is a kind person?).* See Appendix D for a sample story and its associated questions.

Part B: Children's willingness to use verbal irony. For the verbal irony task in Part B, children read four vignettes in which they were asked to adopt the perspective of the speaker in the story. The format of the stories was the same as those in Part A, with two characters engaging in an activity in a negative or positive context. However, for Part B, participants were asked to put themselves in the speaker role. Accordingly, the wording of the stories was in the second person (e.g., *You and your friend are playing mini-golf on a field trip…*). The target of

the story was identified as not shy or shy, as in Part A, and this character was identified as being

a friend of the participant. There were no final statements on the stories. Instead, children were

presented with four possible ending statements (telling the truth, lying, beings sarcastic[6], and

saying something prosocial) and an action (laughing at the target, giving a high five), and were

asked to use a rating scale going from "definitely not" (0) to "yes, definitely" (4) to indicate how

likely they would be to say or do each of the options (e.g., *How likely would you tell the truth by*

saying, 'Boy, that was an awful shot'?). See Appendix E for a sample story and its associated

options.

Self-report Shyness Measure. After they completed the verbal irony stories and

questions from Part A and Part B, children completed a measure of shyness. Shyness was

assessed in the same way as it was in Study 1, using the CSQ (Crozier, 1995; Please see Study 1

methodology for a description of the measure). The internal consistency of the measure in the

current sample was .817. Item scores were averaged (rather than summed) to account for missing

items, which represented 1.65% of the responses to this measure in this study.

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[6] Although in verbal irony research the term "sarcasm" is only used for instances of ironic criticisms directed at a
person, in common usage, people typically use the term "sarcasm" to represent any instance of counterfactual verbal
irony. The terms "counterfactual verbal irony" and "verbal irony" are not typically in lay use.

Study 2 Results

Preliminary Analyses

As noted in the Participants section, above, the results of participants who learned English as their first language differed significantly from those who did not, and thus these participants were excluded from analyses. Although there was a correlation between age and CSQ score ($r = -.189$, $p = .011$), a t-test comparing non-shy and shy participants did not reveal significant age differences in the two groups ($t(177) = 1.480$, $p = .141$). Therefore, age was not included as a covariate in the analyses. Gender was only related responses to Part B (but not Part A), and thus was included as a between-subjects variable for that portion of the study. The mean level of shyness in this sample was 0.879 ($SD = 0.397$; $SE = 0.030$).

Part A: Children's Perceptions of Speakers Using Verbal Irony

In this portion of the study, I explored children's perceptions of ironic speakers by having them rate the speaker on a number of state and trait characteristics including communicative intention, attitude, humour, kindness, and popularity. They were also asked how much they would like to be friends with the speaker. Recall that the character to whom the final utterance was directed (referred to as the "target") was identified as being "shy" or "not shy" within the story text.

Children's comprehension/interpretation of verbal irony. Participants answered a control question, in which they were asked which character in the story was the target of the literal or the ironic remark, to ensure that they had attended to and comprehended the story. Only those trials on which participants got the control question correct were included in subsequent analyses, which led to the exclusion of 9 participants due to missing data (who got

the control question wrong in both trials of at least one condition). Table 2.1 shows the

correlations between age and shyness and control variables.

Is participant shyness related to the comprehension of verbal irony? Previous

research has demonstrated that shy individuals are able to comprehend the counterfactual nature

of verbal irony in a manner that is comparable to non-shy individuals (Mewhort-Buist & Nilsen,

2013; Mewhort-Buist & Nilsen, *accepted*). To examine this in the current sample, mixed model

ANOVAs were used to explore the data. A median split of self-reported shyness using scores on

the CSQ was used to create non-shy and shy groups for the ANOVAs, which differed

significantly in their levels of shyness (t(177) = -20.472, p<.001). The group referred to as "non-

shy" had a mean level of shyness of 0.548, while the group referred to as "shy" had a mean level

of shyness of 1.213; as such, the groups differed by greater than one standard deviation on their

self-reported shyness[7]. Separate 2(participant shyness; non-shy versus shy) x 2(valence;

criticisms versus compliments) x 2(statement type; literal versus irony) x 2(target shyness; non-

shy versus shy) ANOVAs, with participant shyness and valence as the between-subject variables

and statement type and shyness of the target as the within-subject variables were used to examine

participants' understanding of the beliefs and communicative intentions of the speakers in the

stories.

Speaker belief. As noted above, the speaker belief question was coded as correct or

incorrect based on whether the participant's response matched the belief of the speaker in the

story. Proportions correct were therefore calculated for the purposes of these analyses. Across all

participants, there was a significant main effect of valence ($F(1, 164) = 16.791$, $\eta_p^2 = .093$, $p <$

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[7] The terms "shy" and "non-shy" are used to simplify communication of the findings. The CSQ does not have a cut-off score to categorize children based on their reported levels of shyness.

.001). Participants performed better on criticisms ($M = 0.903$, $SE = 0.021$) than they did on compliments ($M = 0.778$, $SE = 0.022$). There was also a significant main effect of statement type ($F(1, 164) = 80.532$, $\eta_p^2 = .330$, $p < .001$), with participants performing better on literal stories ($M = 0.946$, $SE = 0.012$) than on ironic stories ($M = 0.735$, $SE = 0.024$). However, these were clarified by a significant valence by statement type interaction ($F(1, 164) = 23.121$, $\eta_p^2 = .124$, $p < .001$). As shown in Figure 2.1, participants correctly identified the beliefs of the speaker 95.2% and 94.0% of the time for literal criticisms and compliments, respectively, compared to 85.4% and 61.6% of the time for ironic criticisms and compliments, respectively. Performance on ironic criticisms and ironic compliments was significantly weaker than performance on literal criticisms and literal compliments ($p < .001$), and performance on ironic compliments was significantly lower than performance on the other three story types ($p < .001$). There was not a significant relationship between participant shyness and understanding of the speaker's beliefs across all story contexts and conditions (p values $\geq .158$). For all subsequent analyses (in Part A), only those stories on which participants correctly identified the speaker's beliefs were included, which led to 37 participants no longer having enough data to be analysed for subsequent variables.

Speaker communicative intent. Participants answered a multiple choice question to indicate whether the speaker was telling the truth, lying, or being sarcastic, or they could respond that they did not know. Responses were scored as correct or incorrect based on the statement type of the story. There was a significant main effect of statement type ($F(1, 127) = 35.723$, $\eta_p^2 = .220$, $p < .001$), with participants performing better on literal stories ($M = 0.887$, $SE = 0.020$) than on ironic stories ($M = 0.663$, $SE = 0.032$). There was also a valence by statement type interaction, which closely approached statistical significance ($F(1, 127) = 3.879$, $\eta_p^2 = .030$, $p =$

.051). As shown in Figure 2.2, participants correctly identified the communicative intention of the speaker best for literal compliments (92.1% correct), which were understood significantly better than literal criticisms (85.3% correct, $p = .009$), which were understood significantly better than ironic criticisms (70.3% correct, $p = .002$) and ironic compliments (62.4% correct, $p < .001$), which did not significantly differ from each other ($p = .242$). There was no significant relationship between participant shyness and understanding of the speaker's communicative intention across all story contexts and conditions (p values $\geq .134$).

For all subsequent analyses, only those stories on which participants correctly identified the speaker's communicative intentions were included, which led to 51 participants no longer having enough data to be analysed. In total, after removing those stories in which participants failed to correctly identify the target character, the speaker's belief, and the speaker's communicative intentions, 80 participants remained for the subsequent analyses for Part A. Independent t-tests demonstrated that the mean age participants who remained (10 years, 11 months) was higher than those who were excluded (10 years, 3 months; $t(177) = -4.729$, $p < .001$). Although there was a marginal difference in shyness ($t(177) = 1.673$, $p = .096$), with excluded participants scoring higher on the CSQ on average ($M = .923$, $SE = .038$) than included participants ($M = .824$, $SE = .417$), there was still a similar number of participants in the two groups after median split ($X^2(1, N = 80) = .200$, $p = .655$).

Participants' attributions about ironic speakers. Table 2.2 shows the correlations between age and shyness and participants ratings of speaker attitude and humour when making literal and ironic remarks. Mixed model 2(participant shyness; non-shy versus shy) x 2(valence; criticisms versus compliments) x 2(statement type; literal versus irony) x 2(target shyness; non-shy versus shy) ANOVAs were used to examine participants' attributions about the

communication goals (i.e., communication of attitude and humour) and personal characteristics (i.e., kindness, sense of humour, popularity), of the speakers, as well as participants' willingness to be friends with the speakers. I was particularly interested in whether attributions of the speakers varied as a function of the shyness of the target of the utterances. That is, did participants interpret the speaker's objectives or personality differently if the target of the remark was shy? Furthermore, I was interested in whether these judgements were influenced by the participants' own self-reported levels of shyness.

Speaker communication of attitude and humour. Participants were asked to rate the attitude conveyed by the speaker, and the speaker's use of humour in relation to the speaker's final utterance of the story. To rate the speaker's attitude, participants rated on a five point scale to what degree the speaker was being mean or nice when they made the final utterance. As might be expected, there was a main effect of valence ($F(1, 76) = 179.315$, $\eta_p^2 = .702$, $p < .001$), with criticisms being rated as meaner ($M = -0.757$, $SE = .079$) than compliments ($M = 1.044$, $SE = 0.109$). There was also a main effect of statement type ($F(1, 76) = 19.138$, $\eta_p^2 = .201$, $p < .001$), with ironic statements being rated as meaner ($M = -0.088$, $SE = 0.100$) than literal statements ($M = 0.316$, $SE = 0.068$). However, these results are qualified by a valence by statement type interaction ($F(1, 76) = 73.799$, $\eta_p^2 = .493$, $p < .001$). As seen in Figure 2.3, these results are consistent with the Tinge Hypothesis: ironic criticisms were rated as significantly less mean than literal criticisms, while ironic compliments were rated as much less nice than literal compliments ($p < .001$). Interestingly, there was also a two-way interaction between participant self-reported shyness and the shyness of the target in the vignettes ($F(1, 76) = 4.110$, $\eta_p^2 = .051$, $p = .046$); however, this was qualified by a significant three-way interaction between story valence, participant shyness and the shyness of the target ($F(1, 76) = 4.841$, $\eta_p^2 = .060$, $p = .031$).

To explore this interaction, the data were split by valence, and 2(participant shyness) x 2(target) x 2(statement type)[8] mixed model ANOVAs were run separately for criticisms and compliments. When run separately, there was no interaction between participant shyness and the shyness of the target for positive contexts (i.e., compliments, $p = .900$). For criticisms, there was a significant interaction between participant shyness and shyness of the target on attitude ratings ($F(1, 50) = 11.223$, $\eta_p^2 = .183$, $p = .002$). Examining the pattern of results, as seen in Figure 2.4, it appears that non-shy participants believed it was meaner to criticize a shy target than a non-shy target ($p = .006$), while shy participants thought it was meaner to criticize a non-shy target than a shy target, although the latter finding did not reach statistical significance ($p = .083$). Post hoc tests also revealed that shy participants thought it was meaner to criticize a non-shy target than did non-shy participants ($p = .010$).

When looking at participants' attributions of the speakers' use of humour, a main effect of valence was found ($F(1, 67) = 6.554$, $\eta_p^2 = .089$, $p = .013$), such that participants indicated that the speaker was being funnier when the speaker complimented the target ($M = 1.135$, $SE = 0.175$) than when they criticized the target ($M = 0.591$, $SE = 0.121$). There was also a main effect of statement type ($F(1, 67) = 18.847$, $\eta_p^2 = .220$, $p < .001$), such that participants indicated that the speaker was being funnier when the speaker used irony ($M = 1.115$, $SE = 0.131$), rather than making a literal statement ($M = 0.611$, $SE = 0.111$). Although there was marginal three-way interaction between participant shyness, target shyness, and statement type ($F(1, 67) = 3.117$, $\eta_p^2 = .044$, $p = .082$), when this interaction was analyzed further by splitting the data based on

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[8] Although statement type was not a significant predictor in the interaction, this variable remained in the follow-up analysis due to the design of the study (repeated measures), but it was not interpreted beyond the omnibus ANOVA in cases where it was part of a significant or marginal interaction.

participant shyness, there were no significant or marginal relationships between target shyness

and statement type for either shy or non-shy participants (p values $\geq$ .208).

Speaker characteristics. For the speaker characteristic questions, participants were asked

to rate the speakers on a number of traits, including how kind the speaker is, how funny a person

the speaker is, and how popular the speaker is. They were also asked to rate how much they

would like to be friends with the speakers of the vignettes (referred to as "friendship potential").

Table 2.3 shows the correlations between age and shyness and their ratings of speaker's trait-like

or enduring characteristics.

Kindness. When participants rated the how kind the speaker was, there was a significant

main effect of valence ($F(1, 76) = 79.790$, $\eta_p^2 = .512$, $p < .001$), with participants rating speakers

who complimented the targets as kinder ($M = 2.813$, $SE = 0.123$) than those that criticized the

targets ($M = 1.459$, $SE = 0.089$). There was also a main effect of statement type ($F(1, 76) =$

31.879, $\eta_p^2 = .296$, $p < .001$), such that literal speakers were rated as being kinder ($M = 2.400$, SE

$= 0.085$), overall, than those speakers who used irony ($M = 1.872$, $SE = 0.093$). However, these

main effects were clarified by a significant valence by statement type interaction ($F(1, 76) =$

68.326, $\eta_p^2 = .473$, $p < .001$). As can be seen in Figure 2.5, speakers who made ironic criticisms

were rated as being kinder than those who made literal criticisms although this difference fell

short of the value required for statistical significance after Bonferroni correction of .013 (actual p

$= .015$). Speakers who made literal compliments were rated as being significantly kinder than

those who made ironic compliments ($p < .001$), consistent with what might be expected based on

the Tinge Hypothesis.

There was also a participant shyness by target shyness interaction ($F(1, 76) = 12.030$, η_p^2

$= .137$, $p = .001$). As can be seen in Figure 2.6, regardless of the valence of the context or the

statement type, non-shy participants rated speakers who interacted with non-shy targets as kinder than speakers who interacted with shy targets ($p = .005$), and shy participants rated speakers who interacted with shy targets as kinder than speakers who interacted with non-shy targets, although the latter finding did not reach the level of significance required by the Bonferroni correction (actual $p = 0.038$).

Sense of humour. When participants rated how funny of a person they thought the speaker was, there was a significant main effect of statement type ($F(1, 76) = 7.594$, $\eta_p^2 = .091$, $p = .007$), with participants rating speakers who used irony ($M = 1.482$, $SE = 0.100$) as being funnier people than those who made literal statements ($M = 1.230$, $SE = 0.090$). There was also a significant main effect of valence ($F(1, 76) = 13.768$, $\eta_p^2 = .153$, $p < .001$), with participants rating speakers who made compliments ($M = 1.664$, $SE = 0.134$) as being funnier people than those who made criticisms ($M = 1.048$, $SE = 0.098$). Finally, there was also a main effect of participant shyness ($F(1, 76) = 4.485$, $\eta_p^2 = .056$, $p = .037$), such that participants who were not shy rated speakers as funnier ($M = 1.532$, $SE = 0.112$), overall, than did participants who were shy ($M = 1.180$, $SE = 0.123$). There were no significant interactions between any of the variables, nor any effects of the shyness of the target of the remarks (p values $\geq .114$).

Popularity. When participants were asked to rate how popular they felt the speaker was, there was a significant main effect of valence ($F(1, 76) = 7.114$, $\eta_p^2 = .086$, $p = .009$), with speakers who made compliments being rated as more popular ($M = 2.049$, $SE = 0.147$) than speakers who made criticisms ($M = 1.565$, $SE = 0.107$). This was qualified by a significant valence by statement type interaction ($F(1, 76) = 8.381$, $\eta_p^2 = .099$, $p = .005$). Figure 2.7 shows that for compliments but not criticisms, those speakers who used literal statements were deemed more popular than those who used irony ($p = .006$). Central to the research questions, there was a

79

marginal three-way interaction between story valence, the shyness of the participant, and the shyness of the target ($F(1, 76) = 2.917$, $\eta_p^2 = .037$, $p = .092$).

When the data were split by valence to explore this marginal interaction further, a number of statistically significant main effects and interactions emerged in positive contexts only (i.e., when speakers were making literal or ironic compliments). There was a significant main effect of statement type ($F(1, 26) = 5.718$, $\eta_p^2 = .180$, $p = .024$), with speakers who used literal compliments being rated as more popular ($M = 2.247$, $SE = 0.135$) than those who used ironic compliments ($M = 1.852$, $SE = 0.159$). There was also a main effect of the shyness of the target ($F(1, 26) = 4.300$, $\eta_p^2 = .142$, $p = .048$), such that participants rated the speaker as being more popular when complimenting a shy target ($M = 2.167$, $SE = 0.127$), compared to a non-shy target ($M = 1.932$, $SE = 0.142$). Furthermore, again, for compliments only, there was a significant interaction between participant shyness and shyness of the target ($F(1, 26) = 5.524$, $\eta_p^2 = .175$, $p = .027$). These effects were likely masked by the lack of effects for criticisms in the larger omnibus ANOVA, reducing the power of those analyses and rendering the effect non-significant. As can be seen in Figure 2.8, shy participants rated speakers as more popular when they complimented shy targets ($p = .003$), while non-shy participants' popularity ratings did not vary as a function of the shyness of the target ($p = .195$).

Friendship potential. Participants were asked to rate how much they would like to be friends with the speakers. For these ratings, there was a significant main effect of valence ($F(1, 76) = 35.198$, $\eta_p^2 = .317$, $p < .001$), such that participants indicated that they would prefer to be friends with speakers who made compliments ($M = 2.306$, $SE = 0.132$) than with speakers who criticized the targets ($M = 1.341$, $SE = 0.096$). There was also a main effect of statement type ($F(1, 76) = 13.699$, $\eta_p^2 = .153$, $p < .001$), with participants indicating that they would more likely

want to be friends with literal speakers ($M = 1.988$, $SE = 0.089$) than with ironic speakers ($M = 1.659$, $SE = 0.096$). These main effects are qualified by a significant valence by statement type interaction ($F(1, 76) = 34.347$, $\eta_p^2 = .311$, $p < .001$). Participants indicated that they would prefer to be friends with speakers who made ironic criticisms compared to literal criticisms ($p = .005$), and would prefer to be friends with speakers who made literal compliments compared to ironic compliments ($p < .001$; Figure 2.9). Although there was also a marginal three-way interaction between valence, statement type, and shyness of the target ($F(1, 76) = 3.074$, $\eta_p^2 = .039$, $p = .084$), follow-up analyses examining the interaction separately based on valence yielded no marginal or significant interactions between statement type and shyness of the target (p values $\geq .249$).

The self-reported shyness of the participants was also significantly related to their willingness to befriend the speakers ($F(1, 76) = 6.767$, $\eta_p^2 = .082$, $p = .011$). Non-shy participants had higher friendship potential ratings ($M = 2.035$, $SE = 0.109$) than did shy participants ($M = 1.612$, $SE = 0.120$). However, this was qualified by a three-way interaction between the shyness of the participant, the shyness of the target in the story and the statement type ($F(1, 76) = 7.053$, $\eta_p^2 = .085$, $p = .010$). Follow-up analyses with the data split according to participant shyness, and collapsed across story valence, revealed that non-shy participants indicated that they were less likely to befriend speakers who used irony (vs. literal statements) with a shy target ($F(1, 41) = 7.125$, $\eta_p^2 = .148$, $p = .011$; Figure 2.10; post hoc $p = .007$), and that non-shy participants indicated they were less likely to befriend speakers who used irony with a shy target versus a non-shy target ($p = .049$; marginal due to Bonferroni correction). The interaction between target and statement type was not significant for shy participants ($p = .211$).

Part B: Children's Willingness to Use Verbal Irony

In Part B of the study, I was interested in whether participants would endorse using different statement types for non-shy and shy targets, and whether the statement types they endorsed varied as a function of their own shyness or gender. Participants indicated on a 5-point scale ranging from "Definitely not" to "Yes, Definitely" how likely they would be to provide each type of response (telling the truth, lying, being sarcastic, doing an action[9], or saying something prosocial). The correlations between age and shyness and participants' ratings of their likelihood of using these language forms are shown in Table 2.4. To explore all of the response types simultaneously, a mixed model 2(shyness of participant; non-shy versus shy) x 2(gender; female versus male), 2(valence; criticisms versus compliments) x 2(shyness of target; non-shy versus shy) x 4(response type; tell the truth, lie, be sarcastic, or say something prosocial) ANOVA was used.

The results of the ANOVA were shown to violate the sphericity assumption (Mauchly's tests of sphericity; $W(5) = .728$, $p < .001$), thus, the Greenhouse-Geisser correction was applied to the data. There was a significant main effect of statement type ($F(2.518, 430.574) = 267.930$, $\eta_p^2 = .610$, $p < .001$), such that children were most likely to make a prosocial comment ($M = 3.109$, $SE = 0.064$), followed by a truthful comment ($M = 2.144$, $SE = 0.061$), and least likely to make a sarcastic comment ($M = 1.078$, $SE = 0.079$) or to lie ($M = 0.705$, $SE = 0.061$; all post hoc ps $< .001$). However, this main effect was qualified by a number of two- and three-way interactions. There was a significant two-way interaction between story valence and statement type ($F(2.518, 430.574) = 82.732$, $\eta_p^2 = .326$, $p < .001$), such that for negative contexts, children

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[9] Children rated how likely they would be to give a high five to their friend (positive contexts) or laugh at their friend (negative contexts). Because the main focus of the study was on the use of various language forms, this option was excluded from the analyses to simplify the design.

endorsed making a prosocial remark most frequently (with prosocial remarks differing significantly from all other statement types; $p < .001$), followed by sarcasm, then telling the truth, and then lying. Post hoc analyses revealed that telling the truth did not differ from using sarcasm or lying, but that children were significantly more likely to use sarcasm than to lie ($p = .003$). In contrast, for positive contexts, children endorsed using truth the most, followed by prosocial remarks, then sarcasm, and then lying (with all statement types differing significantly from each other, ps $\leq .010$). These results are consistent with what would predicted by the Tinge Hypothesis, in that participants were more likely to criticize using sarcasm than a literal remark (i.e., it is more a more appropriate or socially acceptable way to convey criticism), while they were less likely to use sarcasm to convey praise, as irony mutes the complimentary nature of the remark.

There was also a significant interaction between gender and statement type ($F(2.518, 430.574) = 2.968$, $\eta_p^2 = .017$, $p = .040$). While both girls and boys generally endorsed using the same statement types (i.e., prosocial > telling the truth > sarcasm > lying), girls endorsed using prosocial remarks more than did boys ($p = .044$), although this effect failed to reach the corrected level of significance (Bonferroni Correction: $p < .005$). However, a significant three-way interaction between story valence, gender and statement type ($F(2.518, 430.574) = 4.235$, $\eta_p^2 = .024$, $p = .009$; Figure 2.11) revealed that boys and girls differed in their endorsement of the various statement types depending on whether they were criticizing or complimenting the target. In negative contexts, when the target demonstrated poor performance, girls were less likely than boys to tell the truth (i.e., give a literal criticism) to the target ($p = .003$). In positive contexts, when the target demonstrated good performance, girls indicated they were less likely to lie ($p = .020$), or to be sarcastic (i.e., give an ironic compliment) to the target ($p = .033$) than did boys,

although neither effect reached the corrected level of significance (Bonferroni Correction: $p <$

.006).

Study 2 Discussion

The purpose of Study 2 was to explore children's perceptions of speakers who use verbal irony and their willingness to use verbal irony and, further, to see if their perceptions and communicative choices differed as a function of their gender, their own self-reported levels of shyness, or the shyness of the target of the remark. Consistent with Study 1, shy children understood the beliefs of ironic speakers comparably to non-shy children. In this study, shy children also understood the communicative intentions of the speakers as well as their non-shy peers, which is in contrast to Study 1, where shy children more often interpreted that ironic speakers were lying. The difference in findings is possibly related to the manner in which I assessed comprehension of communicative intent. In this study, I used a multiple choice question in which children chose between "telling the truth", "lying" or "being sarcastic", and they could also answer "I don't know" (in contrast to Study 1, in which participants were asked whether the speaker wanted the listener to believe the speaker's true beliefs). This simplified response format was chosen because preliminary analyses in my past studies had often revealed a significant correlation between vocabulary scores and the speaker intent question, suggesting that language skills were potentially influencing responses to the speaker intent questions. However, this forced response format may not have captured children's initial interpretation. That is, they may have realized a statement was, in fact, verbal irony once that option is presented, but not have done so without such a cue. Also, this question was asked before the speaker belief question, in an effort to prime the ironic interpretation. These procedural differences may have made it easier for children to detect verbal irony, which was a deliberate decision given that the main purpose of Study 2 was to explore children's perceptions of speakers who used verbal irony, necessitating

that they understood verbal irony had been used. Consistent with Study 1, shyness was not related to speaker attitude ratings in this sample.

When exploring children's ratings of the attitude and humour of speakers' remarks, the ratings were consistent with what might be expected based on the premises of the Tinge Hypothesis (Dews et al, 1995; Dews & Winner, 1995). Recall that the Tinge Hypothesis purports that irony renders criticisms less mean and compliments less nice than they would be if delivered literally (Dews & Winner, 1995). In the current study, when rating the attitude of the speaker during the final utterance of the stories, children indicated that speakers who used ironic criticisms were being nicer than those making literal criticisms, and that speakers who used ironic compliments were being meaner than those making literal compliments. Similarly, when rating speaker characteristics including kindness (how kind they thought the speaker was as a whole) and popularity, children rated speakers who made literal compliments more favourably than they did speakers who made ironic compliments. Finally, children indicated that they would be more likely to befriend speakers who made literal compliments than they would speakers who made ironic compliments. Thus, it seems that overall, speakers making ironic compliments are rated as being meaner (in the moment), less kind (overall), less popular, and less appealing as potential friends than speakers who make literal compliments, across all participants, suggesting that it could be socially risky to use verbal irony to convey praise, at least in this age group.

When looking at how participant shyness related to perceptions of ironic speakers, it was found that shy participants tended to rate all speakers as being less funny than did non-shy participants (regardless of the context or statement type within the vignettes), suggesting that shy children may be less likely to find humour in situations in general. This finding is consistent with research in adults, which demonstrates that participants with symptoms of social anxiety

86

expressed less enjoyment of humour that involved understanding others mental states (compared to participants low in social anxiety symptoms), although they enjoyed puns and semantic humour (Samson, Lackner, Weiss, & Papousek, 2012). Shy participants were also less likely to say that they would befriend the speakers generally, likely due to their tendency to withdraw from novel social situations (Asendorpf, 1990), which decreases opportunity for developing new friendships. Shy children (but not non-shy children) also rated ironic speakers as being less popular than literal speakers (again disregarding whether the speaker was complimenting or criticising the target), suggesting that they viewed ironic speakers less favourably. It should be noted, however, that there were no interactions between participant shyness and statement type for the majority of the variables explored, including the speaker's attitude and humour in the moment of the interaction, nor their levels of kindness, sense of humour, or friendship potential.

Another goal of the current study was to explore whether children's perceptions of ironic speakers would vary as a function of the shyness of the target of the remark. I hypothesized that since shy children are sensitive and tend to misinterpret the intentions of ironic speakers, as has been reported previously (Mewhort-Buist & Nilsen, 2013), they could have a reputation for being unable to tolerate sarcasm or teasing. If this were the case, their peers may believe that it is less appropriate to be ironic or jocular with them. I was also interested in how the participants' levels of shyness would affect their perceptions of ironic speakers when target shyness is considered (i.e. whether there is an interaction between participant and target shyness). Results demonstrated a number of interactions between the participants' self-reported levels of shyness and the shyness of the targets in the stories. Overall, regardless of whether speakers used ironic or literal statements, shy children felt that the speaker was kinder when they had seen the speaker interacting with a shy target, and non-shy children felt that the speaker was kinder when they had

87

seen the speaker interacting with a non-shy target. Similarly, shy participants rated speakers as being more popular when the speaker had interacted with a shy target. As these effects were not influenced by valence or statement type, it might suggest that the shy participants were identifying with the shy targets, and that the speakers were rated favourably for befriending targets who were more similar to the participants. There is a paucity of literature looking at children's judgements of other children with respect to peer similarity, although there is research demonstrating that children in this age group are more likely to reproduce sharing behaviour when the person modeling that behaviour is similar in age or other characteristics (Owens & Ascione, 1991).

Aside from these broad findings, there was also some suggestion that the use of verbal irony with shy targets was considered by observers to be less appropriate than with non-shy targets. Specifically, it was found that non-shy participants indicated that they would be less likely to befriend speakers who used irony, rather than literal remarks, with shy targets, regardless of the context of the remarks (criticisms or compliments). This supports the idea that there is a perception among children who are not shy that it is less appropriate to use verbal irony with shy targets. Since individuals with social anxiety symptoms report experiencing more negative affect in response to teasing compared to non-anxious individuals (Nowakowski & Antony, 2013) and less enjoyment with humour involving mentalizing (Samson et al, 2012), it is possible that non-shy children are picking up on shy children's sensitivities, although this wasn't consistently demonstrated across the many speaker characteristics that were measured. Future research could examine this possibility directly and further explore whether children have an explicit awareness that shy children are more sensitive (i.e., can they articulate that they are

88

taking this into consideration) or whether this awareness is more implicit (i.e., do they treat shy children differently without realizing they are doing so).

There were a number of limitations in the design that may have reduced the power of the analyses through a decreased sample size, particularly in Part A of Study 2. First, the group testing format of the study (chosen to increase feasibility) may have decreased the number of participants willing to participate. A greater number of children chose not to participate than has occurred in my previous research, when assent was garnered in a one-to-one setting. It seemed that children felt more comfortable choosing not to participate when they saw their peers do so. Because this occurred before any data were collected, there is no information about the level of shyness of participants who excluded themselves from the study. Second, since children read the stories, rather than hearing recorded versions, they did not benefit from the auditory cues usually associated ironic utterances. This resulted in a larger number of children who failed the irony comprehension questions. Because the focus of Part A was students' perceptions of ironic speakers, which necessitated that they passed all of the irony comprehension questions, a number of participants were excluded from the main analyses of Part A, which greatly reduced the sample size. Similar to Study 1, a conservative approach to missing data was used, in which cases were excluded listwise if they were missing any entire measures, also possibly reducing the power to find group differences.

Finally, a median-split of the shyness scores was used to categorize participants into groups; with those below the median being classified as "non-shy" and those above the median being classified as "shy". Study 2 had a number of categorical predictor variables inherent in the study design including gender, the shyness of the target, the statement type (literal or ironic), and the valence (criticisms or compliments). The statistical method most suited to this design is

ANOVA, which required the participant shyness measure to be categorical as well. However, the CSQ does not have a cut-off score for categorization of respondents into groups. Although median splits have been used in other research examining social anxiety symptoms in youth (e.g., Banerjee & Henderson, 2001), selecting children who are greater than one standard deviation above and below the mean would create groups that theoretically would better represent children who differ categorically in their levels of shyness. However, such an approach would require a larger initial sample of participants than was feasible for the current study.

When children were asked how likely they would be to use irony (Part B), results were again consistent with what might be expected under the premises of the Tinge Hypothesis. That is, in negative contexts, participants were most likely to endorse making a prosocial remark, followed by sarcasm, then telling the truth, and then telling a lie. In contrast, for positive contexts, participants were most likely to endorse making a prosocial remark or telling the truth, followed by sarcasm, then telling a lie. Thus, the use of sarcasm was seen as a more favourable way to convey criticism than was telling the truth, and as a less favourable way to convey praise than telling the truth. However, there was no effect of the shyness of the target on children's ratings of their own likelihood of using irony. In fact, neither participant shyness nor shyness of the target had a significant impact on which statement types participants endorsed using when imagining themselves in the stories. Instead, there were interesting gender effects; with girls being less likely than boys to endorse using literal criticisms and ironic compliments, and being less likely than boys to endorse lying in positive contexts. Although research has shown that males are more likely to use aggressive forms of humour, such as sarcasm (Martin et al, 2003), the present findings suggest that they may choose less prosocial means of communicating in

general. This finding is consistent with research demonstrating that school-aged girls are rated by their peers as being more prosocial, overall, than boys (Zimmer-Gembeck, Geiger, & Crick, 2005).

Although there is research supporting the Tinge hypothesis spanning two decades, with results in children and adults from a number of research groups (Dews et al, 1995; Dews & Winner, 1995; Harris & Pexman, 2003; Mewhort-Buist & Nilsen, 2013; Mewhort-Buist & Nilsen, *accepted*; Pexman & Glenwright, 2007; Pexman & Zvaigzne, 2004), there remains controversy over whether the muting effect of irony occurs in all contexts. Several researchers have suggested that verbal irony (ironic criticisms, in particular) is used to enhance the contempt communicated in an insult (Bowes & Katz 2011; Colston, 1997). Specifically, Colston (1997) completed a series of studies that directly refute the Tinge Hypothesis for ironic criticisms, as he found across four studies with several conditions each, that ironic criticisms were universally rated as being more contemptuous (or, in one of the studies, less sympathetic) than literal criticisms. In his work, he put forth a number of possible explanations for the difference in findings. First, he suggested that the results of Dews & Winner may have been the result of the vocal cues included in the recordings they used in their stimuli, as his stimuli were read by participants. However, in the current work, I used both recorded stories (Study 1) and written passages (Study 2), and found that irony muted criticisms with both types of stimuli (although irony was emphasized by use of italics and bolding in the printed ironic stories). Second, Colston suggested that perhaps criticism is muted by irony when the speaker is not directly affected by the negative performance of the target (as was the case in many of the stories used by Dews and Winner), but not when the speaker is directly affected by the negative performance of the target (as was the case in many of Colston's vignettes). My stimuli contained a mix of both

types of utterance, with the speaker being negatively affected by the behaviour of the target in 6/12 stories in Study 1, 3/8 stories in Part A of Study 2, and 3/4 stories in Part B of Study 2. The fact that children reported that they would be more likely to use ironic over literal criticisms in Part B, despite being personally affected (albeit hypothetically) by the target's poor performance, speaks against this hypothesis. Instead, I would argue that other elements of the stimuli contexts may be the key factor in discriminating these findings; namely the critical tone of the utterances and the significance of the negative outcomes in the vignettes. For example, many of the sample items cited by Colston in his study involved commenting on morally contentious behaviours or character traits (e.g., smoking cigarettes – "I see you really care about your health"), or significant negative consequences (e.g., being locked out of the house in winter, being stuck at a campground without gas). Similarly, in the study by Bowes & Katz (2011), which also found that sarcasm increased the meanness of criticisms, sarcasm was embedded within already aggressive conflict discourses between adults. In contrast, the contexts in my work and that of others (e.g., Dews & Winner, 1995; Pexman & Glenwright, 2007) have tended to involve criticism of behaviours that have few moral underpinnings (e.g., mistakes and failures such as trying on the wrong size shirt, performing poorly in a game or sport), with minimal consequences. Thus, it could be that irony mutes criticisms in situations where the speaker is criticizing a discrete, morally-neutral mistake or failure that has limited consequences, but that it enhances contempt or aggression in value-laden criticisms, or in contexts where the target's behaviour has significant consequences. This possibility deserves further inquiry. Overall, the findings from this study continue to support the premises of the Tinge Hypothesis, that the meaning of the utterance is muted by the counterfactual nature of the utterances.

General Discussion

The over-arching purpose of this dissertation was to explore the social implications of verbal irony interpretation and use by and with shy children. As discussed in the relevant discussion sections for Study 1 and Study 2, above, several findings relating to this main aim were found. Specifically, in Study 1, I found that verbal irony comprehension and other socio-communicative variables moderated the relations between shyness and negative emotional and social outcomes, most often in the negative direction, such that shy children with better verbal irony comprehension and socio-communicative competence showed worse outcomes. The exception to this pattern was that shy boys demonstrated reduced levels of overt and relational victimization when they had better verbal irony comprehension and socio-communicative competence. In Study 2, non-shy children indicated that they were less likely to befriend speakers who used irony with shy targets, and shy participants rated ironic speakers as being less popular than literal speakers. Neither participant shyness nor shyness of the target were related to children's self-reported likelihood of using sarcasm. Instead, children indicated that in negative contexts they were more likely to use sarcasm than literal criticisms, and in positive contexts they were more likely to use literal compliments than ironic compliments. Boys endorsed using literal criticisms and ironic compliments to a greater extent than did girls.

Taking a step back from the main aims, these findings fit into a large body of literature on the development and use of ironic language during childhood. For instance, present work was consistent with previous work demonstrating that children aged 9-12 years have fluent comprehension of ironic criticisms, with a weaker understanding of ironic compliments (Mewhort-Buist & Nilsen, 2013; Whalen & Pexman, 2010). Previous researchers have noted that comprehension of ironic compliments continues to develop into adulthood, with university

93

students rating ironic compliments as being "nice" only 55% (versus "mean" or "neither nice nor mean"; unpublished data from the dataset of Mewhort-Buist & Nilsen, *accepted*) to 70% (Climie & Pexman, 2008) of the time. Furthermore, in the present work, children's overall ratings of speakers were consistent with the Tinge Hypothesis (Dews & Winner, 1995), which proposes that the literal meaning of the words "mutes" the intended meaning of ironic utterances, rendering ironic criticisms less mean or aggressive than literal criticisms, and ironic compliments less nice or prosocial than literal compliments. Extending past literature, my findings demonstrate that children generalize their attributions of speakers to more enduring or trait-like dimensions of kindness, popularity and friendship potential in a manner that is consistent with the Tinge Hypothesis. Thus, it is not only the interpretation of the statements that shows such a pattern, but also the judgments children make about ironic speakers.

Advancing the methodology of the verbal irony research generally, this work is the first to directly ask children how likely they would be to use verbal irony with peers, which may serve as an approximation of children's production of verbal irony. Although a number of studies have examined figurative language use in written texts (Kreuz, Roberts, Johnson, & Bertus, 1996), computer-mediated communication (i.e., email, instant messaging and blogs; Hancock, 2004; Whalen et al, 2009; Whalen, Pexman, Gill, & Nowson, 2013), and conversations (Gibbs, 2000; Hancock, 2004; Tannen, 1984) in adults, there is a paucity of research into verbal irony production in children and adolescents. Three notable exceptions include naturalistic studies examining figurative language use in family conversations (Pexman et al, 2009; Recchia et al 2010), and in play with peers (Ely & McCabe, 1994), and one experimental study (Whalen & Pexman, 2010). In their study, Recchia and colleagues (2010) observed family conversations over 90 minutes, coding instances of figurative language including sarcasm. They found that

children aged 5-7 years used sarcasm within the home to a greater extent than did their parents. Although infrequent, sarcasm use was also noted in younger siblings aged 3-4 years. Pexman and colleagues (2009) observed that children aged 4-11 years used sarcastic gestures and comments with their parents during a brief interaction. Similarly Ely & McCabe (1994) found that kindergarten children used figurative language with their peers in a classroom interaction, including sarcasm. Finally, Whalen and Pexman (2010) demonstrated that children aged 7-11 years responded to ironic criticisms and ironic compliments (spoken by the examiner) with ironic remarks themselves.

Using a different method to examine children's willingness to use ironic language, the current study showed that children endorse *using* verbal irony in a way that is consistent with what the premises of the Tinge Hypothesis might predict. Namely, children indicated that they would be more likely to use ironic criticisms than be honest with a target in negative contexts, and they would be less likely to use ironic compliments than literal statements in positive contexts. This provides further evidence that sarcasm may be perceived and utilized as a means of softening insults. It is likely that children are implicitly aware of the softening function of irony, rather than consciously choosing to use irony in this way; however this claim would require further investigation.

Research into verbal irony comprehension often rests on the assumption that since the use of irony serves important social functions, difficulty understanding or interpreting sarcasm could lead to social difficulties. However, in the present results, there was no significant direct effect of verbal irony comprehension on a number of social and emotional outcomes including friendship quality, peer victimization, loneliness and depression. Thus, although verbal irony is used to soften insults, convey humour and jocularity, to communicate failed expectations (Dews

et al, 1995; Gibbs & Izett, 1999; Pexman, 2008; Pexman & Zvaigzne, 2004), the social ramifications of misunderstanding irony may be minimal. However, one potential caveat is that my findings are based on 3rd person perspective tasks. While individuals might be able to appreciate ironic language when observing others, it may be that when they are the recipients of ironic language they have more difficulty (e.g., more difficulty stepping outside their own perspective, etc.), and that this in-the-moment difficulty may lead to greater social ramifications. Furthermore, while understanding ironic language provides a foundation for knowing how to act, it is possible that the actual social response to ironic language is what predicts social/emotional outcomes as opposed to comprehension, per se. Were this the case, there would likely be greater variability in children's performance on behavioural measures of social communication than would be found with comprehension measures such as those used here.

Beyond understanding verbal irony comprehension and production across children generally, I explored the relations between verbal irony understanding and the social and emotional sequelae of shyness. Contrary to predictions, good verbal irony comprehension was found to strengthen the relationship between shyness and negative outcomes including loneliness and depression symptoms; meaning that for shy children, being better able to perceive the communicative intentions of ironic speakers is related to worse socio-emotional outcomes. Such a finding stands in opposition to research demonstrating that other aspects of language comprehension and functioning, namely vocabulary and understanding of basic social conventions, moderate the relationship between shyness and these outcomes in the opposite direction, serving as a potential protective factor (Coplan & Armer, 2005; Coplan & Weeks, 2009). For instance, Arroyo and Harwood (2011) found that self-perceived and peer-perceived

96

communicative competence mediated the relation between shyness and negative relationship quality in adult same-sex platonic dyads.

What then, may account for the findings of the current study? It is possible that better verbal irony understanding is a marker of greater social understanding in general. With this interpretation in mind, those shy children with good verbal irony understanding may be more aware of their social challenges and (often) lower social standing. Supporting this notion, it has been demonstrated that better theory of mind skills in preschool children predict their sensitivity to teacher criticism (both in terms of their emotional response and the degree to which teacher criticism influenced their self-assessments of their work) and their self-reports of negative experiences in kindergarten (Dunn, 1995; Cutting & Dunn, 2002). Early theory of mind skills in the latter study were also correlated with later sensitivity to failure. Furthermore, since verbal irony always has some element of criticism and evaluation (Garmendia, 2010), it may be that, for shy children, enhanced understanding of this language form is due to an increased sensitivity to criticism generally, which results in greater internalizing symptoms. While there is very little research discussing shy children's perceptions of criticism or hostility, adults with social anxiety symptoms have been shown to be more sensitive to teasing, rating it as more malicious and mean-spirited than did adults without social anxiety symptoms (Nowakowski & Antony, 2013). Furthermore, it has been shown that in children aged 4-9 years, high shyness propensity was related to attributing greater embarrassment to characters in vignettes who were the centre of attention (receiving positive, neutral or negative attention; Colonnesi, Engelhard, & Bögels, 2010). Yet, these results may be confounded by the fact that the study was conducted in Dutch, where a single word is used to denote both "shyness" and "embarrassment". Still, it is plausible that better appreciation for verbal irony and other social processes could lead to greater self-

97

criticism in shy children, which then is reflected by their ratings of loneliness, low mood and poor friendship quality. This hypothesis has been put forth by other researchers who have found that socio-cognitive skills moderate socio-emotional risk in rejected and neglected peers (Hoglund et al, 2007). Suggesting an alternate direction, there is also some evidence to suggest that internalizing symptoms may actually *precede* better social cognitive functioning, rather than being the result of it. Converse, Lin, Keysar and Epley (2008) used an experimental paradigm to demonstrate that adults demonstrated better perspective taking after a sad or neutral mood induction, compared to a happy mood induction. Similarly, there are a number of studies that demonstrate weaker perspective taking, greater stereotypical biases, and weaker executive functioning skills in people who are *happy* (Bless & Igou, 2005; Bodenhausen, Mussweiler, Gabriel, & Moreno, 2001; Forgas, 1995; Oaksford, Morris, Grainger, & Williams, 1996; Phillips, Bull, Adams, & Fraser, 2002). Since the direction of effects cannot be determined in the current methodology, it is possible that internalizing symptoms may follow or precede socio-communicative awareness, or that the effects may be reciprocal in nature.

Although many of the results were consistent across genders, some interesting gender effects did emerge from the data. For example, when peer victimization was used as an outcome variable, for girls, strong verbal irony comprehension strengthened the relationship between shyness and overt (i.e., physical aggression or threats thereof) victimization, similar to the findings for loneliness and depression symptoms, described above. In contrast, for boys, verbal irony comprehension and socio-communicative competence appeared to serve as protective factors, predicting lower levels of overt and relational victimization for shy boys. One possibility is that verbal irony use plays a different role in peer relationships for boys than it does for girls. Study 2 yielded some support for this notion, as boys endorsed using ironic compliments to a

greater extent than did girls, which is consistent with research suggesting that males enjoy

sarcasm more than females do (Drucker et al, 2014), make sarcastic remarks almost twice as

often as females (Gibbs, 2000), and are generally expected to be sarcastic (Colston & Lee, 2004).

Thus, if verbal irony comprehension and/or use is related to gender-typical behaviour, the

gender differences in the current findings may be driven by the social implications of acting in a

gender-typical way. It has been postulated that boys experience greater negative emotional and

social outcomes as a result of shyness because the behaviours associated with shyness contradict

typical male gender norms of dominance and social assertion (e.g., Rubin & Coplan, 2004).

Indeed, a stronger association between shyness and internalizing problems has been found for

boys in a number of studies in North America and Europe (Colder et al, 2002; Coplan et al,

2007; Coplan & Weeks, 2009; Eisenberg et al, 1998; Gest, 1997; Kienbaum, Volland, & Ulich,

2001; Rubin et al, 1993; Stevenson-Hinde & Glover, 1996; although see Schwartz, Snidman, &

Kagan, 1999, and Crick & Ladd, 1993, for results showing stronger associations for girls, and

Gazelle, Peter, & Karkavandi, 2014 for a critique of the view that shyness is more detrimental to

boys' well-being than that of girls). There is some evidence to show that parents accept or

reward shy, anxious, fearful and sad behaviours in girls, whilst discouraging or negatively

responding to similar behaviours in boys (e.g., Coplan et al, 2004; Stevenson-Hinde & Glover,

1996), particularly for moderately shy children. Since negative interactions with family

members, peers and teachers have been shown to strengthen the association between shyness and

negative social and emotional outcomes (e.g., Coplan et al, 2008; Graham & Coplan, 2012;

Gazelle & Ladd, 2003; Arbeau, Coplan, & Weeks, 2010), the parental tendency to negatively

respond to shyness in boys is likely to increase their risk of poor outcomes. Furthermore, boys

tend to socialize in larger groups engaging in physical activity (Maccoby, 1990; Maccoby, 1995),

which may be intimidating for shy children, making it more difficult for them to integrate in same-gendered peer groups (Gazelle & Ladd, 2003). Thus, competence with interpreting verbal irony comprehension and socio-communicative skills in general (including theory-of-mind) may allow shy boys to better enter the social milieu of their same-sex peer groups, overcoming some of the above barriers to social inclusion. Interestingly, it has been shown that for males (aged 16-49 years), there is correlation between shyness and the use of aggressive humour, like sarcasm, while for females, there is correlation between shyness and the use of self-defeating humour (Hampes, 2006). Thus, there are clear gender differences in the humour styles of shy adults, although both these forms of humour (aggressive and self-defeating) are considered maladaptive. In sum, if use of verbal irony and sarcasm corresponds to gender norms for boys, but runs contrary to gender norms for girls, it makes sense that verbal irony comprehension would be related to better social outcomes for boys, and poorer social outcomes for girls, as was observed in this study.

As noted above, the results of the study yield some instances in which competence in verbal irony is beneficial (e.g., for boys); however, there was not support for the assumption that good socio-communicative skills will ultimately lead to positive social and emotional outcomes. Instead, these results suggest that a more nuanced understanding of how individual differences affect socio-emotional outcomes is required. If socio-communicative skills moderate the risk for negative social and emotional outcomes in specific populations, then directly enhancing children's socio- communicative awareness may not be an effective way of improving outcomes for all children, as has been suggested by other authors (Coplan & Weeks, 2009). Rather, for shy children, such interventions may inadvertently increase risk of developing the very outcomes one hopes to mitigate, depending on the skill being targeted. In addition, efforts at implementing

100

interventions are further complicated by the influence of gender on the relations between socio-communicative competence, shyness and negative social outcomes. Current studies might suggest that enhancing socio-communicative awareness may help shy boys to experience less relational victimization, however, this could be at the cost of increased loneliness and depression. Rather than suggesting a specific intervention, the current research could inform parents, educators, and mental health professionals about which shy children are most at risk of negative outcomes. Shy children with better verbal irony comprehension may benefit from more frequent check-ins with respect to their emotional well-being, which would aid in early identification of emotional problems, as has been suggested by shyness researchers in recent reviews (Crozier, 2014; Jones, Schulkin, & Schmidt, 2014). Resultant difficulties, such as clinical levels of depression or social anxiety, could then be addressed using current evidence-based treatments (e.g., cognitive behavioural therapy or acceptance and commitment therapy, in individual, group or computer-based modalities; Jones et al, 2014; McEvoy, Rapee, & Heimberg, 2016).

Given that the present research does not support the notion that improving socio-communicative skills would provide universally beneficial outcomes for shy children, what might improve outcomes for shy children more broadly? One option could be to create changes to shy children's environments. There is growing evidence that shy children may be more sensitive to their environments than non-shy children (Schmidt & Miskovic, 2013). Rather than viewing genetics as representing risk or vulnerability to negative environments (i.e., the diathesis-stress model), differential susceptibility posits that certain genetic predispositions make children more responsive to their environments, either enriching or impoverished (Bakermans-Kranenburg, & van IJzendoorn, 2011, 2015; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2011). It has been suggested that while shy children may be more susceptible to

101

the negative influences of ineffective parenting strategies or peer difficulties, they may also benefit to a greater extent than their peers from positive environments (Schmidt & Miskovic, 2013). Within this conceptualization, improving shy children's environments could mitigate some of the social and emotional risks associated with being shy. Research studies provide support for this idea. For example, supportive parenting and secure parent-child attachment patterns have been shown to reduce social and emotional problems for shy children (Bayer, Sanson, & Hemphill, 2006; Booth-LaForce, Oh, Kennedy, Rubin, Rose-Krasnor, & Laursen, 2012). Furthermore, teacher sensitivity and positive climate (developed as part of the *INSIGHTS into Children's Temperament* program designed to promote social-emotional learning in schools) have been found to promote better critical thinking and mathematics skills, and to lead to better peer relationships for shy children, particularly boys (Gazelle, 2006; O'Connor, Cappella, McCormick, & McClowry, 2014a; O'Connor, Cappella, McCormick, & McClowry, 2014b; Avant, Faldowski, & Gazelle, 2011).

Finally, the peer environment could be another avenue to improve shy children's overall socio-emotional well-being. Having at least one high quality friendship has been shown to mitigate many of the socio-emotional risks associated with shyness (Bowker & Rubin, 2008; Oh et al, 2008). Although research demonstrates that most shy or socially withdrawn children do have at least one mutually-stable friendship (Ladd & Burgess, 1999; Rubin et al, 2006), these relationships have been shown to be lacking a number of characteristics that contribute to the quality of the friendship (Rubin et al, 2006). For example, an observational study of socially withdrawn children in middle childhood revealed that their interactions had lower verbal communication than non-withdrawn children (Schneider, 1999). Socially withdrawn adolescents have rated their best friendships as being lower in helpfulness, guidance and intimate disclosure,

and, likewise, their friends also rated the friendship as being lower in helpfulness, guidance and fun (Rubin et al, 2006). It has been postulated that some of these relational problems may be due to a lack of social reciprocity between withdrawn children and their friends (Rubin, Bowker, & Gazelle, 2010), as socially withdrawn adolescents, when asked about their relationships, have been found to discuss their own needs to a greater extent than do their non-withdrawn peers (Schneider & Tessier, 2007). This finding is consistent with models of social anxiety which suggest that an increase in self-focused attention leads to social deficits and distress in socially anxious individuals (see Norton & Abbott, 2016 for a review). Therefore, interventions for shy children focused on improving reciprocity may increase quality of their friendships (and subsequently reduce negative psychological outcomes). Principles from the cognitive behavioural model of treatment for social anxiety could also inform interventions for shy children (Ryan & Warner, 2012). For example, promoting exposure to social scenarios (i.e. rather than allowing shy children to avoid anxiety-provoking social situations) by gradually increasing shy children's participation is social activities would help to decrease their social reticence (see Ryan & Warner, 2012 for information on how this can be done in a school setting).

Limitations and Future Directions

This study begins to sheds light onto the complex relations between socio-communicative competence, shyness, gender and social and emotional functioning; however, there are a number of limitations to the current studies which should be discussed. First, some methodological choices that were made to increase study feasibility, including using group testing (both studies) and written passages (as opposed to audio recorded, Study 2), may have affected the data quality. In the group testing format, particularly in Study 2, students were more likely to decline to

103

participate once they had seen their peers do so. Because declining meant withdrawing from the study, data are not available on whether the students who decided to withdraw differed on important study variables (e.g., shyness) than the ones who remained. It is possible that this led to some selection bias in the sample. Using written stories rather than recorded stories in Study 2 removes the tone of voice cues that would typically be included in sarcasm, which some may argue could have limited the ecological validity of the stimuli. However, studies have used written stimuli in the past without significant validity problems (e.g. Bowes & Katz, 2011; Kreuz & Glucksberg, 1989), and adults use verbal irony in email (Whalen et al, 2009), indicating that there is some ecological validity in using written vignettes. Furthermore, research has shown that young children do not rely heavily on intonation to interpret verbal irony (Ackerman, 1983; Sullivan et al, 1995; Winner & Leekam, 1991). Altogether, although intonation is a common feature of verbal irony, it is not a necessary component for comprehension of this language form.

Another limitation is that, consistent with much of the verbal irony literature (e.g., Filippova & Astington, 2008; Pexman & Glenwright, 2007), the current study used a third person perspective paradigm wherein participants were exposed to characters using irony and then were asked to make judgements about the scenario and its characters. This format is easy to control and deliver, which makes it well suited to exploring verbal irony comprehension. Yet, to get a deeper understanding of how verbal irony use relates to interpersonal relationships, it would be useful to explore how children respond when verbal irony is directed to them. Observational studies to date have focussed primarily on the frequency of figurative language use and how that relates to the context and demographics of the participants (e.g., Pexman et al, 2009; Recchia et al, 2010). Future observational work could begin to explore how children respond to irony by coding changes in affect and verbal responses. Comparing children's

104

responses based on gender and individual differences in temperament could further shed light on the complex interplay between shyness, gender, communication and the risk of developing negative social and emotional outcomes. There may also be opportunities to observe children's responses to irony in a controlled environment. Confederates could be used to deliver specific ironic utterances, and participants' responses could be coded. Computer-mediated interactions could also be used in studies to allow for experimental control of the figurative language being used, whilst also providing a more ecologically valid interaction format. Examples of such paradigms have been used to measure verbal aggression in children in my studies' age range (Mikami, Huang-Pollock, Pfiffner, McBurnett, & Hangai, 2007; Ohan & Johnston, 2007). Ethically, safeguards would need to be in place to ensure that participants were not distressed by the sarcasm delivered to them as part of such studies, which would include a thorough debriefing.

Another limitation of the current studies is the heavy reliance on self-report measures for the assessment of social and emotional variables. Much of the social withdrawal and shyness literature has used peer-nomination strategies to measure shyness and social variables (e.g., Gazelle & Ladd, 2003). Furthermore, the FQQ, used the current study, was originally designed to be analysed by looking at mutually-identified best friends (Parker & Asher, 1993). However, these methods were not feasible in the current studies for a number of reasons. First, peer nomination procedures lead to certain ethical dilemmas, and are not permitted by the ethical boards within the school boards where this research took place. Yet, even if peer nomination were possible, I did not receive a high enough parental permission rate to facilitate such methods, receiving only 15-25% of the forms that had been sent home with students. Nevertheless, the results obtained using self-report measures in the current studies (i.e., the

105

relations between shyness and negative social and emotional outcomes, which was partially

mediated by poor friendship quality), were consistent with the results that have been found using

peer nomination in others studies (e.g., Gazelle & Ladd, 2003; Rubin et al, 2006) . While it could

be argued that multi-informant rating scales would strengthen the current work, such as having

parents and teachers rate students, preliminary findings from Study 1 showed that the self-report

measure of shyness was the most robust predictor of the negative social and emotional outcomes

that have been reliably demonstrated in the social withdrawal literature. Furthermore, research

has demonstrated poor multi-informant agreement on measures of internalizing symptoms (Grills

& Ollendick, 2003; Miller, Martinez, Shumka, & Baker, 2014). This makes sense given that

many of the symptoms of anxiety are not always observable, such as racing heart, muscle

tension, sweating, and upset stomach, as they are internally felt and not necessarily visible to

others. Therefore, self-reports of shyness and internalizing symptoms are the best single measure

when considering ethical, practical, and measurement factors.

Conclusion

Children who are shy are at risk of a host of social and emotional difficulties in childhood, adolescence and adulthood. Yet, not all children who are shy will go on to experience these negative outcomes. The current studies add to a growing literature aimed at discovering the risk factors that predict which children may suffer negative social and emotional consequences from shyness. I demonstrated that verbal irony comprehension in particular, and socio-communicative competence more generally serve to moderate risk for shy children. In particular, better verbal irony comprehension and socio-communicative competence were associated with an increased relation between shyness and its common negative outcomes of loneliness and depression. In terms of negative social outcomes, while good verbal irony comprehension potentiated the relation between shyness and overt victimization for girls, for boys better verbal irony comprehension was protective, eliminating the relation between shyness and self-reported overt or relational victimization.

In Study 2, there was preliminary support for the idea that children may think it less appropriate to use sarcasm with shy targets, and that shy children may be less likely to appreciate sarcastic humour. That is, non-shy children indicated that they were less likely to befriend speakers who used irony with shy targets, and shy participants rated ironic speakers as being less popular than literal speakers. However, such findings were not consistent across the various speaker attributes that were assessed. Moreover, neither participant shyness nor shyness of the target were related to children's self-reported likelihood of using sarcasm. Instead, consistent with what might be expected based on the premises of the Tinge Hypothesis (Dews & Winner, 1995), children indicated that in negative contexts they were more likely to use sarcasm than literal criticisms, and in positive contexts they were more likely to use literal compliments than

107

ironic compliments. Boys endorsed using the less prosocial forms of communication, literal criticisms and ironic compliments, to a greater extent than did girls.

This work highlights the complex nature of the relations between communication skills, gender, shyness and negative social and emotional outcomes. In particular, findings suggest that strong socio-communicative skills are not going to universally improve the socio-emotional outcomes for children. Rather, for some children such skills may create vulnerabilities. Identifying children with elevated shyness and strong socio-communicative skills could be used to flag those children at risk of developing negative outcomes, in order to target interventions to those children most likely to need them, and in a manner that will be most effective. Continued research into the varied influences of intra-child factors and environmental factors will shed light on developmental trajectories of at-risk children, so that we can identify further ways to reduce or eliminate the social and emotional difficulties experienced by shy children.

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Table 1.1.

Descriptive statistics for individual measures from Study 1.

Measure	Mean	SEM	Std. Deviation
Shyness (CSQ)	0.768	0.024	0.314
Irony Score	6.207	0.215	2.801
Vocabulary (TOLD)	46.437	0.727	9.447
Theory of Mind (NEPSY-II)	21.052	0.184	2.382
Second Order False Belief (SOFB)	1.396	0.055	0.717
Figurative Language (CASL)	26.154	0.607	7.720
Figurative language items from NEPSY-II (NepsyFig)	2.770	0.060	0.781
Loneliness	0.845	0.048	0.621
Depression Symptoms (CDI)	0.227	0.017	0.217
Friendship Quality (FQQ)	3.045	0.047	0.610
Overt Victimization (SEQ-OV)	0.634	0.053	0.690
Relational Victimization (SEQ-R)	0.734	0.058	0.760

Table 1.2.

Bivariate correlation coefficients between predictor variables and outcome variables for Study 1. The correlation between shyness and all variables is also shown.

	Shyness (CSQ)	Depression Symptoms (CDI)	Loneliness	Friendship Quality (FQQ)	Overt Victimization (SEQ-OV)	Relational Victimization (SEQ-R)
Shyness (CSQ)	•••	0 .465***	0.465***	-0.236**	0.283***	0.291***
Irony Score	-0.080	0.071	0.007	0.033	0.000	0.029
Vocabulary (TOLD)	-0.126	-0.044	-0.078	0.018	-0.030	0.000
Theory of Mind (NEPSY-II)	-0.155*	-0.237**	-0.200**	0.277***	-0.034	-0.068
Second Order False Belief (SOFB)	-0.111	-0.079	-0.092	0.033	-0.149†	-0.082
Figurative Language (CASL)	-0.183*	-0.144†	-0.076	0.107	-0.065	-0.035
Figurative language items from NEPSY-II (NepsyFig)	-0.089	-0.143	-0.139	0.227**	0.011	0.011

$\dagger = p < .100$, $* = p < .050$, $** = p < .010$, $*** = p < .001$

Table 1.3.

Summary of regression analyses exploring the potential role of gender and verbal irony comprehension in moderating the relationship between shyness and related social and emotional outcomes.

Factors	Statistic	Loneliness	Depression Symptoms	Friendship Quality	Overt Victimization	Relational Victimization
Step 1 (Age, Gender, TOLD-I:4)	R^2	0.007	0.010	0.046	0.019	0.000
	ΔR^2	0.007	0.010	0.046†	0.019	0.000
Step 2 (Shyness)	R^2	0.149	0.229	0.116	0.111	0.089
	ΔR^2	0.141***	0.219***	0.070*	0.092***	0.089***
Step 3 (Verbal Irony)	R^2	0.151	0.239	0.118	0.111	0.091
	ΔR^2	0.002	0.011	0.002	0.000	0.001
Step 4 (Shyness x Gender/ Shyness x Verbal Irony/ Gender x Verbal Irony)	R^2	0.189	0.282	0.145	0.122	0.117
	ΔR^2	0.039†	0.042*	0.027	0.011	0.027
Step 5 (Shyness x Gender x Verbal Irony)	R^2	0.190	0.282	0.153	0.178	0.155
	ΔR^2	0.000	0.000	0.008	0.056**	0.038**

Note: All values are derived from the full model with all variables included. † = $p < .100$, * = $p < .050$, ** = $p < .010$, *** = $p < .001$.

Table 1.4.

Summary of regression analyses exploring the potential role of gender and socio-communicative competence (SC Comp.) in moderating the relationship between shyness and related social and emotional outcomes.

Factors	Statistic	Loneliness	Depression Symptoms	Friendship Quality	Overt Victimization	Relational Victimization
Step 1 (Age, Gender)	R^2	0.001	0.010	0.046	0.018	0.000
	ΔR^2	0.001	0.010	0.046	0.018	0.000
Step 2 (Shyness)	R^2	0.147	0.228	0.115	0.111	0.088
	ΔR^2	0.146***	0.218***	0.069***	0.092***	0.088***
Step 3 (SC Comp.)	R^2	0.159	0.229	0.126	0.111	0.088
	ΔR^2	0.012	0.002	0.011	0.000	0.000
Step 4 (Shyness x Gender/ Shyness x SC Comp./Gender x SC Comp.)	R^2	0.181	0.283	0.135	0.117	0.112
	ΔR^2	0.022	0.054**	0.009	0.007	0.024
Step 5 (Shyness x Gender x SC Comp)	R^2	0.181	0.293	0.136	0.141	0.138
	ΔR^2	0.000	0.010	0.001	0.024*	0.026*

Note: All values are derived from the full model with all variables included. SC Comp. = Socio-Communicative Competence composite variable. † = $p < .100$, * = $p < .050$, ** = $p < .010$, *** = $p < .001$

Table 2.1.

Bivariate correlation coefficients between participant age and self-reported shyness and performance on control questions for Study 2.

Performance on Control Questions, By Condition				Age	Shyness (CSQ)
Criticisms	Control Question	Literal Story	Non-Shy Target	0.140	-.278**
			Shy Target	0.035	-0.084
		Ironic Story	Non-Shy Target	0.131	0.009
			Shy Target	0.054	-0.032
	Speaker Belief	Literal Story	Non-Shy Target	0.054	0.003
			Shy Target	0.185	-0.070
		Ironic Story	Non-Shy Target	0.198†	-.295**
			Shy Target	.258*	-0.009
	Communicative Intent	Literal Story	Non-Shy Target	-0.069	-0.003
			Shy Target	0.008	0.034
		Ironic Story	Non-Shy Target	0.185	-0.116
			Shy Target	.217*	-0.171
Compliments	Control Question	Literal Story	Non-Shy Target	0.127	-0.002
			Shy Target	0.056	-0.015
		Ironic Story	Non-Shy Target	0.113	-0.165
			Shy Target	0.148	-0.201†
	Speaker Belief	Literal Story	Non-Shy Target	0.136	-0.025
			Shy Target	-0.076	0.023
		Ironic Story	Non-Shy Target	0.164	-0.033
			Shy Target	.316**	-0.120
	Communicative Intent	Literal Story	Non-Shy Target	0.055	0.033
			Shy Target	-0.052	-0.022
		Ironic Story	Non-Shy Target	.407**	-0.125
			Shy Target	.293*	-0.124

† = *p* < .100, * = *p* < .050, ** = *p* < .010, *** = *p* < .001

Table 2.2.

Bivariate correlation coefficients between participant age and self-reported shyness and ratings of immediate speaker attitude and humour.

Participant Ratings by Variable and Condition				Age	Shyness (CSQ)
Criticisms	Attitude	Literal Story	Non-Shy Target	0.034	-0.170
			Shy Target	0.105	-0.103
		Ironic Story	Non-Shy Target	0.174	-0.180
			Shy Target	0.082	0.060
	Humour	Literal Story	Non-Shy Target	0.199†	-.310**
			Shy Target	0.134	-0.116
		Ironic Story	Non-Shy Target	0.120	-.279*
			Shy Target	0.173	-0.130
Compliments	Attitude	Literal Story	Non-Shy Target	0.163	-0.061
			Shy Target	-0.182†	0.109
		Ironic Story	Non-Shy Target	-0.104	-0.159
			Shy Target	0.120	-0.014
	Humour	Literal Story	Non-Shy Target	-0.136	0.043
			Shy Target	-.275**	0.056
		Ironic Story	Non-Shy Target	-.380*	-0.154
			Shy Target	-0.293†	0.009

† = $p < .100$, * = $p < .050$, ** = $p < .010$, *** = $p < .001$

Table 2.3.

Bivariate correlation coefficients between participant age and self-reported shyness and ratings of trait-like or enduring speaker characteristics.

Participant Ratings by Variable and Condition				Age	Shyness (CSQ)
Criticisms	Kindness	Literal Story	Non-Shy Target	0.026	-0.102
			Shy Target	-0.106	0.085
		Ironic Story	Non-Shy Target	0.086	-0.137
			Shy Target	0.050	0.105
	Sense of Humour	Literal Story	Non-Shy Target	0.211†	-0.116
			Shy Target	0.055	-0.091
		Ironic Story	Non-Shy Target	0.206	-.356**
			Shy Target	0.224†	-0.167
	Popularity	Literal Story	Non-Shy Target	0.182†	-0.037
			Shy Target	0.202†	0.054
		Ironic Story	Non-Shy Target	.287*	-0.098
			Shy Target	0.167	-0.197
	Friendship Potential	Literal Story	Non-Shy Target	0.000	-0.015
			Shy Target	0.088	-0.026
		Ironic Story	Non-Shy Target	0.103	-0.127
			Shy Target	0.072	0.015
Compliments	Kindness	Literal Story	Non-Shy Target	0.098	-0.117
			Shy Target	0.011	-0.012
		Ironic Story	Non-Shy Target	-0.166	-0.173
			Shy Target	0.002	0.020
	Sense of Humour	Literal Story	Non-Shy Target	0.005	-0.016
			Shy Target	-0.026	-0.035
		Ironic Story	Non-Shy Target	-0.054	-0.201
			Shy Target	0.042	-0.111
	Popularity	Literal Story	Non-Shy Target	0.058	-0.202†
			Shy Target	0.003	-0.104
		Ironic Story	Non-Shy Target	0.126	-0.283†
			Shy Target	0.244	-.349*
	Friendship Potential	Literal Story	Non-Shy Target	-0.009	-0.083
			Shy Target	-0.043	-0.073
		Ironic Story	Non-Shy Target	-0.014	-0.284†
			Shy Target	0.037	-0.059

Table 2.4.

Correlations between participant age and self-reported shyness and their likelihood of using various language forms in negative and positive contexts.

| Likelihood of using each utterance type, by condition			Age	Shyness (CSQ)
Negative Contexts	Telling the Truth	Non-Shy Target	0.104	-0.097
		Shy Target	-0.049	-0.069
	Lying	Non-Shy Target	-0.092	0.159
		Shy Target	-0.012	0.110
	Sarcasm	Non-Shy Target	0.125	-0.035
		Shy Target	0.155	-0.137
	Prosocial Remark	Non-Shy Target	-0.125	0.095
		Shy Target	-.265**	0.167
Positive Contexts	Telling the Truth	Non-Shy Target	0.145	0.110
		Shy Target	0.045	-0.015
	Lying	Non-Shy Target	-0.201†	-0.005
		Shy Target	-0.054	0.026
	Sarcasm	Non-Shy Target	0.033	-0.201†
		Shy Target	0.000	-0.161
	Prosocial Remark	Non-Shy Target	-0.054	0.105
		Shy Target	-0.119	0.045

† = $p < .100$, * = $p < .050$, ** = $p < .010$, *** = $p < .001$

Figure 1.1. Two-way interaction between valence and statement type on children's understanding of speaker belief.
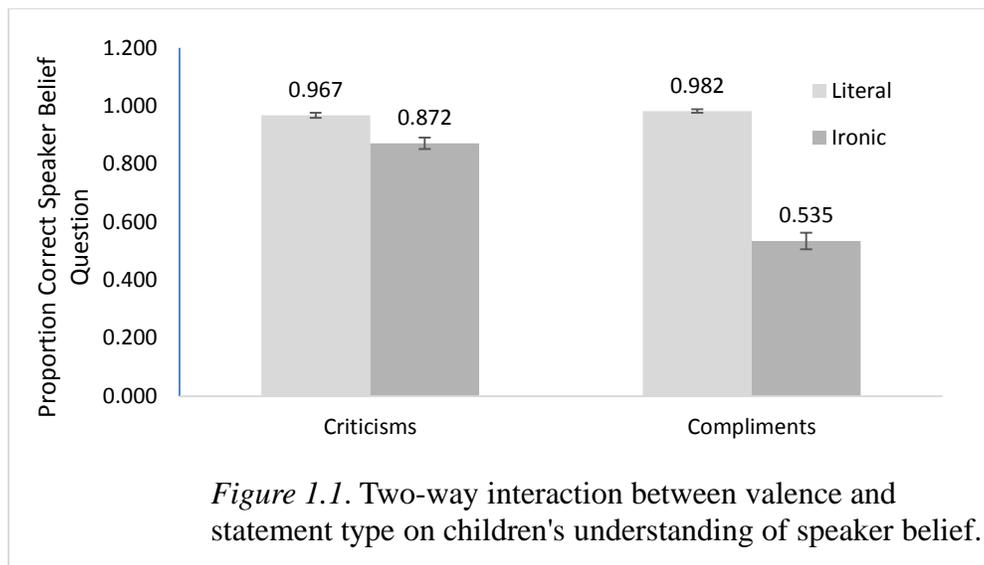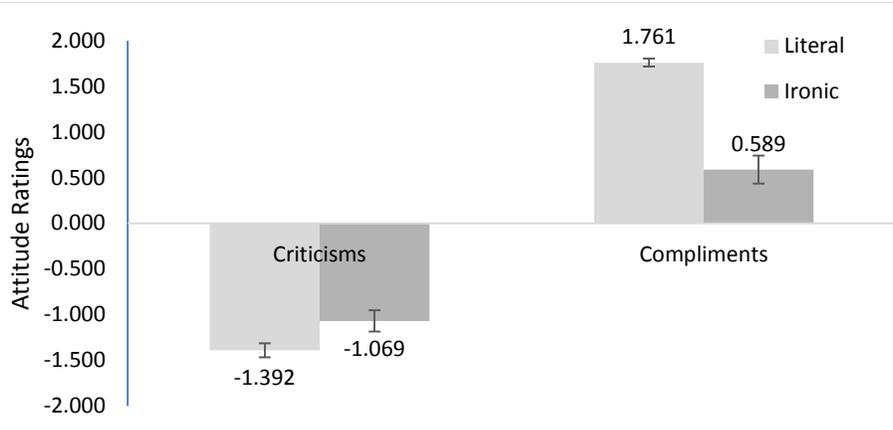
Figure 1.2. Two-way interaction between valence and statement type on children's ratings of speaker attitude.
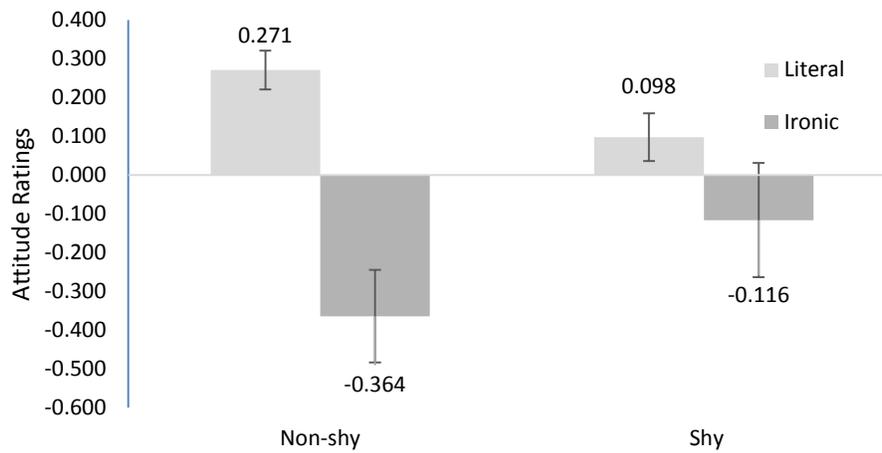
Figure 1.3. Two-way interaction between participant shyness and statement type on children's ratings of the speakers' attitudes.
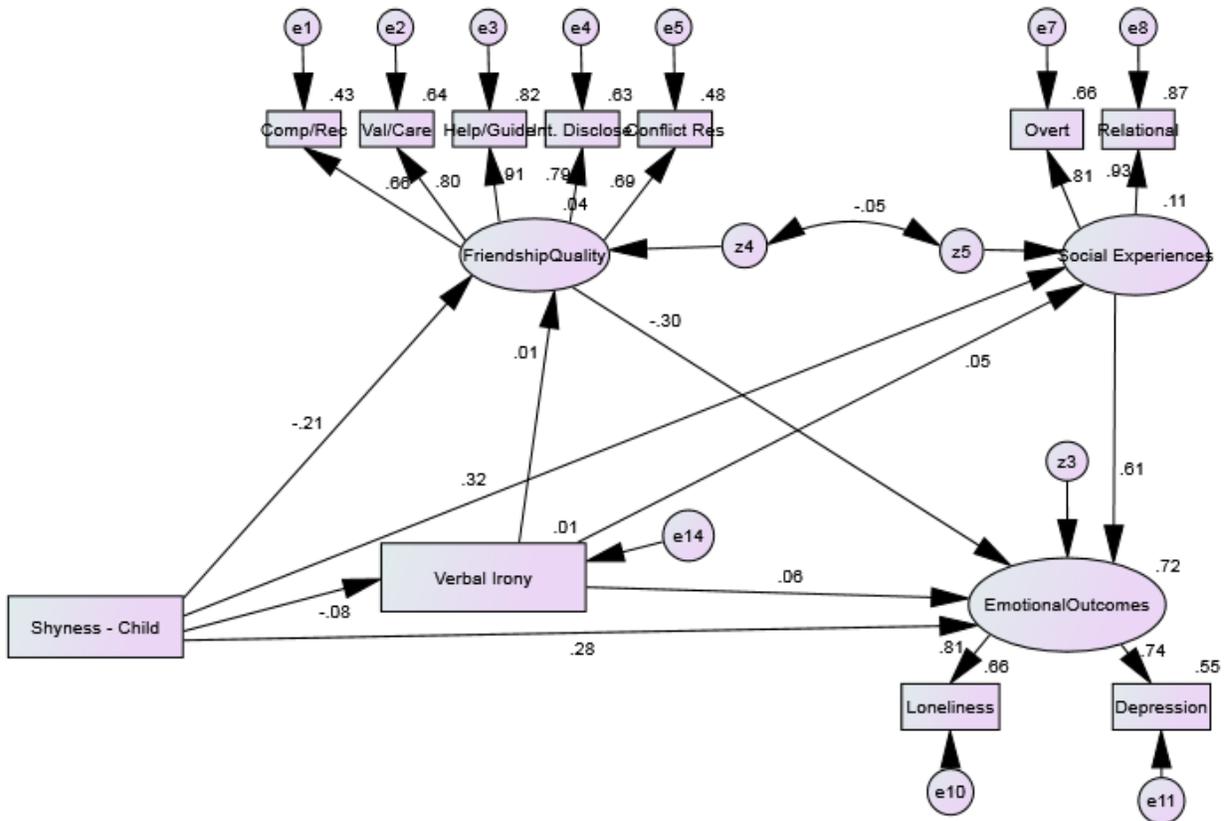
Chi-square = 83.969, df = 36, p = .000, CFI = .941, RMSEA = .089, pclose = .006

Figure 1.4. Standardized solution for Model 1 demonstrating the relationships between shyness, verbal irony comprehension, and the negative social and emotional outcomes associated with shyness
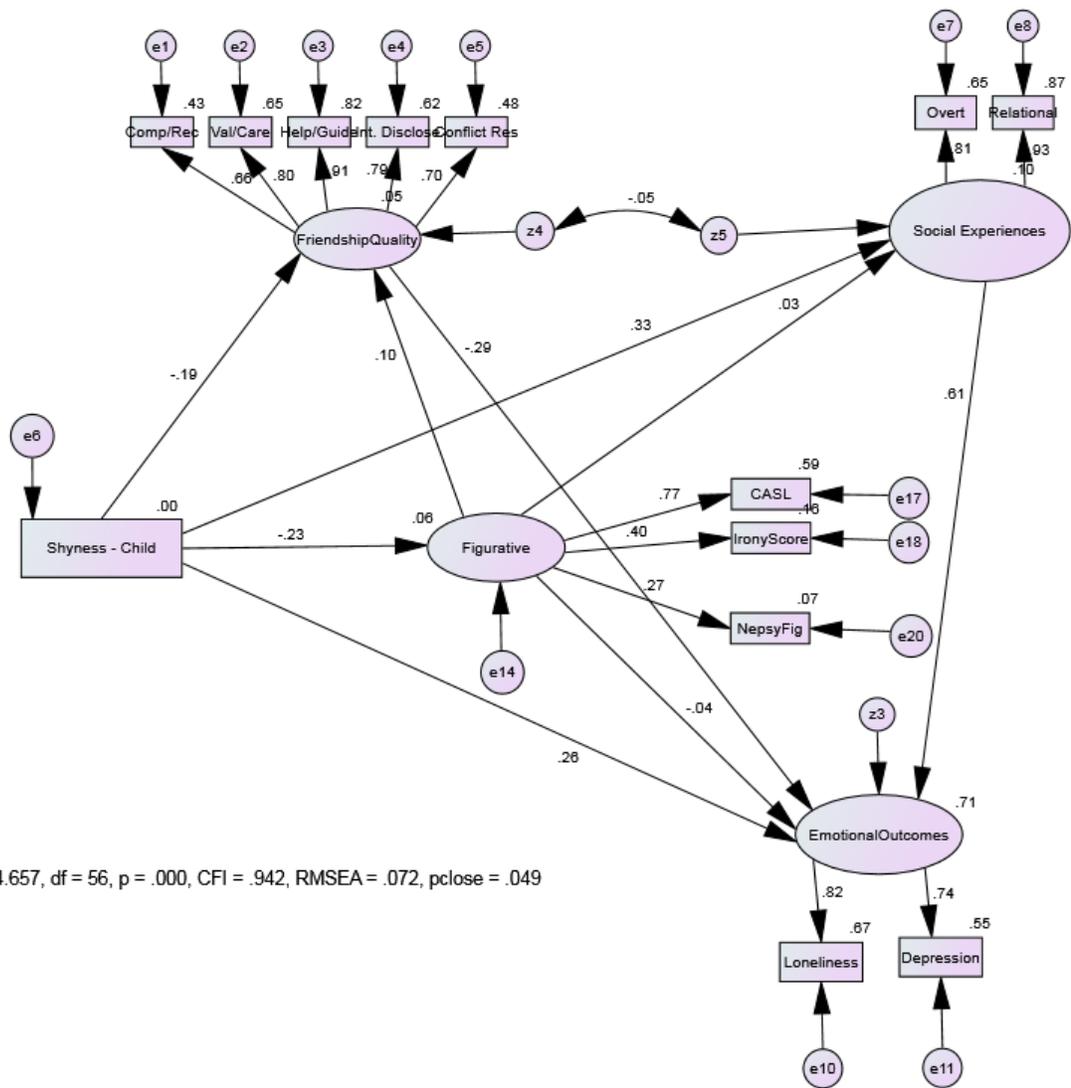
Figure 1.5. Standardized solution for Model 2 demonstrating the relationships between shyness,

figurative language comprehension, and the negative social and emotional outcomes associated
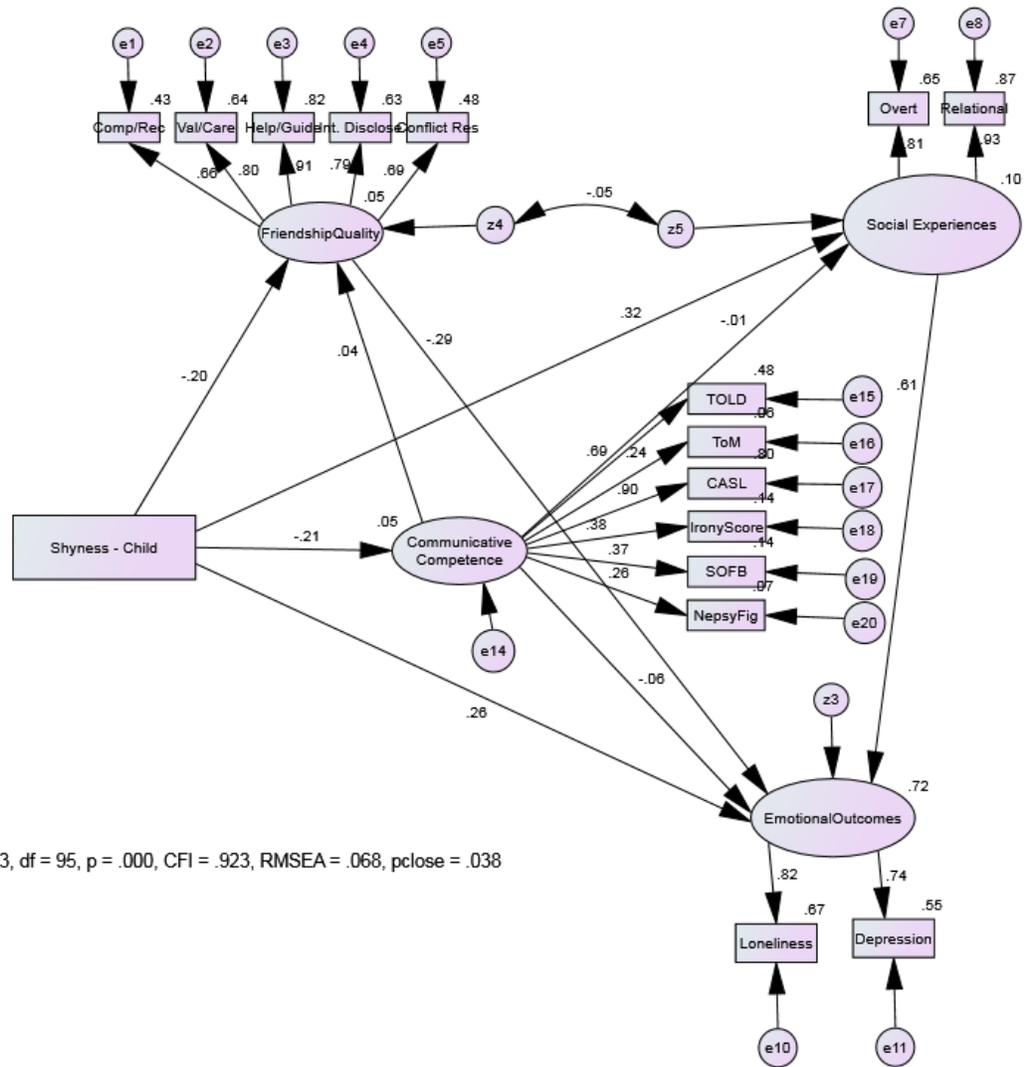
with shyness.

Figure 1.6. Standardized solution for Model 3 demonstrating the relationships between shyness, socio-communicative competence, and the negative social and emotional outcomes associated with shyness.

Figure 1.7. Two-way interaction between shyness and irony score in predicting loneliness.

Figure 1.8. Two-way interaction between shyness and irony score in predicting depression symptoms.
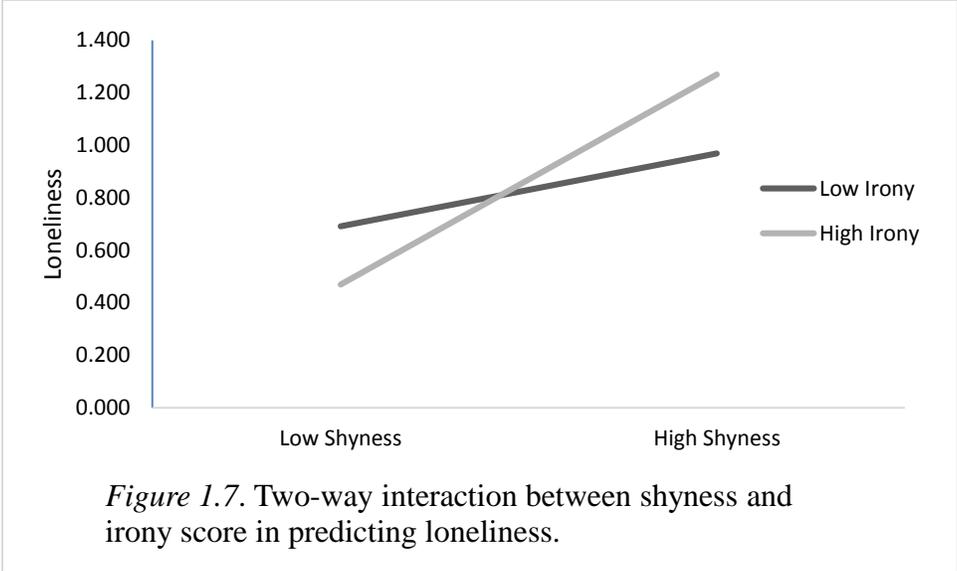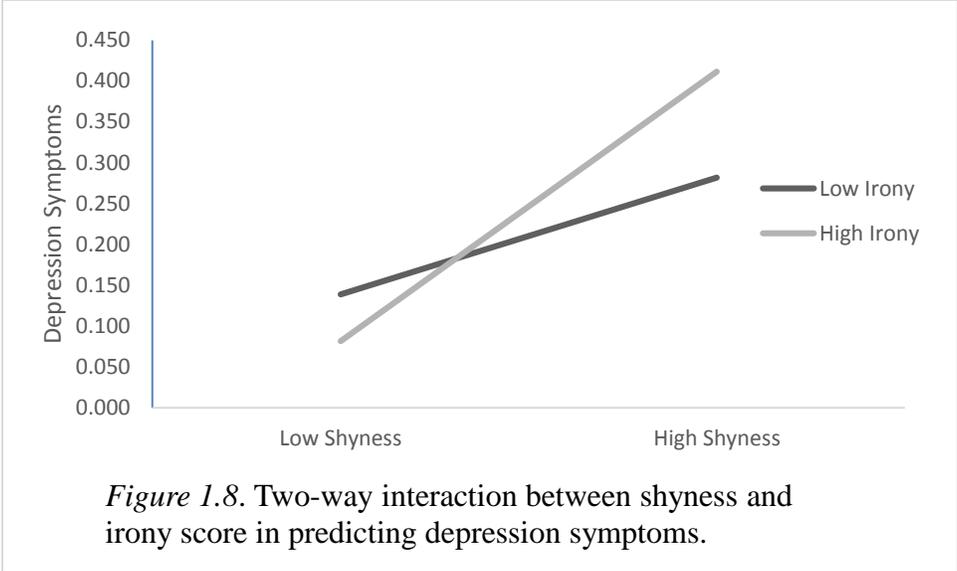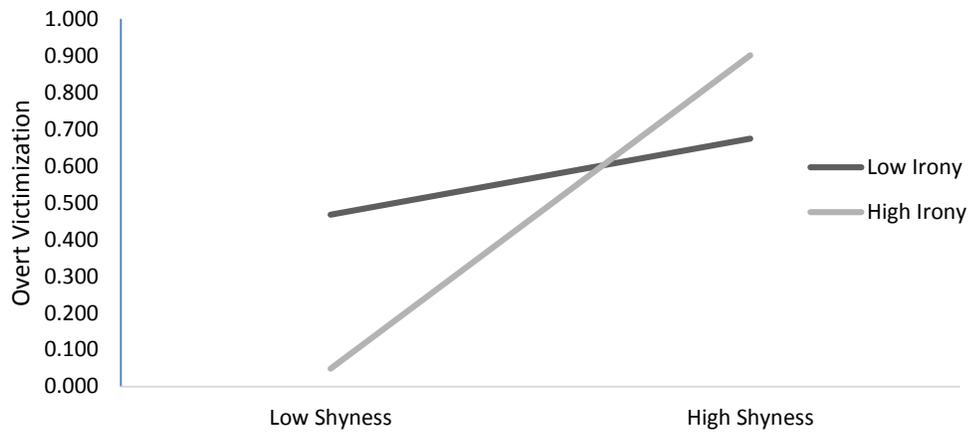
Figure 1.9 (a). Two-way interaction between shyness and irony score in predicting overt victimization for girls.
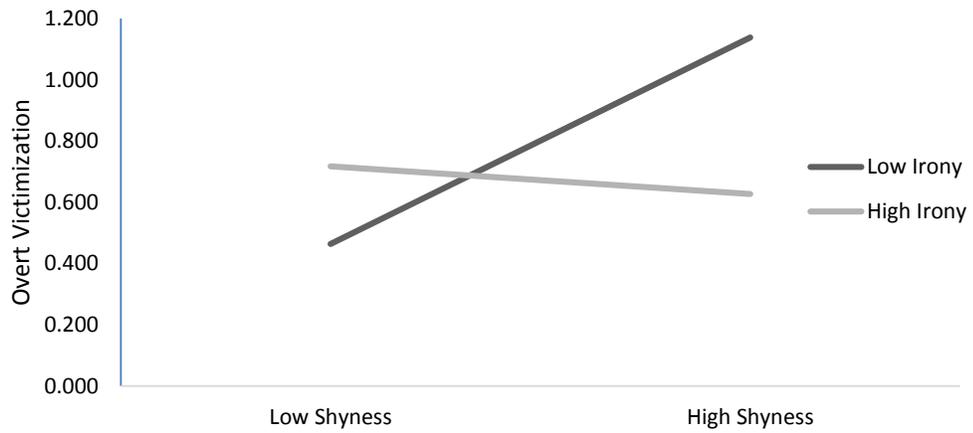
Figure 1.9 (b). Two-way interaction between shyness and irony score in predicting overt victimization for boys.
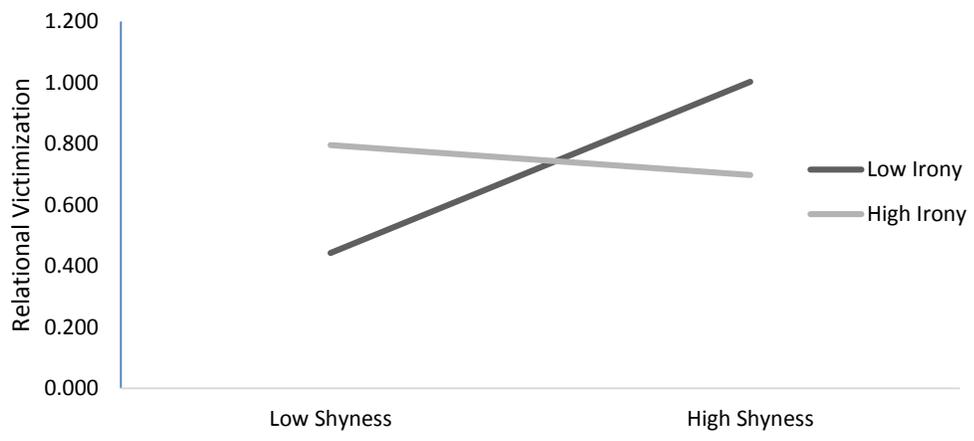
Figure 1.10. Two-way interaction between shyness and irony score in predicting relational victimization for boys.

Figure 1.11. Two-way interaction between gender and socio-communicative competence (SC Comp.) in predicting symptoms of depression.

Figure 1.12. Two-way interaction between shyness and socio-communicative competence (SC Comp.) in the prediction of relational victimization for boys.

Figure 2.1. Two-way interaction between valence and statement type on children's understanding of speaker belief.

Figure 2.2. Two-way interaction between valence and statement type on children's understanding of speaker communicative intention.

Figure 2.3. Two-way interaction between valence and statement type on children's ratings of speaker attitude.

Figure 2.4. Two-way interaction between participant shyness and target shyness on ratings of speaker attitude for criticisms.

Figure 2.5. Two-way interaction between valence and statement type on ratings of speaker kindness.

Figure 2.6. Two-way interaction between participant shyness and target shyness on ratings of speaker kindness.

Figure 2.7. Two-way interaction between valence and statement type on ratings of speaker popularity.

Figure 2.8. Two-way interaction between participant shyness and target shyness on ratings of speaker popularity for compliments.

Figure 2.9. Two-way interaction between valence and statement type on friendship potential ratings of the speakers.
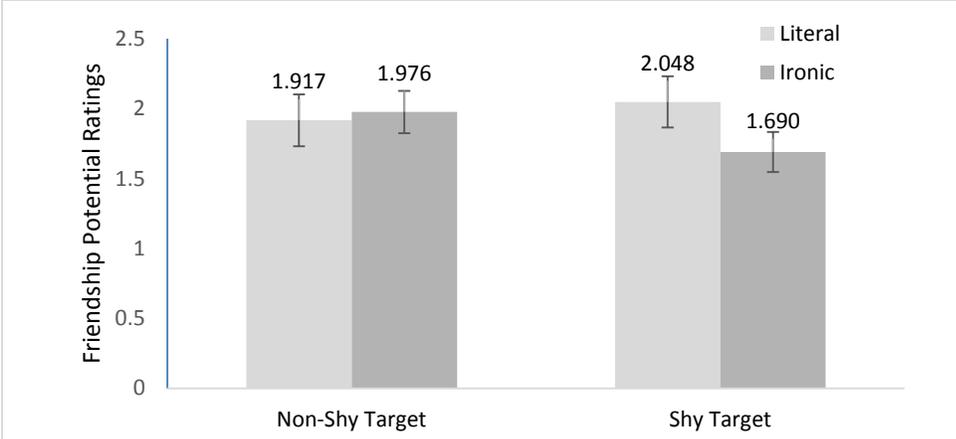
Figure 2.10. Two-way interaction between target shyness and statement type on non-shy participants' ratings of friendship potential.

Figure 2.11. Three-way interaction between gender, valence, and statement type in predicting children's self-reported likelihood of using various language forms.
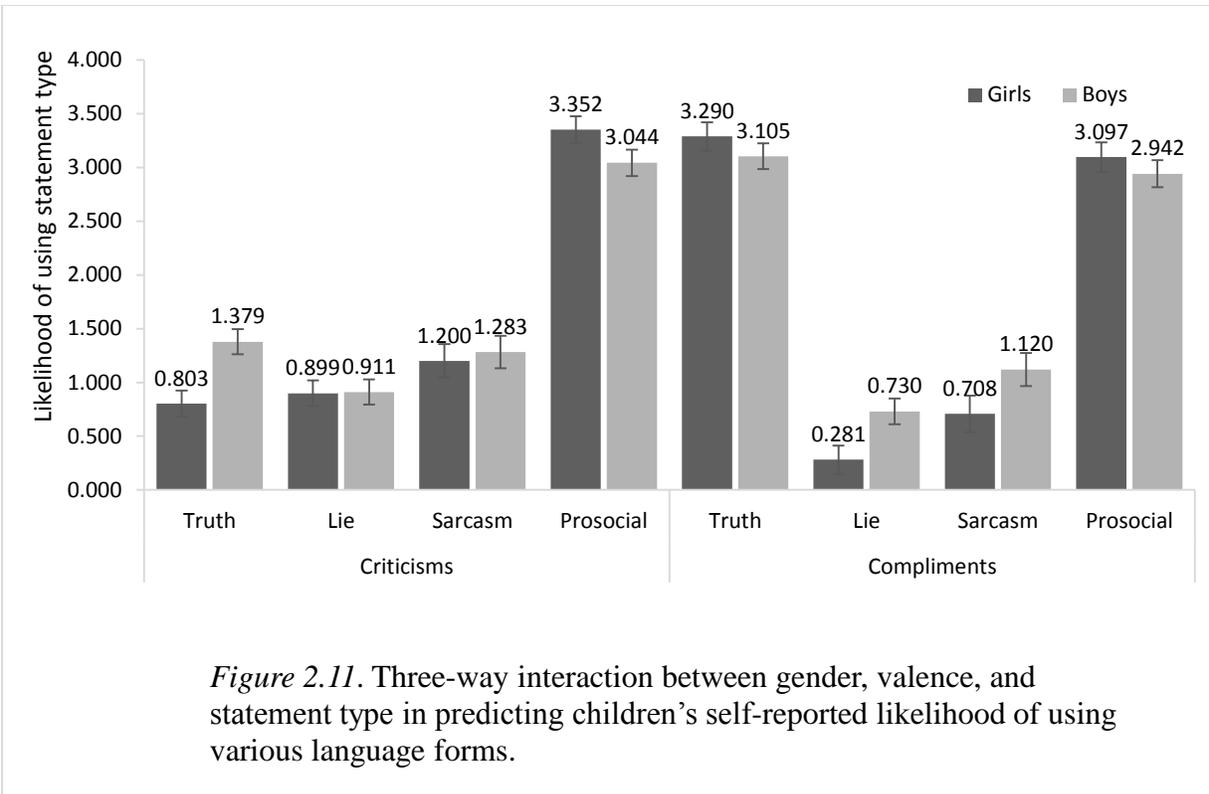
Appendix C – List of all stories used in Study 1.

Hide and Seek Scenario

Literal Compliment
Jennifer and Ryan are playing hide and seek. Ryan tells Jennifer he always finds good hiding spots. Ryan hides first while Jennifer counts. Jennifer looks everywhere for Ryan, but she doesn't find him. Jennifer says, "Wow, that was an ideal hiding spot!"

Literal Criticism
Jennifer and Ryan are playing hide and seek. Ryan tells Jennifer he never finds good hiding spots. Ryan hides first while Jennifer counts. Jennifer looks right in Ryan's spot and finds him easily. Jennifer says, "Wow, that was an obvious hiding spot!"

Ironic Criticism
Jennifer and Ryan are playing hide and seek. Ryan tells Jennifer he always finds good hiding spots. Ryan hides first while Jennifer counts. Jennifer looks right in Ryan's spot and finds him easily. Jennifer says, "Wow, that was an ideal hiding spot!"

Ironic Compliment
Jennifer and Ryan are playing hide and seek. Ryan tells Jennifer he never finds good hiding spots. Ryan hides first while Jennifer counts. Jennifer looks everywhere for Ryan, but she doesn't find him. Jennifer says, "Wow, that was an obvious hiding spot!"

Soccer Scenario

Literal Compliment
John plays on a soccer team with Shannon. Shannon tells John she is a great soccer player. It is the last few minutes of a game. Shannon kicks the ball and scores a goal. John says, "That was a really excellent play!"

Literal Criticism
John plays on a soccer team with Shannon. Shannon tells John she is a bad soccer player. It is the last few minutes of a game. Shannon kicks the ball and misses the net. John says, "That was a really lousy play!"

Ironic Criticism
John plays on a soccer team with Shannon. Shannon tells John she is a great soccer player. It is the last few minutes of a game. Shannon kicks the ball and misses the net. John says, "That was a really excellent play!"

Ironic Compliment
John plays on a soccer team with Shannon. Shannon tells John she is a bad soccer player. It is the last few minutes of a game. Shannon kicks the ball and scores a goal. John says, "That was a really lousy play!"

Snowboarding Scenario

Literal Compliment
Sarah and Will are snowboarding. Will tells Sarah he can always land jumps. Will spots a jump and heads towards it. Will snowboards over the jump, spins twice in the air, and lands perfectly. Sarah says, "Wow, that was a nice jump!"

Literal Criticism
Sarah and Will are snowboarding. Will tells Sarah he can never land jumps. Will spots a jump and heads towards it. Will snowboards over the jump and lands on his face in the snow. Sarah says, "Wow, that was a bad jump!"

Ironic Criticism
Sarah and Will are snowboarding. Will tells Sarah he can always land jumps. Will spots a jump and heads towards it. Will snowboards over the jump and lands on his face in the snow. Sarah says, "Wow, that was a nice jump!"

Ironic Compliment
Sarah and Will are snowboarding. Will tells Sarah he can never land jumps. Will spots a jump and heads towards it. Will snowboards over the jump, spins twice in the air, and lands perfectly. Sarah says, "Wow, that was a bad jump!"

Mini-Golf Scenario

Literal Compliment
Chris and Tara are playing mini-golf on a field trip. They are on the same team. Tara tells Chris she is a great mini-golf player. Tara hits the ball and she scores a hole-in-one. Chris says, "Boy, that was an awesome shot!"

Literal Criticism
Chris and Tara are playing mini-golf on a field trip. They are on the same team. Tara tells Chris she is an awful mini-golf player. Tara hits the ball and completely misses the hole. Chris says, "Boy, that was an awful shot!"

Ironic Criticism
Chris and Tara are playing mini-golf on a field trip. They are on the same team. Tara tells Chris she is a great mini-golf player. Tara hits the ball and completely misses the hole. Chris says: "Boy, that was an awesome shot!"

Ironic Compliment
Chris and Tara are playing mini-golf on a field trip. They are on the same team. Tara tells Chris she is an awful mini-golf player. Tara hits the ball and she scores a hole-in-one. Chris says: "Boy, that was an awful shot!"

Video Game Scenario

Literal Compliment
Ethan comes over to Fiona's house to play. They start playing a video game. Ethan tells Fiona he is good at video games. Ethan's man gets to the very last level of the game. Fiona says, "You sure are an excellent gamer."

Literal Criticism
Ethan comes over to Fiona's house to play. They start playing a video game. Ethan tells Fiona he is bad at video games. Ethan's man doesn't get past the first level of the game. Fiona says, "You sure are a lousy gamer."

Ironic Criticism
Ethan comes over to Fiona's house to play. They start playing a video game. Ethan tells Fiona he is good at video games. Ethan's man doesn't get past the first level of the game. Fiona says, "You sure are an excellent gamer."

Ironic Compliment
Ethan comes over to Fiona's house to play. They start playing a video game. Ethan tells Fiona he is bad at video games. Ethan's man gets to the very last level of the game. Fiona says, "You sure are a lousy gamer."

Waterskiing Scenario

Literal Compliment
Mark visits Lily's cottage at the lake. Mark tells Lily that he is good at waterskiing. Lily and Mark go waterskiing one day. Mark gets up easily on the skis and does five tricks. Lily says, "Wow, you are an expert skier!"

Literal Criticism
Mark visits Lily's cottage at the lake. Mark tells Lily that he is bad at waterskiing. Lily and Mark go waterskiing one day. Mark can't get up on the skis, even after five tries. Lily says, "Wow, you are a weak skier!"

Ironic Criticism
Mark visits Lily's cottage at the lake. Mark tells Lily that he is good at waterskiing. Lily and Mark go waterskiing one day. Mark can't get up on the skis, even after five tries. Lily says, "Wow, you are an expert skier!"

Ironic Compliment
Mark visits Lily's cottage at the lake. Mark tells Lily that he is bad at waterskiing. Lily and Mark go waterskiing one day. Mark gets up easily on the skis and does five tricks. Lily says, "Wow, you are a weak skier!"

Art Scenario

Literal Compliment
Shawn and Ava attend art classes. Ava tells Shawn she is a good artist. In the class they paint a picture of a rose. Ava's painting is beautiful, and looks just like a rose. Shawn says, "Woah, you are a terrific artist."

Literal Criticism
Shawn and Ava attend art classes. Ava tells Shawn she is a bad artist. In the class they paint a picture of a rose. Ava's painting is ugly and doesn't even resemble a rose. Shawn says, "Woah, you are a terrible artist."

Ironic Criticism
Shawn and Ava attend art classes. Ava tells Shawn she is a good artist. In the class they paint a picture of a rose. Ava's painting is ugly and doesn't even resemble a rose. Shawn says, "Woah, you are a terrific artist."

Ironic Compliment
Shawn and Ava attend art classes. Ava tells Shawn she is a bad artist. The class is told to paint a picture of a rose. Ava's painting is beautiful and looks just like a rose. Shawn says, "Woah, you are a terrible artist."

Garden Scenario

Literal Compliment
Steve grows flowers in his backyard. Samantha offers to weed Steve's garden one day. Samantha tells Steve she is a great gardener. Samantha finishes quickly, pulling out all the weeds, and watering the flowers. Steve says, "You are such an awesome gardener."

Literal Criticism
Steve grows flowers in his backyard. Samantha offers to weed Steve's garden one day. Samantha tells Steve she is a bad gardener. Samantha finishes quickly, pulling out all the flowers instead of the weeds. Steve says, "You are such an awful gardener."

Ironic Criticism
Steve grows flowers in his backyard. Samantha offers to weed Steve's garden one day. Samantha tells Steve she is a great gardener. Samantha finishes quickly, pulling out all the flowers instead of the weeds. Steve says, "You are such an awesome gardener."

Ironic Compliment
Steve grows flowers in his backyard. Samantha offers to weed Steve's garden one day. Samantha tells Steve she is a bad gardener. Samantha finishes quickly, pulling out all the weeds, and watering the flowers. Steve says, "You are such an awful gardener."

Shirt Scenario

Literal Compliment
Kyle and Olivia are shopping for clothes. Kyle tells Olivia that he can always find the nicest clothes. Kyle changes into a shirt. Kyle comes out to show Olivia, and the shirt looks terrific. Olivia says, "You really picked a fantastic shirt!"

Literal Criticism
Kyle and Olivia are shopping for clothes. Kyle tells Olivia that he can never find very nice clothes. Kyle changes into a shirt. Kyle comes out to show Olivia, and the shirt looks terrible. Olivia says, "You really picked a horrible shirt!"

Ironic Criticism
Kyle and Olivia are shopping for clothes. Kyle tells Olivia that he can always find the nicest clothes. Kyle changes into a shirt. Kyle comes out to show Olivia, and the shirt looks terrible. Olivia says, "You really picked a fantastic shirt!"

Ironic Compliment
Kyle and Olivia are shopping for clothes. Kyle tells Olivia that he can never find very nice clothes. Kyle changes into a shirt. Kyle comes out to show Olivia, and the shirt looks terrific. Olivia says, "You really picked a horrible shirt!"

Kite Scenario

Literal Compliment
Noah and Laura go to the park with a kite that Laura made. Laura says her kite will fly well. Noah asks to try Laura's kite. The kite flies easily, soaring high above them. Noah says, "You sure made an amazing kite."

Literal Criticism
Noah and Laura go to the park with a kite that Laura made. Laura says her kite won't fly well. Noah asks to try Laura's kite. The kite won't even get off the ground. Noah says, "You sure made a useless kite."

Ironic Criticism
Noah and Laura go to the park with a kite that Laura made. Laura says her kite will fly well. Noah asks to try Laura's kite. The kite won't even get off the ground. Noah says, "You sure made an amazing kite."

Ironic Compliment
Noah and Laura go to the park with a kite that Laura made. Laura says her kite won't fly well. Noah asks to try Laura's kite. The kite flies easily, soaring high above them. Noah says, "You sure made a useless kite."

Fair Scenario

Literal Compliment
Alex invites Hannah to go to the fair. Alex says there won't be line-ups. Both Hannah and Alex hate waiting in lines. Inside the fair, none of the rides have lines! Hannah says, "You sure picked the perfect day for the fair."

Literal Criticism
Alex invites Hannah to go to the fair. Alex says there might be line-ups. Both Hannah and Alex hate waiting in lines. Inside the fair, all of the rides have lines! Hannah says, "You sure picked the worst day for the fair."

Ironic Criticism
Alex invited Hannah to go to the fair. Alex says there won't be line-ups. Both Hannah and Alex hate waiting in lines. Inside the fair, all of the rides have lines! Hannah says, "You sure picked the perfect day for the fair."

Ironic Compliment
Alex invited Hannah to go to the fair. Alex says there might be line-ups. Both Hannah and Alex hate waiting in lines. Inside the fair, none of the rides have lines! Hannah says, "You sure picked the worst day for the fair."

Cake Scenario

Literal Compliment
Gary is at Lucy's house for dinner. For dessert, Lucy brings out a cake that she baked earlier in the day. Lucy says her cake is going to be delicious. The cake tastes wonderful. Gary says: "Wow, you made a delicious cake."

Literal Criticism
Gary is at Lucy's house for dinner. For dessert, Lucy brings out a cake that she baked earlier in the day. Lucy says her cake might not be very good. The cake tastes terrible. Gary says: "Wow, you made a horrible cake."

Ironic Criticism
Gary is at Lucy's house for dinner. For dessert, Lucy brings out a cake that she baked earlier in the day. Lucy says her cake is going to be delicious. The cake tastes terrible. Gary says: "Wow, you made a delicious cake."

Ironic Compliment
Gary is at Lucy's house for dinner. For dessert, Lucy brings out a cake that she baked earlier in the day. Lucy says her cake might not be very good. The cake tastes wonderful. Gary says: "Wow, you made a horrible cake."

Appendix D: Sample trial from Study 1

Trials were presented on computer, with the stories and questions pre-recorded. Children could repeat the reading of questions, but not the original story. The comic remained visible for each of the questions to serve as a memory aid for the stories.
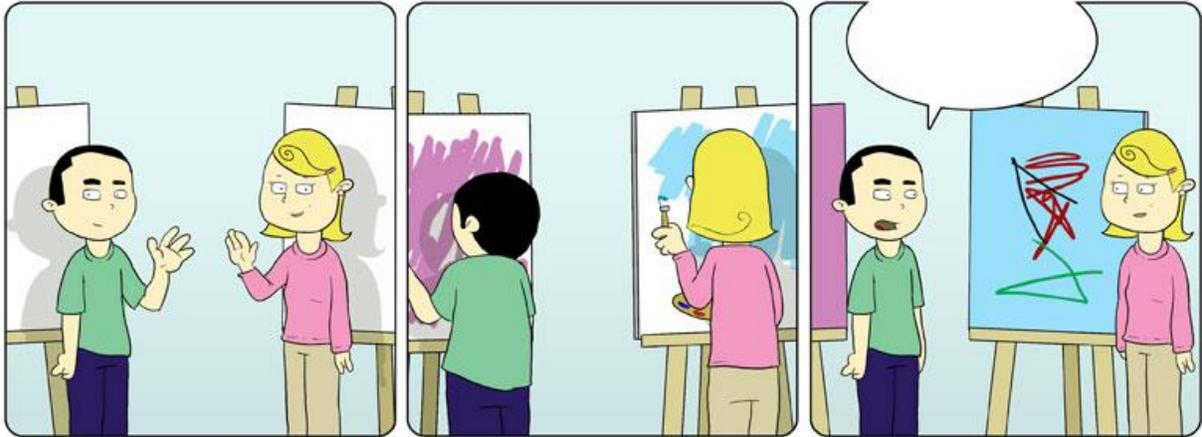
Shawn and Ava attend art classes. Ava tells Shawn she is a good artist. In the class they paint a picture of a rose. Ava's painting is ugly and doesn't even resemble a rose. Shawn says, "Woah, you are a terrific artist."

Speaker belief –The thumb up and thumb down pictures appear on the screen, along with the question, which was also presented by recording. *"Did Shawn think Ava's painting was good or bad?"*

Bad

○

Good

○

Speaker Intention – *Did Shawn want Ava to believe he thought that her painting was [child's answer]?* "Yes", "No" and "I don't know" radial buttons will appear on the screen.

Bad   Good

○   ○

Speaker Attitude – The nice/mean face scale then appears on the screen.   *"When Shawn said 'Woah, you are a terrific artist,' how nice or mean was he being?"*

Very Nice	A Little Bit Nice	Not Mean or Nice	A Little Bit Mean	Very Mean
○	○	○	○	○

Positive Scenarios

Hide and Seek Scenario

Literal Compliment – Not Shy
Jennifer and Ryan are playing hide and seek. Ryan is not shy. He loves meeting new people everywhere he goes. Ryan has the first turn hiding. Ryan says he always finds the best hiding spots. Jennifer looks everywhere for Ryan, but she doesn't find him. Jennifer says, "Wow, you find the perfect hiding spots!"

Literal Compliment – Shy
Jennifer and Ryan are playing hide and seek. Ryan is very shy. He gets nervous talking to people at a party. Ryan has the first turn hiding. Ryan says he always finds the best hiding spots. Jennifer looks everywhere for Ryan, but she doesn't find him. Jennifer says, "Wow, you find the perfect hiding spots!"

Ironic Compliment – Not Shy
Jennifer and Ryan are playing hide and seek. Ryan is not shy. He loves meeting new people everywhere he goes. Ryan has the first turn hiding. Ryan says he never finds very good hiding spots. Jennifer looks everywhere for Ryan, but she doesn't find him. Jennifer says, "Wow, you find the *worst* hiding spots!"

Ironic Compliment – Shy
Jennifer and Ryan are playing hide and seek. Ryan is very shy. He gets nervous talking to people at a party. Ryan has the first turn hiding. Ryan says he never finds very good hiding spots. Jennifer looks everywhere for Ryan, but she doesn't find him. Jennifer says, "Wow, you find the *worst* hiding spots!"

Soccer Scenario

Literal Compliment – Not Shy
John plays on a soccer team with Shannon. Shannon is not shy. She loves meeting new people and trying new things. Shannon tells John she is a great soccer player. It is the last few minutes of a game. Shannon kicks the ball and scores a goal. John says, "You are a really excellent player!"

Literal Compliment – Shy
John plays on a soccer team with Shannon. Shannon is very shy. She has trouble talking to people at a party. Shannon tells John she is a great soccer player. It is the last few minutes of a game. Shannon kicks the ball and scores a goal. John says, "You are a really excellent player!"

Ironic Compliment – Not Shy
John plays on a soccer team with Shannon. Shannon is not shy. She loves meeting new people and trying new things. Shannon tells John she is a bad soccer player. It is the last few minutes of a game. Shannon kicks the ball and scores a goal. John says, "You are a really *lousy* player!"

Ironic Compliment – Shy
John plays on a soccer team with Shannon. Shannon is very shy. She has trouble talking to people at a party. Shannon tells John she is a bad soccer player. It is the last few minutes of a game. Shannon kicks the ball and scores a goal. John says, "You are a really *lousy* player!"

Snowboarding Scenario

Literal Compliment – Not Shy
Sarah and Will are snowboarding. Will is not shy. He will always take the lead in group presentations. Will spots a jump and heads towards it. Will tells Sarah he can always land jumps. Will snowboards over the jump, spins twice in the air, and lands perfectly. Sarah says, "Wow, you can land amazing jumps!"

Literal Compliment – Shy
Sarah and Will are snowboarding. Will is very shy. His face turns red when meeting a new person. Will spots a jump and heads towards it. Will tells Sarah he can always land jumps. Will snowboards over the jump, spins twice in the air, and lands perfectly. Sarah says, "Wow, you can land amazing jumps!"

Ironic Compliment – Not Shy
Sarah and Will are snowboarding. Will is not shy. He will always take the lead in group presentations. Will spots a jump and heads towards it. Will tells Sarah he can never land jumps. Will snowboards over the jump, spins twice in the air, and lands perfectly. Sarah says, "Wow, you *really* can't land jumps!"

Ironic Compliment – Shy
Sarah and Will are snowboarding. Will is very shy. His face turns red when meeting a new person. Will spots a jump and heads towards it. Will tells Sarah he can never land jumps. Will snowboards over the jump, spins twice in the air, and lands perfectly. Sarah says, "Wow, you *really* can't land jumps!"

Video Game Scenario

Literal Compliment – Not Shy
Ethan comes over to Fiona's house to play. Ethan is not shy. He will always take the lead in group presentations. They start playing a video game. Ethan tells Fiona he is good at video games. Ethan gets to the very last level of the game. Fiona says, "You sure are an excellent gamer."

Literal Compliment – Shy
Ethan comes over to Fiona's house to play. Ethan is very shy. His face turns red when meeting a new person. They start playing a video game. Ethan tells Fiona he is good at video games. Ethan gets to the very last level of the game. Fiona says, "You sure are an excellent gamer."

Ironic Compliment – Not Shy
Ethan comes over to Fiona's house to play. Ethan is not shy. He will always take the lead in group presentations. They start playing a video game. Ethan tells Fiona he is bad at video games. Ethan gets to the very last level of the game. Fiona says, "You sure are a *lousy* gamer."

Ironic Compliment – Shy
Ethan comes over to Fiona's house to play. Ethan is very shy. His face turns red when meeting a new person. They start playing a video game. Ethan tells Fiona he is bad at video games. Ethan gets to the very last level of the game. Fiona says, "You sure are a *lousy* gamer."

Waterskiing Scenario

Literal Compliment – Not Shy
Mark visits Lily's cottage at the lake. Mark is not shy. He doesn't mind talking in front of the class. Lily and Mark go waterskiing one day. Mark tells Lily that he is good at waterskiing. Mark gets up easily on the skis and does five tricks in a row. Lily says, "Wow, you are an expert skier!"

Literal Compliment - Shy
Mark visits Lily's cottage at the lake. Mark is very shy. He never knows what to say in big groups of people. Lily and Mark go waterskiing one day. Mark tells Lily that he is good at waterskiing. Mark gets up easily on the skis and does five tricks in a row. Lily says, "Wow, you are an expert skier!"

Ironic Compliment – Not Shy
Mark visits Lily's cottage at the lake. Mark is not shy. He doesn't mind talking in front of the class. Mark tells Lily that he is bad at waterskiing. Lily and Mark go waterskiing one day. Mark gets up easily on the skis and does five tricks in a row. Lily says, "Wow, you are definitely a *weak* skier!"

Ironic Compliment - Shy
Mark visits Lily's cottage at the lake. Mark is very shy. He never knows what to say in big groups of people. Lily and Mark go waterskiing one day. Mark tells Lily that he is bad at waterskiing. Mark gets up easily on the skis and does five tricks in a row. Lily says, "Wow, you are definitely a *weak* skier!"

Rose Scenario

Literal Compliment – Not Shy
Shawn and Ava attend art classes. Ava is not shy. She doesn't mind talking in front of the class. In the class they paint a picture of a rose. Ava tells Shawn she is a good artist.   Ava's painting is beautiful, and looks just like a real rose. Shawn says, "Whoa, you are a terrific artist."

Literal Compliment – Shy
Shawn and Ava attend art classes. Ava is very shy. She never knows what to say in big groups of people. In the class they paint a picture of a rose. Ava tells Shawn she is a good artist. Ava's painting is beautiful, and looks just like a real rose. Shawn says, "Whoa, you are a terrific artist."

Ironic Compliment – Not Shy
Shawn and Ava attend art classes. Ava is not shy. She doesn't mind talking in front of the class. In the class they paint a picture of a rose. Ava tells Shawn she is a bad artist. Ava's painting is beautiful and looks just like a real rose. Shawn says, "Whoa, you are a ***terrible*** artist."

Ironic Compliment - Shy
Shawn and Ava attend art classes. Ava is very shy. She never knows what to say in big groups of people. In the class they paint a picture of a rose. Ava tells Shawn she is a bad artist. Ava's painting is beautiful and looks just like a real rose. Shawn says, "Whoa, you are a ***terrible*** artist."

Kite Scenario

Literal Compliment – Not Shy
Noah and Laura go to the park with a kite that Laura made. Laura is not shy. She always says the right thing to new people. Noah asks to try Laura's kite. Laura says her kite will fly well. The kite flies easily, soaring high above them. Noah says, "You sure made an amazing kite."

Literal Compliment – Shy
Noah and Laura go to the park with a kite that Laura made. Laura is very shy. She finds it hard to talk to new people. Noah asks to try Laura's kite. Laura says her kite will fly well. The kite flies easily, soaring high above them. Noah says, "You sure made an amazing kite."

Ironic Compliment – Not Shy
Noah and Laura go to the park with a kite that Laura made. Laura is not shy. She always says the right thing to new people. Noah asks to try Laura's kite. Laura says her kite won't fly well. The kite flies easily, soaring high above them. Noah says, "You sure made a ***useless*** kite."

Ironic Compliment – Shy
Noah and Laura go to the park with a kite that Laura made. Laura is very shy. She finds it hard to talk to new people. Noah asks to try Laura's kite. Laura says her kite won't fly well. The kite flies easily, soaring high above them. Noah says, "You sure made a ***useless*** kite."

Cake Scenario

Literal Compliment - Not Shy
Gary is at Connor's house for dinner. Connor is not shy. He always says the right thing to new people. For dessert, Connor brings out a cake that he baked earlier in the day. Connor says his cake is going to be delicious. The cake tastes wonderful. Gary says: "Wow, you made a delicious cake."

Literal Compliment - Shy
Gary is at Connor's house for dinner. Connor is very shy. He finds it hard to talk to new people. For dessert, Connor brings out a cake that he baked earlier in the day. Connor says his cake is going to be delicious. The cake tastes wonderful. Gary says: "Wow, you made a delicious cake."

Ironic Compliment – Not Shy
Gary is at Connor's house for dinner. Connor is not shy. He always says the right thing to new people. For dessert, Connor brings out a cake that he baked earlier in the day. Connor says his cake might not be very good. The cake tastes wonderful. Gary says: "Wow, you made a ***horrible*** cake."

Ironic Compliment - Shy
Gary is at Connor's house for dinner. Connor is very shy. He finds it hard to talk to new people. For dessert, Connor brings out a cake that he baked earlier in the day. Connor says his cake might not be very good. The cake tastes wonderful. Gary says: "Wow, you made a ***horrible*** cake."

Negative Scenarios

Hide and Seek Scenario

Literal Criticism – Not Shy
Jennifer and Ryan are playing hide and seek. Ryan is not shy. He loves meeting new people everywhere he goes. Ryan has the first turn hiding. Ryan says he never finds very good hiding spots. Jennifer looks right in Ryan's spot and finds him easily. Jennifer says, "Wow, you find the worst hiding spots!"

Literal Criticism – Shy
Jennifer and Ryan are playing hide and seek. Ryan is very shy. He gets nervous talking to people at a party. Ryan has the first turn hiding. Ryan says he never finds very good hiding spots. Jennifer looks right in Ryan's spot and finds him easily. Jennifer says, "Wow, you find the worst hiding spots!"

Ironic Criticism – Not Shy
Jennifer and Ryan are playing hide and seek. Ryan is not shy. He loves meeting new people everywhere he goes. Ryan has the first turn hiding. Ryan says he always finds the best hiding spots. Jennifer looks right in Ryan's spot and finds him easily. Jennifer says, "Wow, you find the ***perfect*** hiding spots!"

Ironic Criticism – Shy
Jennifer and Ryan are playing hide and seek. Ryan is very shy. He gets nervous talking to people at a party. Ryan has the first turn hiding. Ryan says he always finds the best hiding spots. Jennifer looks right in Ryan's spot and finds him easily. Jennifer says, "Wow, you find the *perfect* hiding spots!"

Soccer Scenario

Literal Criticism – Not Shy
John plays on a soccer team with Shannon. Shannon is not shy. She loves meeting new people and trying new things. Shannon tells John she is a bad soccer player. It is the last few minutes of a game. Shannon kicks the ball and misses the net. John says, "You are a really lousy player!"

Literal Criticism – Shy
John plays on a soccer team with Shannon. Shannon is very shy. She has trouble talking to people at a party. Shannon tells John she is a bad soccer player. It is the last few minutes of a game. Shannon kicks the ball and misses the net. John says, "You are a really lousy player!"

Ironic Criticism – Not Shy
John plays on a soccer team with Shannon. Shannon is not shy. She loves meeting new people and trying new things. Shannon tells John she is a great soccer player. It is the last few minutes of a game. Shannon kicks the ball and misses the net. John says, "You are a really *excellent* player!"

Ironic Criticism – Shy
John plays on a soccer team with Shannon. Shannon is very shy. She has trouble talking to people at a party. Shannon tells John she is a great soccer player. It is the last few minutes of a game. Shannon kicks the ball and misses the net. John says, "You are a really *excellent* player!"

Snowboarding Scenario

Literal Criticism – Not Shy
Sarah and Will are snowboarding. Will is not shy. He will always take the lead in group presentations. Will spots a jump and heads towards it. Will tells Sarah he can never land jumps. Will snowboards over the jump and lands on his face in the snow. Sarah says, "Wow, you really can't land jumps!"

Literal Criticism – Shy
Sarah and Will are snowboarding. Will is very shy. His face turns red when meeting a new person. Will spots a jump and heads towards it. Will tells Sarah he can never land jumps. Will snowboards over the jump and lands on his face in the snow. Sarah says, "Wow, you really can't land jumps!"

Ironic Criticism – Not Shy
Sarah and Will are snowboarding. Will is not shy. He will always take the lead in group presentations. Will spots a jump and heads towards it. Will tells Sarah he can always land jumps. Will snowboards over the jump and lands on his face in the snow. Sarah says, "Wow, you can land *amazing* jumps!"

Ironic Criticism – Shy
Sarah and Will are snowboarding. Will is very shy. His face turns red when meeting a new person. Will spots a jump and heads towards it. Will tells Sarah he can always land jumps. Will snowboards over the jump and lands on his face in the snow. Sarah says, "Wow, you can land *amazing* jumps!"

Video Game Scenario

Literal Criticism – Not Shy
Ethan comes over to Fiona's house to play. Ethan is not shy. He will always take the lead in group presentations. They start playing a video game. Ethan tells Fiona he is bad at video games. Ethan doesn't get past the first level of the game. Fiona says, "You sure are a lousy gamer."

Literal Criticism – Shy
Ethan comes over to Fiona's house to play. Ethan is very shy. His face turns red when meeting a new person. They start playing a video game. Ethan tells Fiona he is bad at video games. Ethan doesn't get past the first level of the game. Fiona says, "You sure are a lousy gamer."

Ironic Criticism – Not Shy
Ethan comes over to Fiona's house to play. Ethan is not shy. He will always take the lead in group presentations. They start playing a video game. Ethan tells Fiona he is good at video games. Ethan doesn't get past the first level of the game. Fiona says, "You sure are an *excellent* gamer."

Ironic Criticism – Shy
Ethan comes over to Fiona's house to play. Ethan is very shy. His face turns red when meeting a new person. They start playing a video game. Ethan tells Fiona he is good at video games. Ethan doesn't get past the first level of the game. Fiona says, "You sure are an *excellent* gamer."

Waterskiing Scenario

Literal Criticism – Not Shy
Mark visits Lily's cottage at the lake. Mark is not shy. He doesn't mind talking in front of the class. Lily and Mark go waterskiing one day. Mark tells Lily that he is bad at waterskiing. Mark can't get up on the skis, even after five tries. Lily says, "Wow, you are definitely a weak skier!"

Literal Criticism – Shy
Mark visits Lily's cottage at the lake. Mark is very shy. He never knows what to say in big groups of people. Lily and Mark go waterskiing one day. Mark tells Lily that he is bad at

waterskiing. Mark can't get up on the skis, even after five tries. Lily says, "Wow, you are definitely a weak skier!"

Ironic Criticism – Not Shy
Mark visits Lily's cottage at the lake. Mark is not shy. He doesn't mind talking in front of the class. Lily and Mark go waterskiing one day. Mark tells Lily that he is good at waterskiing. Mark can't get up on the skis, even after five tries. Lily says, "Wow, you are an *expert* skier!"

Ironic Criticism - Shy
Mark visits Lily's cottage at the lake. Mark is very shy. He never knows what to say in big groups of people. Lily and Mark go waterskiing one day. Mark tells Lily that he is good at waterskiing. Mark can't get up on the skis, even after five tries. Lily says, "Wow, you are an *expert* skier!"

Rose Scenario

Literal Criticism – Not Shy
Shawn and Ava attend art classes. Ava is not shy. She doesn't mind talking in front of the class. In the class they paint a picture of a rose. Ava tells Shawn she is a bad artist. Ava's painting is ugly and doesn't even resemble a real rose. Shawn says, "Whoa, you are a terrible artist."

Literal Criticism – Shy
Shawn and Ava attend art classes. Ava is very shy. She never knows what to say in big groups of people. In the class they paint a picture of a rose. Ava tells Shawn she is a bad artist. Ava's painting is ugly and doesn't even resemble a real rose. Shawn says, "Whoa, you are a terrible artist."

Ironic Criticism – Not Shy
Shawn and Ava attend art classes. Ava is not shy. She doesn't mind talking in front of the class. In the class they paint a picture of a rose. Ava tells Shawn she is a good artist. Ava's painting is ugly and doesn't even resemble a real rose. Shawn says, "Whoa, you are a *terrific* artist."

Ironic Criticism – Shy
Shawn and Ava attend art classes. Ava is very shy. She never knows what to say in big groups of people. In the class they paint a picture of a rose. Ava tells Shawn she is a good artist. Ava's painting is ugly and doesn't even resemble a real rose. Shawn says, "Whoa, you are a *terrific* artist."

Kite Scenario

Literal Criticism – Not Shy
Noah and Laura go to the park with a kite that Laura made. Laura is not shy. She always says the right thing to new people. Noah asks to try Laura's kite. Laura says her kite won't fly well. The kite won't even get off the ground. Noah says, "You sure made a useless kite."

Literal Criticism – Shy
Noah and Laura go to the park with a kite that Laura made. Laura is very shy. She finds it hard to talk to new people. Noah asks to try Laura's kite. Laura says her kite won't fly well. The kite won't even get off the ground. Noah says, "You sure made a useless kite."

Ironic Criticism – Not Shy
Noah and Laura go to the park with a kite that Laura made. Laura is not shy. She always says the right thing to new people. Noah asks to try Laura's kite. Laura says her kite will fly well. The kite won't even get off the ground. Noah says, "You sure made an ***amazing*** kite."

Ironic Criticism – Shy
Noah and Laura go to the park with a kite that Laura made. Laura is very shy. She finds it hard to talk to new people. Noah asks to try Laura's kite. Laura says her kite will fly well. The kite won't even get off the ground. Noah says, "You sure made an ***amazing*** kite."

Cake Scenario

Literal Criticism - Not Shy
Gary is at Connor's house for dinner. Connor is not shy. He always says the right thing to new people. For dessert, Connor brings out a cake that he baked earlier in the day. Connor says his cake might not be very good. The cake tastes terrible. Gary says: "Wow, you made a horrible cake."

Literal Criticism - Shy
Gary is at Connor's house for dinner. Connor is very shy. He finds it hard to talk to new people. For dessert, Connor brings out a cake that he baked earlier in the day. Connor says his cake might not be very good. The cake tastes terrible. Gary says: "Wow, you made a horrible cake."

Ironic Criticism – Not Shy
Gary is at Connor's house for dinner. Connor is not shy. He always says the right thing to new people. For dessert, Connor brings out a cake that he baked earlier in the day. Connor says his cake is going to be delicious. The cake tastes terrible. Gary says: "Wow, you made a ***delicious*** cake."

Ironic Criticism – Shy
Gary is at Connor's house for dinner. Connor is very shy. He finds it hard to talk to new people. For dessert, Connor brings out a cake that he baked earlier in the day. Connor says his cake is going to be delicious. The cake tastes terrible. Gary says: "Wow, you made a ***delicious*** cake."

Please read the story and answer the questions that follow.
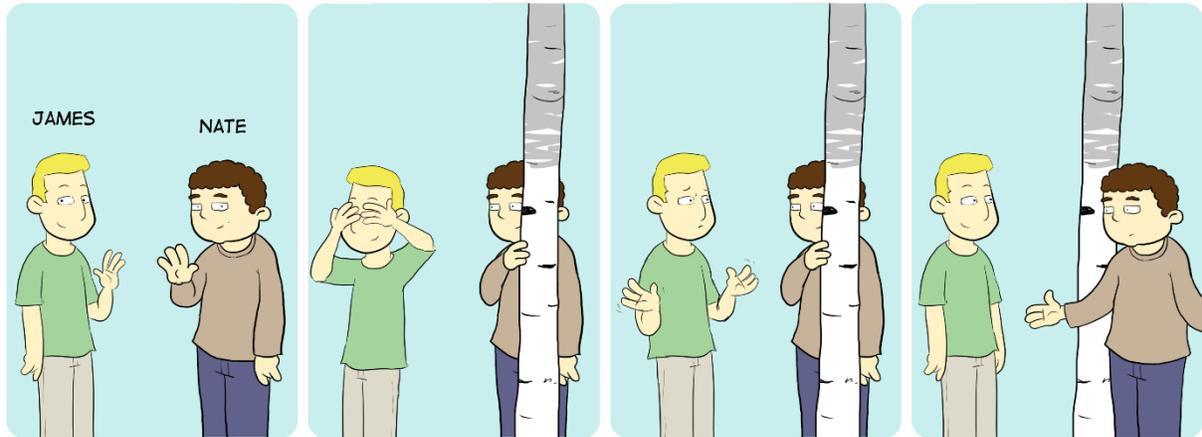
James and Nate are playing hide and seek. Nate is not shy. He loves meeting new people everywhere he goes. Nate has the first turn hiding. Nate says he never finds very good hiding spots. James looks right in Nate's spot and finds him easily. James says, "Wow, you find the worst hiding spots!"

_____

Please answer the following questions by choosing one answer for each question:

1. Who was hiding?   a) Nate   b) James

2. When James said, "Wow, you find the worst hiding spots," was he: (choose one)

      a) Telling the truth   b) Lying   c) Being Sarcastic   d) I don't know

3. Did James think Nate found a good hiding spot or a bad hiding spot?

Bad   Good

  ○   ○

4. When James said, "Wow, you find the worst hiding spots," how nice or mean was he being?

Very Nice	A Little Nice	Not Nice or Mean	A Little Mean	Very Mean
○	○	○	○	○

5. When James said, "Wow, you find the worst hiding spots," how funny was he being?
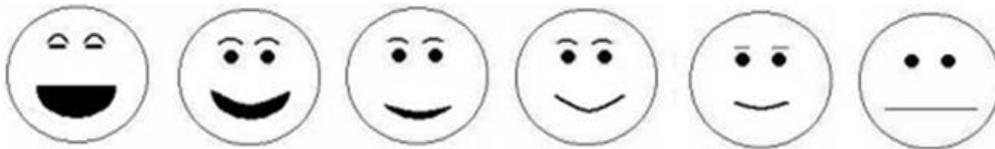
Extremely Funny	Very Funny	Pretty Funny	Somewhat Funny	A Little Bit Funny	Not at all Funny
○	○	○	○	○	○

6. Please answer the following questions about James (the speaker) by marking one circle for each question:

	Very Much	Pretty Much	A Little Bit	Not Really	Not at All
How much would you like to be friends with James?	○	○	○	○	○
How much do you think that James is a funny person?	○	○	○	○	○
How much do you think that James is a kind person?	○	○	○	○	○
How much do you think that James is a popular person?	○	○	○	○	○

Appendix G: **Sample trial from Part B of Study 2**

For this story, imagine that **you** are in the story. After you finish reading the story, answer the questions below.
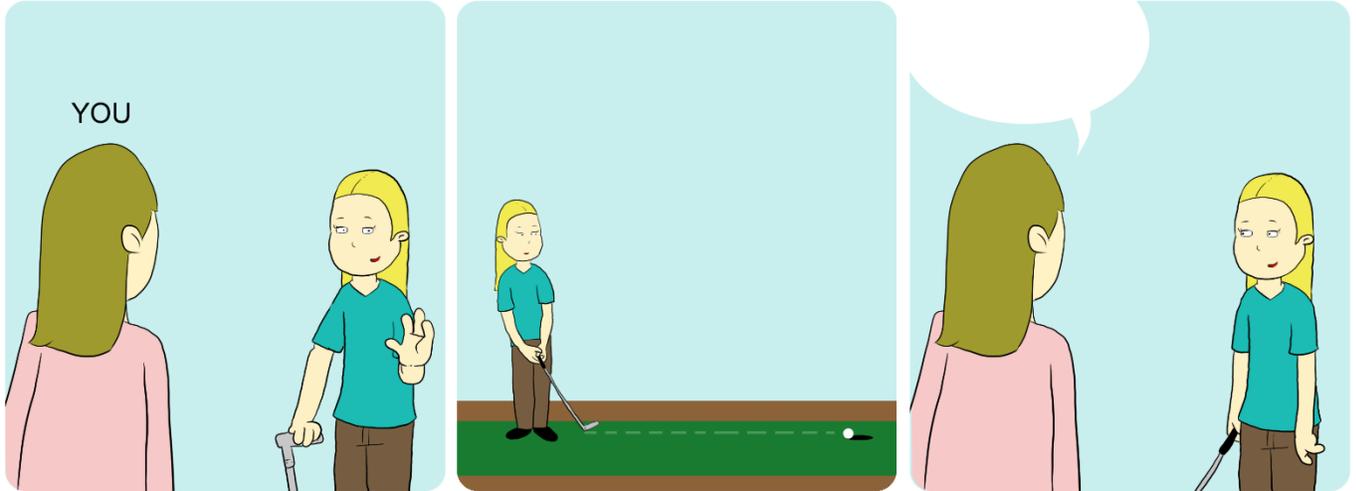
You and your friend are playing mini-golf on a field trip. Your friend is shy. She really doesn't like to be the center of attention. You are on the same team. Your friend tells you she is an awful mini-golf player. Your friend hits the ball and she scores a hole-in-one!
_____

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

In this situation, would you:	Definitely Not	Probably Not	Maybe	Probably, Yes	Yes, Definitely
Tell the truth by saying: *"Boy, that was an awesome shot."*	○	○	○	○	○
Tell a lie by saying: *"That was an awful shot."*	○	○	○	○	○
Be sarcastic by saying: *"Boy, that sure was an **awful** shot!"*	○	○	○	○	○
Give your friend a high five.	○	○	○	○	○
Congratulate your friend: *"You should be really proud!"*	○	○	○	○	○